

A Subset Analysis for Stereotypical Expressions in Japanese¹

日本語のステレオタイプ表現に対するサブセット分析

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Abstract

In this paper, we will discuss the semantics of stereotypical expressions in Japanese focusing on the adjectival suffix *-rashii*, which takes an NP and forms an adjective. We will propose that *-rashii* involves the process of subset taking, which intuitively corresponds to strengthening. Stereotypicality obtains by taking a subset of all properties associated with an individual. Furthermore, it will be argued that the same semantics can be applied to other stereotypical expressions in Japanese such as Construction Reduplication (X X *si-ta* Y) and X in X constructions (X-no *naka-no* X), which involve the process more explicitly as reduplication. Not only is our semantics motivated by overt counterparts, it also can explain wider range of data than previous studies such as McCready and Ogata (2007). Specifically, the obviation of the P(x) presupposition, in which the modified NP is in the extension of the modifier NP, is correctly predicted under our analysis. Finally, we touch upon Contrastive Focus Reduplication in English, making a speculation on the relation between subsets and stereotypicality.

Keywords: Japanese, Stereotypes, Adjectives, Subsets, Comparatives, Reduplication,

1. Introduction

Japanese has several stereotypical expressions such as *X-rashii* Y and *X X si-ta* Y, which denote that Y has a stereotypical property of X. Although there are some previous studies on these expressions in the field of Japanese linguistics, the phenomena have not attracted much attention in the field of formal semantics. Exceptionally, McCready & Ogata (2007, hereafter M&O) give a formal account for adjectival suffixes *-rashii*. Roughly speaking, they argue that *-rashii* quantifies over a set of stereotypical properties and has a presupposition that Y is in the extension of X. Given that *-rashii* denotes a stereotype, the presupposition seems to be trivial. However, the presupposition disappears once X is modified by a comparative expression whose standard is the same extension, schematically in the form *X-than X-rashii* Y. This undermines the analysis proposed by M&O since it predicts that the sentence should suffer from presupposition failure, contrary to the fact. Based on this observation, we alternatively propose that *-rashii* quantifies over a proper subset, rather than a set of stereotypical properties. This slight modification derives the facts correctly in simple cases and comparative cases with the assumption that the output of comparison yields the set difference, in which the comparison between the same extensions amounts to eliminate the core properties. Moreover, we will see that our subset analysis can be overtly observed as reduplication.

Finally, this paper is organized as follows. In section 2, we review previous studies on *-rashii* with M&O. Section 3 first observes a fact which cannot be explained by M&O's semantics. Then, we will propose an alternative. In section 4, other stereotypical expressions which involve reduplication will be discussed to support our subset analysis. Specifically, Construction Reduplication and X in X constructions in Japanese and Contrastive Focus Reduplication in English will be discussed. Section 5 concludes the paper.

2. Previous Studies

In this section, we first observe basic facts concerning *-rashii* contrasting with *-mitai* and *-yoo* in 2.1. These three items are adjectival suffixes, which take an NP as its complement and modify the argument NP, yielding the form X-Adj Y. A characteristic which we are especially concerned with is the requirement on the extension of Y, the argument NP. As we will see, *-rashii* requires Y be in the extension of X while Y cannot be in the extension of X in *-mitai* and *-yoo*. In 2.2, we will overview a previous formal account by M&O.

2.1 Facts about *-rashii*

M&O investigate three suffixes which take a nominal and form an adjective, namely, *-rashii*, *-mitai*, and *-yoo*. As being an adjective, they have both predicative and attributive uses. The examples (1) and (2) shown below illustrate this point. Although we will mainly use the attributive use as an example for limitation of space in the following discussion, the same observation holds true for the predicative use.

(1) Predicative uses^{2,3}

- | | | | | |
|----|---|------------|-----------------|------------------|
| a. | Ano | hito-wa | ikanimo | kyoojyu-rashii. |
| | that | person-TOP | really | professor-RASHII |
| | ‘That person is really professor-like.’ | | | |
| b. | Ano | hito-wa | kyoojyu-mitai | da. |
| | that | person-TOP | professor-MITAI | COP.PRES |
| | ‘That person is professor-like.’ | | | |
| c. | Ano | hito-wa | kyoojyu-no | yoo da. |
| | That | person-TOP | professor-GEN | YOO COP.PRES |
| | ‘That person is professor-like.’ | | | |

(Slightly modified from M&O 2007:41-42)

(2) Attributive uses

- a. *Ikanimo onna-rashii hito.*
 person woman-RASHII really
 ‘a feminine person (who is a woman)’
- b. *Onna-mitai-na hito.*
 woman-MITAI-COP person
 ‘a feminine person (could be a man)’
- c. *Onna-no yoo-na hito.*
 woman-GEN YOO-COP person
 ‘a feminine person (could be a man)’

(Slightly modified from M&O 2007:38)

The translation for *-rashii* above needs to be clarified here. As M&O state, *-rashii* denotes stereotypicality. The stereotypical use of *-rashii* can be paraphrased as “this object or situation exemplifies an image the speaker takes to be characteristic of something else (M&O 2007:36)”, in which something else is the denotation of the NP immediately preceding *-rashii*.

Now, let us look at the facts to be explained taken up in M&O. First, *-rashii*, on one hand, and *-mitai* and *-yoo*, on the other, differ with respect to the requirement on the extension of the head NP. That is, in the form ‘Comp-Adj Arg’ or ‘Subj-Comp-Adj’, Arg and Subj have to be in the extension of Comp if -Adj is *-rashii* while they must not be in the extension of Comp with *-mitai* and *-yoo*. This point is further confirmed by the example below.

- (3) a. *Onna-rashii onna*
 woman-RASHII woman
 ‘feminine woman’
- b. **?Onna-mitai-na onna*
 woman-MITAI-COP woman

‘feminine woman’

- c. *? Onna-no yoo-na onna
 woman-GEN YOO-COP woman
 ‘feminine woman’

(M&O 2007:39)

For *-rashii*, the complement NP and the argument NP are not always the same extension. The following expressions are perfectly acceptable as long as the denotation of the argument NP is a woman or something of a woman⁴.

- (4) a. Onna-rashii sensei
 woman-RASHII teacher
 ‘a feminine teacher (who is a woman)’
 b. Onna-rashii hurumai
 woman-RASHII behavior
 ‘a feminine behavior (of a woman)’

According to M&O, this requirement is presuppositional. A representative piece of evidence is that it does not disappear under negation. In the following example, the person modified/predicated by *-rashii* has to be in the extension of ‘woman’ while ‘person’ in (5b) cannot be in the extension of ‘woman’.

- (5) a. Onna-rashiku-nai
 woman-RASHII-NEG
 ‘non-feminine woman’
 b. Onna-mitai-na hito ja-nai
 woman-MITAI-COP person COP-NEG
 ‘non-feminine person (not a woman)’

(M&O 2007:39-40)

Another characteristic to be explained is that the three adjectives can be used in comparatives. The example is shown below.

- (6) Ryoanji-wa Kinkakuji-yori Kyoto-rashii tokoro da.
 Ryoanji-TOP Kinkakuji-YORI Kyoto-RASHII place COP.PRES
 ‘Ryoanji is a more Kyoto-like place than Kinkakuji’
 (M&O 2007: 40)

The same observation holds for *-mitai* and *-yoo* as well.

- (7) a. Zoujoji-wa Sensouji-yori Kyoto-mitai-na tokoro da.
 Zoujoji -TOP Sensouji-YORI Kyoto- MITAI-COP place COP.PRES
 ‘Zoujoji is a more Kyoto-like place than Sensouji’
 b. Zoujoji-wa Sensouji-yori Kyoto-no yoo-na tokoro da.
 Zoujoji-TOP Sensouji-YORI Kyoto-GEN YOO-COP place COP.PRES
 ‘Zoujoji is a more Kyoto-like place than Sensouji’

This indicates that the semantics for the three suffixes involve degrees that can be used in comparatives.

Finally, *-rashii* cannot take an NP which is not associated with any stereotypical properties while *-mitai* and *-yoo* are felicitous with such an NP.

- (8) a. # Akai kutsu-rashii mono
 red shoe-RASHII thing
 ‘red shoe-like thing’
 b. Akai kutsu-mitai-na mono
 red shoe-MITAI-COP thing
 ‘red shoe-like thing’
 c. Akai kutsu-no yoo-na mono

red shoe-GEN YOO-COP thing
 ‘red shoe-like thing’

(M&O 2007: 54)

Summarizing so far, the facts to be explained are the followings.

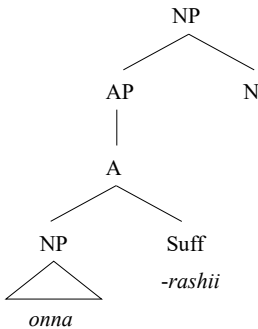
- (9) a. The requirement on the extension of the argument NP
- b. The availability in comparative constructions
- c. The sensitivity to the stereotypicality of the complement NP

In the next subsection, we will see how these properties are explained by M&O.

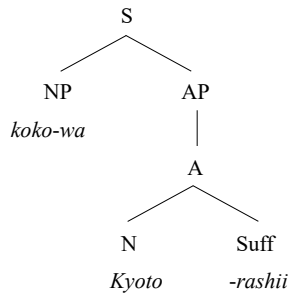
2.2 Syntax and Semantics for *-rashii*

This subsection reviews the syntax/semantics for *-rashii*, *-mitai*, and *-yoo* proposed by M&O. First, they assume the following syntax for *X-rashii/-mitai/-yoo* Y.

- (10) a. Attributive use



- b. Predicative use



Let us begin with *-rashii*. First, they argue that *-rashii* quantifies over the properties which are not core or defining to the complement NP⁵. If it did, the woman in the example (11) would not be a woman, contrary to the fact. Thus, *-rashii* is only con-

cerned with the non-core properties that are associated with a stereotypical image of women.

- (11) Onna-rashiku-nai onnna
 woman-RASHII-NEG woman
 ‘non-feminine woman’

The stereotypical properties of individuals satisfying a property P obtain by taking the difference of all properties that P has, represented as $A(P)$, and the core properties of P , $C(P)$ ⁶. This is illustrated below in (12).

$$(12) \quad S(P) = A(P) / C(P)$$

With these sets of properties, the fact that *-rashii* is available in comparative constructions is explained as follows. Comparison becomes possible by ordering individuals by the number of properties which they satisfy in $S(P)$. More specifically, they assume a function Q , which takes a property P and individual x , and returns the set of properties in $S(P)$ that x satisfies. Then, ordering is implemented by $<_p$, which orders individuals based on the cardinality of the sets yielded by Q . Q and ordering by $<_p$ are formally represented below.

$$(13) \quad Q(P)(x) = \{P' \in S(P) | P'(x) = 1\}$$

$$(14) \quad x <_p y \text{ iff } \text{Card}(Q(O(x))) < \text{Card}(Q(P)(y)))$$

In addition, *Card* above is a function from sets of properties to their cardinalities. Cardinalities are turned into degrees by γ below.

$$(15) \quad \gamma_{\langle\langle e, t \rangle, t \rangle, d \rangle} = \gamma Q_{\langle\langle e, t \rangle, t \rangle} \cdot \llbracket Q \rrbracket$$

Together, *-rashii* is defined as a function from individuals to the degrees of Q . This is illustrated below. Note that the requirement that the argument NP be in the extension of the complement NP is in curly braces, which stand for a presupposition. Furthermore, it is assumed that the complement NP and the argument NP are assigned different types, $\langle e, t \rangle$ and e , respectively. This assumption is due to the property of bare nominals in Japanese⁷ and does not affect the argument in any significant way.

(16) Semantics for *-rashii*

$$\llbracket rashii \rrbracket = \lambda P \in D_{\langle e, t \rangle} \cdot \lambda x \in D_e \{P(x)\}. [\gamma(Q(P))(x)]$$

(M&O 2007:54)

This semantics successfully derives the facts to be explained reviewed in the previous subsection. The first two facts can be explained by the presupposition and the assumption that it denotes degrees. Furthermore, the third fact that *-rashii* cannot take an NP without stereotypicality is explained by the ban on vacuous quantification.

For *-mitai* and *-yoo*, two modifications are in order. First, the presupposition of them is $\neg P(x)$, rather than $P(x)$. Second, the domain of quantification is different. This move is necessary to account for the fact that *-mitai* and *-yoo* can take an NP without any stereotypicality. M&O argue that they quantify over the actual properties. Thus, Q , which is a function taking P and x , and returns the sets of properties that x satisfies in $S(P)$, is modified as follows.

$$(17) \quad Q'(P)(x) = \{P' \in A(P) | P'(x) = 1\}$$

Finally, the semantics for *-mitai* and *-yoo* is as follows.

(18) Semantics for *-mitai* and *-yoo*

- a. $\llbracket \textit{mitai} \rrbracket = \lambda P \in D_{\langle e, t \rangle}. \lambda x \in D_e \{ \neg P(x) \}. [\gamma(Q'(P))(x)]$
- b. $\llbracket \textit{yoo} \rrbracket = \lambda P \in D_{\langle e, t \rangle}. \lambda x \in D_e \{ \neg P(x) \}. [\gamma(Q'(P))(x)]$

In the next section, we will discuss the semantics of *-rashii* with a novel observation. It will be proposed that the set over which *-rashii* quantifies is a proper subset of the complement NP, not the set of stereotypical properties.

3. A Subset Analysis

This section first observes that the presupposition of *-rashii* proposed by M&O can be reversed or obviated in comparative contexts, in which the complement NP is modified by a comparative expression of the same extension. This is unexpected under M&O's presupposition analysis. Then, in 3.2 we will claim that the presence/absence of the requirement on the extension of the argument NP is correctly predicted if we assume that *-rashii* quantifies over a proper subset of A(P) associated with the complement NP. Another crucial assumption, which is fairly general, is that the output of comparison yields the difference. This means that the comparison between the same extensions amounts to eliminate the core properties. These two enable us to obtain the set of strongly associated properties, i.e. S(P), without C(P) in comparative contexts. With additional assumptions, our subset analysis covers all the data which will be presented in this section including negation.

3.1 *-Rashii* in Comparative Contexts

As we have seen, the requirement of P(x) is encoded in semantics of *-rashii* as a presupposition in M&O's theory. Thus, it is predicted that the violation should yield relatively strong unacceptability, which is indeed the case in simple cases. There is, however, an environment in which the requirement of *-rashii* is reversed or obviated. To be concrete, the argument NP is required not to be in the extension of the comple-

ment NP when the complement of *-rashii* is modified by a comparative expression. The example is shown below.

- (19) a. *?Onna-rashii otoko
 woman-RASHII man
 ‘a feminine man’
- b. Onna yori onna-rashii otoko
 woman YORI woman-RASHII man
 ‘a man who is more feminine than women’
- c. *?Onna yori onna-rashii onna
 woman YORI woman-RASHII woman
 ‘a woman/girl who is more feminine than women’

This reversing effect is not limited to *yori*-comparatives. In the following example, it is shown that *ijouni*, which roughly corresponds to English ‘more’, induces the same effect⁸.

- (20) a. Onna ijouni onna-rashii otoko
 woman more woman-RASHII man
 ‘a man who is more feminine than women’
- b. *?Onna ijouni onna-rashii onna
 woman more woman-RASHII woman
 ‘a woman/girl who is more feminine than women’

Moreover, the requirement on the extension of the argument NP completely disappears when the complement is modified by a comparative expression whose standard of comparison is a subcategory. In the following example, with the standard of comparison ‘normal/strange women’, the argument NP can be either ‘man’ or ‘woman’.

- (21) a. Hutsuuno/henna onna yori onna-rashii otoko
 Normal/strange woman YORI woman-RASHII man
 ‘A man who is more feminine than normal/strange women’
- b. Hutsuuno/henna onna yori onna-rashii onna
 Normal/strange woman YORI woman-RASHII woman
 ‘A woman who is more feminine than normal/strange women’

These observations can be partly explained by the semantics of comparison. That is, comparison cannot be made between two identical NPs. The examples (19c) and (20b) are unacceptable since a woman is compared with a woman. This, however, does not give an account for the fact that the requirement on the extension in *-rashii* is obviated. The example (21) is still problematic for M&O’s semantics. How can the requirement be obviated in comparative contexts?

In this respect, given a general assumption that the output of comparison yields the set difference between two sets of degrees, it is plausible that the yielded set does not contain the core/defining properties of ‘woman’. In other words, there is no P, which is a prerequisite for the requirement of P(x). Although it is not clear how the absence of a prerequisite of a presupposition is led to obviation at this point, here, there is good reason to believe that our first approximation is on the right track. In Japanese, subcomparatives are not allowed with predicative adjectives. However, it becomes possible when each kind of degrees is already compared with the same kind of degrees. This contrast is illustrated below in (22).

- (22) a. * Kono tana-wa ano doa-ga hiroi yori (mo) (motto) takai.
 this shelf-TOP that door-NOM wide YORI MO more tall
 ‘This shelf is taller than that door is wide’

(Beck et al. 2004:290)

- b. ? Kono isu-ga ano tsukue yori hiroi yori (mo) (motto) kono
 this chair-NOM that desk YORI wide YORI MO more this

doa-ga ano mado yori takai.

door-NOM that window YORI tall

‘The degree to which this chair is wider than that desk is greater than the degree to which this door is taller than that window.’

Although subcomparatives are beyond the scope of this paper, we can assume that something similar to degree abstraction takes place in (22b) with the set difference. More specifically, the first embedded comparison yields the set difference of degrees between the width of the chair and that of the desk. Crucially, this set difference does not contain the core properties of width since it is in both sets of properties. The same process applies to the second embedded comparison, which is between the height of the door and that of the window. Again, the set difference is the degree to which the height of the door exceeds that of the window, without the core properties of height. This is schematically represented as follows.

$$(23) \quad D_1\text{-tall (door)}/D_1\text{-tall (window)} > D_2\text{-wide (chair)}/D_2\text{-wide (desk)} \\ = D_1 > D_2$$

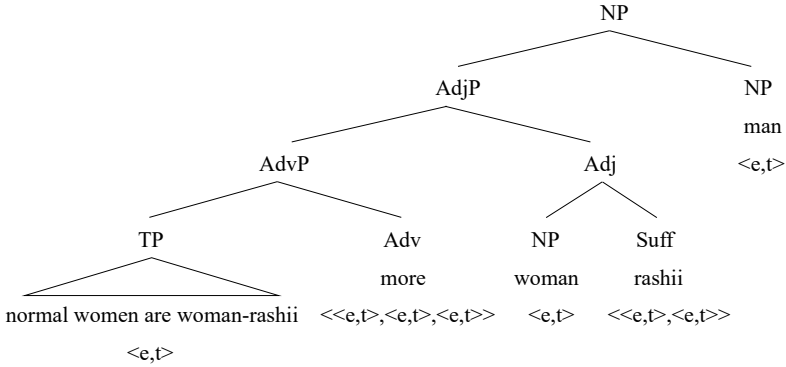
In the next subsection, we will consider how our set difference analysis is formally implemented for *-rashii* in comparative contexts. It will be shown that the set difference analysis makes a correct prediction about the requirement of $P(x)$ with a subset analysis of *-rashii* which will be proposed.

3.2 Analysis

Before considering the semantics, we have to examine the syntax of *-rashii* in comparative contexts. Following Hoji (1998) and Hayashishita (2009), we assume that the complement of *yori* is clausal and undergoes comparative deletion in the following step of the derivation. This assumption is for explicitness of semantic composition. Nothing crucial hinges on this clausal analysis for our purpose. The

structure, in which *-rashii* is modified by a *-yori* comparative, is shown below with types. Notice that the standard of comparison, which is clausal, is of type $\langle e, t \rangle$ under the assumption that the output of comparison is degrees. The type of *-yori* will be discussed shortly.

(24) Syntax for *-rashii* in comparative contexts



For the semantics, we first assume that *yori* is a function which takes two sets of properties (degrees) and returns the set difference. This is consistent with a general assumption that comparison denotes a proper subset relation. Our semantics for *yori* is shown below in (25), in which $-$ represents the set difference.

(25) Semantics for *yori*

$$\llbracket yori \rrbracket = \lambda x \in D_e. \lambda D \in D_{\langle e, t \rangle}. \lambda D' \in D_{\langle e, t \rangle}. D \subset D'. [D' / D(x)]$$

Given these standard assumptions, it has to be the case that AdjP denotes the set of stereotypical properties of women that normal women do not have, crucially, without core properties of women. This seems to be on the right track since it correctly predicts that the argument NP can be either a man or a woman if the woman is not in the extension of normal women.

What kind of semantics do we need for *-rashii* to derive this result? Since

M&O's semantics has $P(x)$ as a presupposition, the core properties cannot be eliminated even if we take the set difference between the set of degrees of femininity of normal women and that of women. In this respect, let us first assume that *-rashii* takes $C(P)$ in addition to $S(P)$ and there is no $P(x)$ presupposition. This tentative modification can yield the correct semantics since AdjP denotes the set difference between the union of $C(\text{normal women})$ and $S(\text{normal women})$, on one hand, and that of $C(\text{women})$ and $S(\text{women})$, on the other. As a result, it denotes the set of stereotypical properties which normal women do not have. Now, let us see how this is calculated. In the following derivation, U stands for the union of $C(P)$ and $S(P)$.

- (26) a. $\lambda x. \lambda D. \lambda D'. D \subset D'. [D' / D(x)](U(\text{normal women}))(U(\text{women}))(x)$
 b. $\lambda x. [U(\text{normal women}) / U(\text{women})] (x)$
 c. $[U(\text{normal women}) / U(\text{women})](\text{man})$

As shown above, our tentative modification seems to work well for comparative contexts and simple attributive/predicative uses. It, however, immediately faces a problem. That is, the negative form, 'X-*rashiku-nai* Y' cannot be explained in our current analysis as argued in M&O. Since what we have is a set whose members are stereotypical properties and core properties, there is no way to negate only stereotypical properties. Put differently, a dilemma is that we lose an account for comparative contexts if we dissociate $C(P)$ from $S(P)$ but the negation cannot be dealt with if we assume a single set consisting of $C(P)$ and $S(P)$.

A key to resolve this dilemma is in the interpretation of the negative form of *-rashii*. A closer inspection reveals that the denotation of *-rashiku-nai* is not just the absence of stereotypical properties but the presence of anti-stereotypical properties. For instance, the expression shown below cannot be used to describe a situation in which Mary does not have any stereotypical properties of women⁹. Rather, it is typically used when Mary has anti-stereotypical properties associated with women such as preference to robot anime and carelessness of her appearance.

- (27) Mary-wa onna-rashiku-nai.
 Mary-TOP woman-RASHII-NEG
 ‘Mary is non-feminine’

The above fact shows that *-rashii* has some strengthening effect in both affirmative and negative cases. Stereotypical properties and anti-stereotypical properties are properties strongly associated and anti-associated with an individual, respectively. Additional supporting evidence for this claim comes from Noro (2016). He observes that unlike other adjectives the negative form of *-rashii* can be modified by adjectives such as *totemo* ‘very’ and *hijouni* ‘extremely’. This indicates that the negative form *-rashiku-nai* is gradable with the presence of anti-stereotypical properties. If it just denotes the absence of degrees, modification by *very* or *extremely* should be impossible.

- (28) a. Totemo/hijouni onna-rashiku-nai.
 very/extremely woman-RASHII-NEG
 ‘very/extremely non-feminine’
 b. *?Totemo/hijouni nagaku-nai.
 very/extremely long-NEG
 ‘very non-long’

Furthermore, the above fact indicates that *-rashiku-nai* is a lexicalized form since negation does not work compositionally, that is, it does not denote the lack of stereotypical properties. In fact, this is a welcome consequence. If we assume a compositional semantics for *-rashiku-nai*, a serious problem arises. In a compositional view, one might argue that negation operates on the set from which *-rashii* takes a set of properties, not the whole expression. This, however, raises a question about why C(P) is not negated, which may undermine our analysis since we only have a single set whose members are C(P) and S(P)¹⁰. In this respect, the non-com-

positional view, which we have just argued with supporting evidence, can dispense with this problem. Thus, our first approximation for *-rashii* that it takes $C(P)$ and $S(P)$ without the $P(x)$ presupposition can be maintained for the negative form as well. It takes $C(P)$ and $\neg S(P)$, which stands for a set of anti-stereotypical properties.

Now, we are ready for a formal account for the presence and absence of the $P(x)$ requirement. Specifically, I propose that *-rashii* simply takes a (proper) subset of $A(P)$. This assumption correctly derives the set from which *-rashii* and its negative form take a subset. When the form is positive and accordingly properties of $A(P)$ are aligned positively, that is, with core properties in the center and properties strongly associated with P next to them, the union of $C(P)$ and $S(P)$ is yielded. When *-rashii* is negated and the members of the subset yielded by *-rashii* are aligned negatively, on the other hand, the core properties are still in the center, and anti-stereotypical properties are adjacent to them. As a result, what we get amounts to the union of $C(P)$ and $\neg S(P)$. Also, our set difference analysis for comparative contexts is not affected by this move since we maintain the union of $C(P)$ and $S(P)$.

This proposal, however, does not directly derive the facts. A remaining question is how specifically the requirement on the extension of the argument NP is derived. This question arises because we just have desiredly regulated sets, and there is no mechanism to connect the requirement on the extension to those sets¹¹. Given that we only have a subset of $A(P)$, a straightforward solution for this is to assume that the argument satisfies all the properties of the subset. This guarantees that the core properties have to be satisfied if present and do not have to be otherwise. Although this assumption directly connects the member of the proper subset and the presence/absence of $P(x)$ requirement, some questions arise. An immediate problem is the domain restriction. The domain restriction is necessary since it is not the case that the argument NP must satisfy all the stereotypical properties of the complement NP. As the following example shows, one can be felicitously modified by *-rashii* if she lacks some stereotypical properties of women.

- (29) Mary-wa onna-rashiku-nai toko-mo aru ga kane onna-rashii
 Mary-TOP woman-RASHII-NEG part-also exist but basically woman-RASHII
 ‘Mary is sometimes not feminine but basically feminine’

The domain restriction is sometimes overtly expressed. In (30) below for instance, the subset consists of C(P) and a restricted S(P), which only contains a property of wearing a skirt.

- (30) Sukaato-o haku nante onna-rashii.
 skirt-ACC wear COMP woman-RASHII
 ‘(It’s) feminine to wear a skirt.’

Thus, a problem of domain restriction arises when the *-rashii* phrase is uttered out of the blue, analogous to the domain restriction of quantifiers or the standard of vague predicates. Although this problem is beyond the scope of this paper and we thus will not consider it any deeper, in the following discussion we will assume contextual variables following Stanley and Szabó (2000). They argue that *man* in *every man runs*, for example, occurs with f(i), in which according to Stanley and Szaó (2000: 251) “the value of ‘i’ is an object provided by the context, and the value of ‘f’ is a function provided by the context that maps objects onto quantifier domains”. For *-rashii*, we assume that the complement NP comes with f(i). Thus, A(P), the domain from which *-rashii* takes a subset, is already restricted by a context. Then, the next question is how to implement total satisfaction. Notice that it is not universal quantification since *-rashii* cannot be modified by *hotondo* ‘almost’ as shown below.

- (31) *?Mary-wa hotondo onna-rashii.
 Mary-TOP almost woman-RASHII
 ‘Mary is almost feminine.’

We, however, do not have a clear answer in this respect. We simply put the requirement of total satisfaction in the presupposition instead of the presupposition of $P(x)$ in M&O. Notice that this is not just a stipulation since it has been shown that the requirement on the extension is presuppositional.

Finally, we get the following semantics for *-rashii* and its negative counterpart. We represent A(P) with positive alignment as P^{POS} and the one with negative alignment as P^{NEG} , respectively. Also, Q has a different function than M&O's. Our Q just takes a subset. Thus, (32a) says that *-rashii* denotes the degree of the properties in the subset of P^{POS} satisfied by x . Replacing P^{POS} with P^{NEG} yields the semantics for *-rashiku-nai*.

(32) Semantics for *-rashii*

- a. $\llbracket rashii \rrbracket = \lambda P \in D_{\langle e, t \rangle}, \lambda x \in D_e \{Q(x)\}. [\gamma(Q(P^{POS}))(x)]$
- b. P^{POS} is a set of properties associated with P

(33) Semantics for *-rashiku-nai*

- a. $\llbracket rashiku - nai \rrbracket = \lambda P \in D_{\langle e, t \rangle}, \lambda x \in D_e \{Q(x)\}. [\gamma(Q(P^{NEG}))(x)]$
- b. P^{NEG} is a set of properties anti-associated with P

The final result of the simple attributive cases and comparative cases are represented in (34) below. The positive case yields the degree which is derived from the cardinality of the subset of the set of properties associated or anti-associated with women. The resulted sets denote a set of stereotypical properties or the one of anti-stereotypical properties depending on the choice of the polarity. Also, it presupposes that the argument NP satisfies all the properties in the subset. The comparative or obviation case, on the other hand, yields the degree which is derived from the cardinality of the subset of the set difference between the sets of properties associated or anti-associated with normal women and non-normal women in some sense determined by the context. Importantly, the core properties of women are eliminated by taking the set

difference of two NPs which share the extension. Thus, the argument NP can be a man or a woman as long as it satisfies all the properties in Q .

(34) a. Semantics for simple cases

$$\begin{aligned} \llbracket \text{woman} - \text{rashii woman} \rrbracket &= \lambda P \in D_{\langle e, t \rangle}. \lambda x \in D_e. Q(x). [\gamma(Q(P^{POS/NEG}))] \\ &= \{Q(x)\}. [\gamma(Q(\text{woman}^{POS/NEG}))] \end{aligned}$$

b. Semantics for comparative cases

$$\begin{aligned} \llbracket \text{normal woman more woman} - \text{rashii } X \rrbracket &= \lambda P \in D_{\langle e, t \rangle}. \lambda x \in D_e. Q(x). \\ &[\gamma(Q(P^{POS/NEG}))] \\ &= \{Q(x)\}. [\gamma(Q(U(\text{normal women}) - U(\text{women})^{POS/NEG}))] \end{aligned}$$

In this section, we have seen that our semantics for *-rashii* and *-rashiku-nai* successfully derive the $P(x)$ requirement in simple cases and the obviation in comparative contexts. The modification consists of three parts. First, *-rashii* and its negative form take a proper subset, not the set of stereotypical properties. Second, the set from which the negative form of *-rashii* takes a subset is aligned negatively in the sense that the properties anti-associated with the individual is put next to the $C(P)$. Third, there is a requirement that x satisfy all the properties in the proper subset, which has undergone an appropriate domain restriction. These three modifications enable us to give an account for the positive/negative simple cases and the obviation effect in comparative contexts. In the next section, we will discuss other stereotypical expressions which involve reduplication. It will be first shown that the behavior of Construction Reduplication (CR) in Japanese is the same as that of *-rashii*. Furthermore, we will consider a speculation that the subset taking process in *-rashii* is overtly expressed as reduplication in CR.

4. Stereotypicality and Reduplication

This section first observes that Construction Reduplication (CR) in Japanese behaves

just like *-rashii* with respect to stereotypicality and the obviation effect. Then, it will be shown that our semantics for *-rashii* can be successfully applied to CR as well. Also, we will consider a speculation that CR overtly exemplifies the process of subset taking proposed for *-rashii* as reduplication. We will observe more cases in which reduplication denotes stereotypicality in Japanese and English.

4.1 Construction Reduplication

Japanese has another productive word formation process in which NPs can be turned into stereotypical adjectives. Following Ono (2015), we call such an expression Construction Reduplication (CR). As exemplified below, CR forms a stereotypical expression by reduplication an NP and suffixing *si-ta* ‘do-PAST’ or *si-tei-ru* ‘do-ASP-PAST’.

- (35) a. Onna onna si-ta onna
 woman woman do-PAST woman
 ‘feminine woman’
- b. Onna onna si-tei-ru onna
 woman woman do-ASP-PRES woman
 ‘feminine woman’

Like *-rashii*, CR cannot be applied if the NP does not induce any stereotypicality. The following utterance is unacceptable without a supporting context.

- (36) # Akai kutsu akai kutsu si-ta kutsu
 red shoe red shoe do-PAST shoe
 Int. ‘really red shoe-like shoe’

Further similarities between *-rashii* and CR are the availability in comparatives, which indicates that CR denotes degrees, and the P(x) presupposition.

- (37) Sue-wa Mary yori onna onna si-tei-ru.
 Sue-TOP Mary yori woman woman do-ASP-PRES
 ‘Sue is more feminine than Mary’

- (38) a. # Onna onna si-ta otoko
 woman woman do-PAST man
 Int. ‘a feminine man’
 b. # Onna onna si-tei-nai otoko
 woman woman do-ASP-NEG man
 Int. ‘a non-feminine man’

Interestingly, the P(x) presupposition disappears in the same environment as *-rashii*. This is illustrated below in (39).

- (39) Hutsuuno onna yori onna onna si-tei-ru otoko/onna
 normal woman YORI woman woman do-ASP-PRES man/woman
 ‘a man/woman who is more feminine than women’

If we assume our subset analysis for CR as well, these facts are correctly derived while M&O make a wrong prediction.

Given the observation that CR patterns with *-rashii*¹², we can make a speculation here that the process of subset taking we have argued for *-rashii* is transparent in CR. Especially, it is suggestive that CR is formed by reduplicating an NP and changing the category, from nominal to predicative since *-rashii* also takes an NP and turns into an adjective. In the next subsection, we will consider other stereotypical expressions which involve reduplication. It will be shown that reduplication is a common strategy to represent stereotypicality or a subset of the base word.

4.2 Reduplication and stereotypicality in Japanese

Besides CR, we can observe the process of subset taking more explicitly in what we call X-in X constructions., which have the form NP-*no naka-no* NP ‘NP-GEN inside-GEN NP’. The example is shown below.

- (40) Otoko-no naka-no otoko
man-GEN inside-GEN man
‘Man’s man’

The interpretation, however, is not exactly the same as *-rashii* and CR. As observed in Abe (2009) and argued in Noro (2016), X-in X does not denote stereotype but a representative of the category with some outstanding property. Thus, sparrows, despite its stereotypicality as a bird, cannot be the bird’s bird but hawks can as exemplified below. This contrast is because hawks have outstanding properties such as rarity (at least in Tokyo) and hunting-skills while sparrows do not.

- (41) a. ? Suzume-wa tori-no naka-no tori da
sparrow-TOP Bird-GEN Inside- GEN bird COP
‘The sparrow is bird’s bird’
b. Taka-wa tori-no naka-no tori da
hawk-TOP Bird-GEN Inside-GEN bird COP
‘The hawk is bird’s bird’

This is unexpected under the assumption that both *-rashii*/CR and X-in X take a subset. In this respect, we argue that X-in X takes a set of stereotypical properties as well but the yielded set is further restricted. First, let us confirm that we can still detect stereotypicality in X-in X, too. In the example shown below, penguins and whales cannot be representatives of birds and mammals, respectively, despite the fact that they have outstanding properties. A plausible account for this is that they are not

typical birds and mammals.

- (42) a. ? Penguin-wa tori-no naka-no tori da
 penguin-TOP bird-GEN inside-GEN bird COP
 ‘The penguin is bird’s bird’
- b. ? Kujira-wa honyuurui-no naka-no Honyuurui da
 penguin-TOP mammal-GEN inside-GEN mammal COP
 ‘The penguin is bird’s bird’

Thus, we assume that the denotation of X-in X is the subset of the set of stereotypes. We do not discuss what derives this additional restriction but speculate that it is due to overtness of the process or the idiomatic nature of the expression.

In this subsection, we have seen that subset taking process is explicitly observed in X-in X constructions, which involve stereotypes. As we will see in the next subsection, the connection between stereotypicality and reduplication is observed in English as well.

4.3 Reduplication and stereotypicality in English

English has an expression similar to Japanese CR which denotes stereotypicality or a subset by reduplication. Following Ghomeshi et al. (2004), we refer to the phenomenon as Contrastive Focus Reduplication (CFR). The example is shown below, in which *salad-salad* denotes a stereotypical salad.

- (43) I’ll make the tuna salad, and you make the salad_{CF}-salad.

(Ghomeshi et al. 2004: 308)

Although the denotation of English CFR is not only a stereotype, we mainly consider the stereotypical use of CFR. Also, we do not consider syntactic issues such as head-movement vs. phrasal movement for limitation of space¹³. The semantics of

CFR is briefly touched upon in Horn (1993: 48). Specifically, he comments on the mechanism which yield the denotation of CFR as follows, “As a rough approximation, we can say that the reduplicated modifier singles out a member or subset of the extension of the noun that represents a true, real, default, or prototype instance”. Thus, our subset analysis can be seen as a reminiscent of Horn’s rough approximation. A more detailed discussion is found in Song and Lee (2011). They investigate three denotations of CFR, namely, the stereotype of a category, the subcategory of a category, and the category itself. The example is shown in (44) below. Among them, the first two are relevant for our discussion .

(44) a. Stereotypes of a category

Mary: Would you like a wine?

Jason: No, a drink_{CF}-drink. I’ll have some vodka.

b. Subcategories of a category

(Jason, the husband, comes back after lots of work from his garden, with sweat pouring down his face. Mary, the wife, meets him at home.)

Jason: I want a drink.

Mary: Here, have some beer.

Jason: No, I want a drink_{CF}-drink. With no alcohol.

c. The category itself

(Two attractive models are auditioning for a magazine at a photo shoot. Jason holds sunglasses and a bottle of sunscreen while Mary holds a fan and a plastic replica of a glass of lemonade.)

Jason: It’s really hot in here. I’d love a drink right now.

Mary: (handing him the lemonade prop) Here!

Jason: No, a drink_{CF}-drink, silly!

(Song and Lee 2011: 446-447)

In short, Song and Lee’s dynamic analysis assumes a disjunctive structure $p \vee q$,

which is created based on a discourse context, and one of the disjunct is selected by contrastively focusing. For instance, in (44) above there is a structure *wine* $\vee$ *vodka* in (44a), *alcoholic drink* $\vee$ *non-alcoholic drink* in (44b), and *real drink* $\vee$ *fake drink* in (44c). Then, *drink*_{CF} exclusively selects either of them. Notice that what consists of the disjunctive structure is members of a subset of *drink*¹⁴. Under this view, our argument that taking subset of A(P) yields S(P) is challenged since it is not necessarily the case in English. In this respect, we assume that *-rashii* and CR in Japanese are not context-dependent while CFR in English is. This is a natural assumption given the fact that Japanese stereotypical expressions do not involve any morphological/phonological features related to discourse while English CFR involves contrastive focus. The denotation of CFR becomes the same as Japanese *-rashii* and CR only if the context provides a set of drinks ordered on the scale of stereotypicality or the strength of association. Thus, we argue that CFR is in the scope of our subset analysis.

In this section, we first observed that CR behaves the same as *-rashii* with respect to stereotypicality and the obviation effect in comparative contexts. It has been shown that our subset analysis can be applied to CR as well. Then, we discussed a speculation that the covert subset taking process assumed for *-rashii* is overtly expressed as reduplication in CR. This speculation was confirmed by a more explicit counterpart X-in X. Finally, we reviewed the context-dependent counterpart of *-rashii* and CR, namely, CFR in English.

5. Conclusion

In this paper, we have seen that the facts about *-rashii* are accounted for by our subset analysis, but not by M&O's. The coverage of our analysis is not limited to *-rashii*. It was also shown that CR, which behave the same as *-rashii*, can be given the same account. Finally, we discussed a speculation that reduplication is a strategy to take a subset or a set of stereotypical properties. The speculation is supported by other stereotypical expressions such as X-in X in Japanese and CFR in English.

Notes

- 1 I have benefited from discussions with Shoichi Takahashi and Kenta Kakenami. Also, I would like to offer my special thanks to Erin McCready for reading earlier versions of this paper and providing useful comments. All remaining errors are my own.
- 2 Abbreviations: ACC=accusative ASP=aspect COMP=complementizer COP=copula GEN=genitive NEG=negation NOM=nominative PRES=present tense TOP=topic
- 3 The adjective use of *rashii* is ambiguous with the evidential reading, which is roughly translated as ‘It seems that...’. To resolve the ambiguity, we added *ikanimo* ‘really’, which is not in the original sentence from M&O. We made the same modification for the attributive use. Although we will omit the modification for disambiguation in the following discussion, all the examples of *-rashii* are intended to convey stereotypicality in this paper.
- 4 It might be possible to analyze ‘teacher’ and ‘behavior’ in (4) as ‘female teacher’ and ‘her behavior’, respectively. Furthermore, we could extend this analysis to the canonical case and argue that ‘woman-RASHII woman’ is actually something like ‘woman-RASHII female woman’. Although we do not consider the possibility of hidden structures seriously here partly because there is no acceptable overt counterpart in Japanese, our analysis which will be presented in the following sections can be seen as substantially the same as this reduplication analysis.
- 5 It is not clear what the core/defining properties of women are. We, however, put this issue aside since it is beyond the scope of this paper and what matters for us is the fact that NPs have some defining properties. Also, we will continue to use ‘woman’ in examples for the sake of concordance with previous studies. Nothing crucial hinges on this choice.
- 6 An assumption in M&O is that possessing a stereotypical property of an individual does not necessarily entail being in the extension of the individual.
- 7 See Chierchia (1998) for details.
- 8 This observation is originally from Yamashita (1995). However, this kind of examples is not problematic for her since the P(x) requirement is not assumed there.
- 9 For this situation, the following way of negation is used instead. Notice that *wa*, glossed as Contrastive Focus, is put between *-rashii* and negation. This CF *wa* marks the scope of negation.

(i) Mary-wa onna-rashiku-wa-nai.
 Mary-TOP woman-RASHII-CF-NEG
 ‘Mary is non-feminine’
- 10 The answer could be derived from the adjective nature of *-rashii*. Of particular relevance here is subjective modifiers in the sense of Partee (1995). Unlike intersective modifiers

such as *blue*, subsecutive modifiers such as *skillful* takes a subset of the modified NP. For instance, *a skillful surgeon* is a person who is skillful as a surgeon, not anyone who is skillful as a carpenter but unskillful as a surgeon, for example. From this view, *X-rashii* Y denotes Y that has a stereotypical property of X. If we were to analyze *-rashii* as a subsecutive modifier, one possible argument is that *a skillful surgeon* is actually *a surgically skillful surgeon*. Although this argument still calls for an account as to why *skillfull* and *-rashii* have to be bound by the modified NP, it might be worth pursuing. However, we leave it for future research.

- 11 It would be possible to argue that each stereotypical property is tied with core properties. In that case, it follows that the requirement of the extension can be derived from the adjectival nature of *-rashii*. This, however, undermines our fundamental assumption from M&O that C(P) obtains by taking a difference between A(P) and S(P). We thus maintain M&O's assumption.
- 12 However, there is a difference in the scope of the negation. That is, negation of CR simply yields non-stereotype reading while *-rashii* denotes anti-stereotypicality when negated. We leave this matter for future research.

- (i) Mary-wa onna onna si-tei-nai.
 Mary-TOP woman woman do-ASP-NEG
 'Mary is not feminine'

- 13 See Ghomeshi et al. (2004) for the head-movement analysis and Bross and Fraser (2020) for the phrasal-movement analysis based on a cartographically structured DP. An interesting possibility pointed out but rejected by Bross and Fraser (2020) is that stereotypicality obtains through the copy of the reduplicated NP occupying every Spec position of a functional head except for Foc and D. Under this analysis, *coffee-coffee* is interpreted as *coffee-smelled coffee-tasted coffee*, for example. We, however, do not consider a syntactic way to derive stereotypicality in this paper.
- 14 It is controversial whether *fake drink* is a drink. However, we assume that it is also in a subset of drink at least in (44c), in which Mary conceives it as a drink.

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