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Are Japanese Disyllabic and Bimoraic Given Names Feminine?

Abstract

The present study focuses on Japanese disyllabic and bimoraic given names and considers three questions: (a) Are Japanese disyllabic and bimoraic names feminine? (b) Do disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" sound feminine? (c) Are there any other phonological gender differences that have not been reported in the literature?

I have been working on gender in Japanese given names and have reached the conclusion that Japanese disyllabic and bimoraic given names are weakly feminine (Mutsukawa 2008). That is a hypothetical conclusion, however, and it is not clear how native speakers of Japanese judge the gender of Japanese disyllabic and bimoraic given names. Therefore, I conducted two questionnaire surveys for this study. By analyzing the results of these surveys, the present study concludes that the answer to question (a) is "Yes" and the answer to question (b) is "No" and that one candidate for masculine first syllable, seven candidates for masculine last syllables (among them two strong ones), and thirteen candidates for feminine last syllables (among them nine strong ones) are observed. None of the candidates have been reported in the literature.

1. Introduction

The present study explores Japanese disyllabic and bimoraic given names and considers the following three questions:

(a) Are Japanese disyllabic and bimoraic names feminine?
(b) Do disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" sound feminine?
(c) Are there any other phonological gender differences that have not been reported in the literature?

Japanese parents keep creating new given names and, theoretically, any combination of phonemes can become a given name. I have been working on gender[1] in Japanese given names as listed in the reference section and have reached the conclusion that Japanese disyllabic and bimoraic given names are weakly feminine (Mutsukawa, 2008). That is a theoretical conclusion, however, and it is not clear how native speakers of Japanese judge the gender of Japanese disyllabic and bimoraic given names. Therefore, I designed a questionnaire for the present study and asked native speakers of Japanese how they judge the gender of disyllabic and bimoraic given names. This study discusses the results of these questionnaire surveys.

2. Previous studies

This section introduces Mutsukawa (2008) and explains how the conclusion that Japanese given names consisting of two light syllables are weakly feminine was obtained. The purposes of Mutsukawa (2008) were to explore how the gender of Japanese given names was phonologically and semantically determined and to discuss the roles of kanji, i.e., Chinese characters, in determining the

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[1] In the present study, "gender" is not understood as grammatical gender but as the gender associated with certain names.

gender. The relevant part to the present study is how the gender is phonologi-
cally determined. The data used in Mutsukawa (2008) were the most popular
Japanese given names in each year and period in (1). By analyzing these data,
Mutsukawa (2008) reveals that five types of phonological gender differences,
i.e., first syllables (2), last syllables (3), heavy syllables (4), palatalized conso-
nants (5), and length, were found in Japanese given names. The phonological
gender differences observed in the data are summarized in (6).

(1)   Data

	1906–25	1926–45	1946–65	1966–85	1986–2000	2001	2002	2003	2004	2005	Total
Male	12	15	11	14	29	31	32	30	50	55	279
Female	15	16	14	19	42	30	31	31	57	50	305

Sources: 1906–1985: Daiichi Seimei, 1987; 1986–2005: Meiji Yasuda Seimei website:
https://www.meijiyasuda.co.jp/enjoy/ranking/index.html

(2)   First syllables

	Male Names											
Year	V-	k-	s-	t-	n-	h-	m-	y-	r-	w-	j-	d-	Total
'06–'25	0	2	3	3	0	2	1	1	0	0	0	0	12
'26–'45	2	2	2	4	0	2	2	1	0	0	0	0	15
'46–'65	1	4	1	3	0	2	0	0	0	0	0	0	11
'66–'85	0	3	1	3	0	2	1	3	0	0	0	1	14
'86–'00	0	6	4	6	2	0	0	3	5	0	0	3	29
2001	0	7	4	2	1	4	2	5	5	0	0	1	31
2002	0	5	6	3	0	5	0	6	6	0	0	1	32
2003	0	4	3	4	0	5	0	7	6	0	0	1	30
2004	2	9	6	8	0	7	1	7	9	0	0	1	50
2005	1	11	8	8	0	8	2	9	7	0	0	1	55
Total	6	53	38	44	3	37	9	42	38	0	0	9	279

	Female names												
Year	V-	k-	s-	t-	n-	h-	m-	y-	r-	w-	j-	d-	Total
'06–'25	0	4	0	2	0	5	2	2	0	0	0	0	15
'26–'45	1	3	2	2	1	2	3	2	0	0	0	0	16
'46–'65	1	3	0	1	1	2	2	3	0	0	1	0	14
'66–'85	3	2	0	1	2	1	4	4	1	0	1	0	19
'86–'00	9	3	4	3	6	2	11	2	2	0	0	0	42
2001	7	0	2	0	3	4	7	3	4	0	0	0	30
2002	6	2	2	0	2	5	8	2	4	0	0	0	31
2003	7	0	2	1	2	4	8	4	3	0	0	0	31
2004	9	5	4	1	5	8	13	4	7	1	0	0	57
2005	8	4	2	0	4	6	14	6	5	1	0	0	50
Total	51	26	18	11	26	39	72	32	26	2	2	0	305

(3) Last syllables

	Male names											
Year	-si	-zi	-ke	-ta	-to	-ko	-mi	-ka	-na	-o	-ki	-ma
'06–'25	2	1	0	0	0	0	0	0	0	6	0	0
'26–'45	4	1	0	0	0	0	0	0	0	7	0	0
'46–'65	2	2	0	0	0	0	0	0	0	3	1	0
'66–'85	4	2	3	1	1	0	0	0	0	0	2	0
'86–'00	0	0	1	3	3	0	1	0	0	0	2	0
2001	0	0	3	6	5	0	1	0	0	0	8	0
2002	0	0	2	5	5	0	1	0	0	0	6	5
2003	0	0	2	5	6	0	1	0	0	0	5	2
2004	0	0	3	10	7	0	1	0	0	1	8	2
2005	0	0	3	6	11	0	1	0	0	1	8	4

Female names												
Year	-si	-zi	-ke	-ta	-to	-ko	-mi	-ka	-na	-o	-ki	-ma
'06–'25	1	0	0	0	0	7	2	0	1	0	0	0
'26–'45	0	0	0	0	0	16	0	0	0	0	0	0
'46–'65	0	0	0	0	0	11	3	0	0	0	0	0
'66–'85	0	0	0	0	0	7	6	2	0	0	1	0
'86–'00	0	0	0	0	0	2	9	5	3	0	4	0
2001	0	0	0	0	0	1	3	6	6	1	3	0
2002	0	0	0	0	0	1	3	7	7	1	1	0
2003	0	0	0	0	0	1	3	5	6	2	2	0
2004	0	0	0	1	0	1	4	7	11	3	3	0
2005	0	0	0	1	0	1	3	5	12	3	3	0

(4)   Heavy syllables

Male names						Female names				
Year	ū	ō	n		Total		ū	ō	n		Total
'06–'25	0	3	0	3	(25.0%)	'06–'25	0	0	0	0	(0.0%)
'26–'45	0	2	0	2	(13.3%)	'26–'45	0	1	0	1	(6.2%)
'46–'65	0	1	1	2	(18.2%)	'46–'65	1	1	1	3	(21.4%)
'66–'85	3	0	1	4	(28.6%)	'66–'85	1	1	1	3	(15.8%)
'86–'00	4	6	3	3	(44.8%)	'86–'00	1	0	0	1	(2.4%)
2001	6	9	3	18	(58.1%)	2001	3	0	0	3	(10.0%)
2002	7	8	3	18	(56.3%)	2002	1	0	0	1	(3.2%)
2003	8	8	1	17	(56.7%)	2003	2	0	1	3	(9.7%)
2004	9	9	4	22	(44.0%)	2004	3	0	3	6	(10.5%)
2005	9	11	7	27	(49.1%)	2005	4	0	2	6	(12.0%)

(5)   Palatalized consonants

Male names

Year	kyo	shu	sho	ju	ryu	ryo	Total	
'06–'25	0	0	3	0	0	0	3	(25.0 %)
'26–'45	0	0	2	0	0	0	2	(13.3 %)
'46–'65	0	0	0	0	0	0	0	(0.0 %)
'66–'85	0	0	0	0	0	0	0	(0.0 %)
'86–'00	0	1	3	0	1	2	7	(24.1%)
2001	0	1	2	0	1	2	6	(19.4 %)
2002	0	2	2	0	1	3	8	(25.0 %)
2003	0	0	2	0	1	3	6	(20.0%)
2004	0	0	2	0	2	2	2	(12.0%)
2005	0	2	3	0	2	2	9	(16.4%)

Female names

Year	kyo	shu	sho	ju	ryu	ryo	Total	
'06–'25	0	0	0	0	0	0	0	(0.0 %)
'26–'45	0	0	0	0	0	0	0	(0.0 %)
'46–'65	1	0	0	1	0	0	2	(14.3 %)
'66–'85	0	0	0	1	0	0	1	(5.3 %)
'86–'00	0	0	0	0	0	0	0	(0.0 %)
2001	0	0	0	0	0	0	0	(0.0 %)
2002	0	0	0	0	0	0	0	(0.0 %)
2003	0	0	0	0	0	0	0	(0.0 %)
2004	0	0	0	0	0	0	0	(0.0 %)
2005	0	0	0	0	0	0	0	(0.0 %)

(6) Phonological gender differences in Japanese given names

	Masculine	Feminine
First syllables (Onset Cs)	• k- (especially *ke*) • s- (especially *sō* and *shō*) • t- (especially *ta*) • ry- (*ryū* and *ryō*) • d-	• onsetless syllables (especially *a*) • sa- • h- (*hu* and *ho*) • nasals (*m-* and *n-*) • j- • w-
Last syllables	• o (–1965) • si, zi (–1985) • ki (1946–) • ke, ta, to (1966–) • ma (2002–)	• ko, mi • ka (1966–) • na (1986–) • o (2001–)
Heavy syllables	• Yes	• No
Palatalized Cs	• Yes (1906–1945, 1986–)	• Yes (1946–1985)
Length	• Monosyllabic names • Names with four or five morae	

The phonological gender differences in (6) play roles in determining the gender of Japanese given names. However, these features do not equally determine gender. Rather, they can be ranked based on their importance in determining gender. First, the names in (7) have one masculine feature and one feminine feature. Interestingly, (7a) and (7b) sound masculine while (7c) and (7d) sound feminine, and none of them sounds neutral. That is because last syllables play a more important role in determining gender. Last syllables and first syllables are ranked as in (8). Second, each name in (9) has one masculine feature and one feminine feature, but all the names in (9) sound masculine. This indicates that length is more significant than first syllables in determining gender. That is, length and first syllables are ranked as in (10). Third, the names in (11) sound masculine although each of them has both a masculine feature, i.e., quadrimoraicity, and a feminine feature, i.e., a feminine last syllable. This suggests that length is ranked higher than last syllables. Finally, consider the given names in (13) and (14). They all sound feminine to native speakers of Japanese, although they have a heavy syllable, which is a masculine feature. These names indicate that first syllables and last syllables are ranked higher than heavy syllables. With respect to palatalized consonants, I assume they

are tie-ranked with heavy syllables, since palatalized consonants are found only in heavy syllables. In sum, the five features are ranked as in (17). This explains how the gender of Japanese given names is phonologically determined and how Japanese speakers judge the gender of Japanese given names.

(7) Male Names   a. Masaki   (m- = Feminine, -ki = Masculine)
                   b. Naoto   (n- = Feminine, -to = Masculine)
     Female Names c. Kazuko   (k- = Masculine, -ko = Feminine)
                   d. Tomomi (t- = Masculine, -mi = Feminine)

(8) Last Syllables >> First Syllables

(9) Male Names   a. Motoharu (Quadrimoraic = Masculine, m- = Feminine)
                   b. Naonori   (Quadrimoraic = Masculine, n- = Feminine)

(10) Length >> First Syllables

(11) Male Names   a. Yosihumi (Quadrimoraic = Masculine, -mi = Feminine)
                   b. Yukitaka (Quadrimoraic = Masculine, -ka = Feminine)

(12) Length >> Last Syllables

(13) Female Names   a. Yōko   (-ko = Feminine, Heavy Syllable = Masculine)
                    b. Yūka   (-ka = Feminine, Heavy Syllable = Masculine)

(14) Female Name   a. Mīru   (m- = Feminine, Heavy Syllable = Masculine)

(15) Last Syllables >> Heavy Syllables

(16) First Syllables >> Heavy Syllables

(17) Length
        |
     Last Syllables
        |
     First Syllables
        |
     Heavy Syllables   Palatalized consonants
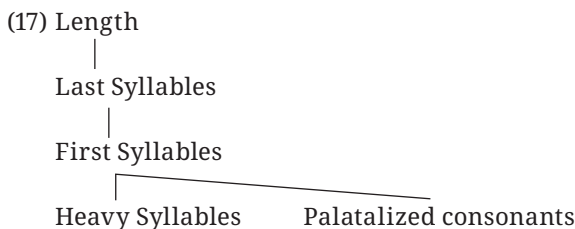
The ranking in (17) explains the gender of most Japanese given names. However, there is one type of counterexample to this ranking. Names in (18) consist of two light syllables and have a feminine feature at the start and a masculine feature at the end. As shown in (17), features in the end position are ranked higher than features in the start position. The ranking in (17) predicts that the names in (18) sound masculine. But, in fact, they sound feminine. Why do they sound not masculine but feminine? That is because the feature "bimoraicity and disyllabicity" indicates femininity weakly. This idea is supported by the fact that female names in general are shorter than male names, although male names consisting of two light syllables are possible and have been becoming more common. That is, when a name has the feature "bimoraicity and disyllabicity" and a feminine feature in the name-initial position, the name sounds feminine even if it has a masculine feature at the end. The ranking in (17) can be modified as in (19).

This is the summary of Mutsukawa (2008). I have been working on gender in Japanese given names and Table (20) is the latest version of gender differences observed in Japanese given names.

(18)   Counterexamples
      Female Names   a. Aki
                           b. Maki
                           c. Miki

(19)   Length $\sigma_\mu \sigma_\mu$ + First syllables
         ⌐―――――/
      Last syllables
        |
      First syllables
      ⌐――――――――――\
      Heavy syllables   Palatalized sonsonants
       ⌐―――――/
       $\sigma_\mu \sigma_\mu$
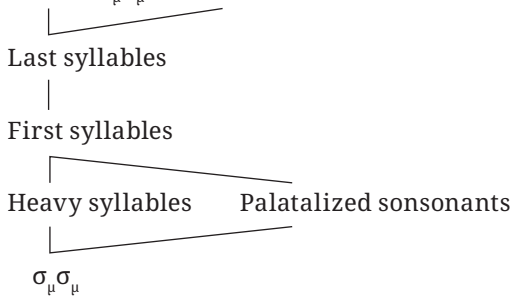
(20)   Gender Differences in Japanese Given Names (Mutsukawa, 2016b)

	Masculine	Feminine
First syllables (Onset Cs)	• k- (especially *ke*) • s- (especially *sō* and *shō*) • t- (especially *ta*) • ry- (*ryū* and *ryō*) • d-	• onsetless syllables (especially *a*) • sa- • h- (*hu* and *ho*) • Nasals (*m-* and *n-*) • j- • w-
Last Syllables	• o (–1965) • si, zi (–1985) • ki (1946–) • ke, ta, to (1966–) • ma (2002–) • ku, ya	• ko, ho, mi, yo, ri • ka (1966–) • na (1986–) • o (2001–)
Heavy Syllables	• Yes	• No
Palatalized Cs	• Yes (1906–1945, 1986–)	• Yes (1946–1985)
Length (Structures)	• $\sigma_{\mu\mu}$ • Four or more morae	• $\sigma_{\mu}\sigma_{\mu}$ • $\sigma_{\mu}\sigma_{\mu\mu}$ (ending in /n/)
Semantics		• Flower and plant names

3. Questionnaire surveys

The present study considers the three questions in (21). A questionnaire was designed for this study to investigate the gender of Japanese disyllabic and bimoraic given names. The questionnaire contains given names consisting of two light syllables ((C_1)V_1(C_2)V_2). Japanese has 119 phonemes. This means that more than 14,000 (119x119=14,161) disyllabic and bimoraic given names can be created because any combination of phonemes can be a given name. But that is too many for a questionnaire survey. Therefore, the 44 phonemes in (22) that are most frequently used in Japanese were adopted for use in the questionnaire. With those phonemes, approximately 2,000 (44x44=1,936) given

names can be made. However, that is still too many for a questionnaire survey and the questionnaire was divided into two parts: Questionnaire 1 and Questionnaire 2.

(21) a. Are Japanese disyllabic and bimoraic names feminine?
b. Do disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" sound feminine?
c. Are there any other phonological gender differences that have not been reported in the literature?

(22)

a	i	u	e	o
ka	ki	ku	ke	ko
sa	shi	su	se	so
ta	chi	tsu	te	to
na	ni	nu	ne	no
ha	hi	fu	he	ho
ma	mi	mu	me	mo
ya		yu		yo
ra	ri	ru	re	ro
wa				

In Questionnaire 1, phonemes in the upper half of (22) (*a – no*) are used for the first syllable and all of the 44 phonemes are used for the last syllable, while, in Questionnaire 2, phonemes in the bottom half of the table (*ha – wa*) are used for the first syllable and all of the 44 phonemes are used for the last syllable. In each questionnaire survey, native speakers of Japanese were asked if those names can be used for new-born babies. Participants were asked to choose one from the four options for each name: ① this can be a male name, ② this can be a female name, ③ this can be a male or female name, and ④ this cannot be a given name.

4. The results

4.1. Questionnaire Survey 1[2]

For Questionnaire 1, 1,100 (25x44=1,100) given names were made. From those names, 59 names that are commonly used as given names,[3] 25 names that contain a long vowel (*ā, ī, ū, ē,* or *ō*), and 289 names that are found in dictionaries as common nouns were excluded. The reason why common nouns were excluded is to exclude semantic influence. As a result, 727 names were adopted in Questionnaire Survey 1. All 88 participants in the Questionnaire Survey 1 were undergraduate students.

The number of names that one participant chose ① ② or ③ varies from 10 to 727. That means, for some of the participants, all those combinations could be given names, although some of the participants were conservative. The total number of ① ② and ③ from all the participants is 13,670 and its breakdown is: ① 3,563 (26.1%), ② 6,914 (50.6%), and ③ 3,193 (23.4%).[4] The number of names that sound feminine (②) is greater than the number of the names that sound masculine (①), which suggests that, in answer to Question (a) in the introduction, Japanese disyllabic and bimoraic names do sound feminine. The fact that no commonly used male names are found in Questionnaire 1 and that all the 59 names excluded from Questionnaire 1 can be used as female names also supports this idea.

Next, let us focus on the 148 names for which more than 90% of the participants chose ④. The most frequently observed first and last syllables found in those names are shown in (23). The tables in (23) suggest that the names starting with *nu* or *no* and the names ending with *he, hi, hu, ha, ke,* or *te* are not favoured. When those phonemes appear in a different position (e.g., *no* in

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[2] An earlier version of this section appeared in Mutsukawa (2019).

[3] Interestingly, no commonly used male names are found in the 1100 given names. Among the 59 names, 58 names are female names and 1 name is a unisex name, *Sora.*

[4] Option ③ indicates that those names were judged as unisex names. Japanese unisex names are more associated with femininity than masculinity because they are structurally feminine, which means that they have more feminine features than masculine ones, and native speakers of Japanese believe that they are used more for females than for males (Mutsukawa, 2016a). See (20) for feminine and masculine features.

the last syllable), however, they are not disfavoured (see (31)). It is not clear why this positional asymmetry is observed.

(23)   Most Frequently Observed First and Last Syllables

First syllables	nu	no				
# of names	23	10				
Last syllables	he	hi	hu	ha	ke	te
# of names	19	18	14	13	12	10

Next, let us focus on the other 579 names (579 = 727 – 148). The 579 names were divided into three groups based on the judgements of the participants.[5] As shown in (24), the majority of the names belong to Group 2. This supports the idea that disyllabic and bimoraic given names are feminine.

(24)   Group 1 "Masculine" (the ratio of ① to ② is 2:1 or higher):   130 names
       Group 2 "Feminine" (the ratio of ② to ① is 2:1 or higher):   295 names
       Group 3 "Neutral" (none of the above is applicable):   154 names

First, let us consider the 130 names in Group 1. The names in Group 1 can be grouped based on their structure as shown in (25).[6] As explained above, gender is determined by the ranking in (19). Among the 130 names, 74 names in (25a, c) can be explained by the ranking in (19).

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[5] In the analysis below, the names for which more than 90% of participants chose ④ are not discussed. Some of the names adopted in this study may not be acceptable to the majority of participants, but I decided to include those names in the data set, because Japanese parents keep creating new given names and trends in commonly used names keep changing (Mutsukawa, 2008). It is often observed that the names that were popular decades ago do not appear in recent rankings of the most popular given names for new-born babies and that the names that do appear in such rankings do not exist in the data set of most popular given names decades ago. This means that native speakers of Japanese often encounter unfamiliar given names. Some of those names may not be acceptable to the majority of native speakers. Once they recognize a name as a name, however, they can judge its gender even if they consider it unsuitable as a given name.

[6] The last syllable *o*, which was a masculine feature but is recently used in female names, is categorized as "neutral" in (25).

(25) a. First syllable=Masculine, Last syllable=Masculine: 30
     b. First syllable=Masculine, Last syllable=Feminine: 0
     c. First syllable=Masculine, Last syllable=Neutral: 44
     d. First syllable=Feminine, Last syllable=Masculine: 18
     e. First syllable=Feminine, Last syllable=Feminine: 1
     f. First syllable=Feminine, Last syllable=Neutral: 37

The names in (25d) are disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable". If disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" indicate femininity strongly, as discussed in Mutsukawa (2008), the names in (25d) should sound feminine. However, they do not. The names in (25d) suggest that disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" do not show femininity strongly.

Next, when you look at the names in (25f), you can see that the last syllables in (26) appear repeatedly. They are frequently found in Group 1 but not in Group 2,[7] which suggests that they could be masculine features. And if those are masculine features, all of the names with one of the last syllables in (26) have the structure "feminine first syllable + masculine last syllable" and should be categorized in (25d). The fact that the names with one of the last syllables in (26) do not sound feminine strongly suggests that disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" do not sound feminine. The structure "$\sigma_\mu \sigma_\mu$ + First Syllables" in the ranking in (19) needs to be reconsidered. The last syllables in (26) are observed in the names in (25c) as well, as shown in (27). This also supports the idea that the last syllables in (26) are masculine features.

(26) Last syllables frequently observed in (25f)

Last Syllables	ro	tsu	so, te, mu
# of names	5	4	3

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[7] The names in Group 2 that have one of the last syllables in (26) are *Iro*, *Chiro*, *Setsu*, *Chite*, *Nemu*, and *Chimu*.

(27)

Last syllables	ro	tsu	so	te	mu
# of names	5	1	3	5	6

Among the 37 names in (25f), 12 names start with *o*. As shown in Table (20), onsetless first syllables have been analyzed as feminine features in my previous studies. Names starting with *o* in (25f), however, suggests that *o* in the first syllable is a masculine feature. In Group 2, there are 6 names starting with *o* but all of them have a feminine feature in their last syllable, which could be the reason for their femininity. The only name in (25e) is *Omi*, which also starts with *o*. The structure of *Omi* is "masculine first syllable + feminine last syllable" and it is not clear why this name is judged as a masculine name.

Next, let us focus on the 295 names in Group 2. As in the case of Group 1, the names in Group 2 can be grouped based on their structure as shown in (28).[8] As introduced above, gender is determined by the ranking in (19). Among the 295 names, the ranking in (19) can explain 171 names in (28b, d-f) but not 124 names in (28a, c).

(28) a. First syllable=Masculine, Last syllable=Masculine: 6
     b. First syllable=Masculine, Last syllable=Feminine: 38
     c. First syllable=Masculine, Last syllable=Neutral: 118
     d. First syllable=Feminine, Last syllable=Masculine: 5
     e. First syllable=Feminine, Last syllable=Feminine: 41
     f. First syllable=Feminine, Last syllable=Neutral: 87

The 5 names in (28d) are shown in (29). They have the structure "feminine first syllable + masculine last syllable". The majority of the participants judged that these names sound feminine, which seems to support the idea that disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" indicate femininity strongly. However, there is an alternative analysis. Three of these names have *ma* in their last syllable and that could

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[8] The last syllable *o*, which was a masculine feature but is recently used in female names, is categorized as "neutral" in (28).

be the reason why these names were judged as female names. In fact, commonly used female names ending with *ma* are observed (e.g., *Ema* and *Yuma*). In my previous studies, as shown in (20), *ma* in the last syllable was analyzed as a masculine feature. However, there is a difference between male names ending with *ma* and female names ending with *ma*, which is length. Male names ending with *ma* are trimoraic (e.g., *Kazuma*, *Takuma* and *Yūma*), while female names ending with *ma* are bimoraic. This suggests that "$\sigma_\mu\sigma_\mu$ma" and "$\sigma_{\mu\mu}$ma" are masculine and "$\sigma_\mu$ma" is feminine. Names in (30) are the 6 names in (28a) and four of them have the structure "$\sigma_\mu$ma", which supports the idea that "$\sigma_\mu$ma" is feminine. The feminine feature "$\sigma_\mu$ma" explains why the names ending with *ma* in (28d) and (28a) are judged as female names.

(29) Ake, Niki, Nima, Nema, Noma
(30) Kima, Keke, Kema, Seshi, Sema, Chima

Finally, let us consider the 118 names in (28c). In those names, the last syllables in (31) are commonly found. They are frequently found in Group 2 but not in Group 1,[9] which suggests that they could be feminine features. The last syllables in (31) are observed in the names in (28f) as well, as shown in (32). This also supports the idea that the last syllables in (31) are feminine features.

(31) Last syllables frequently observed in (28c)

Last Syllables	yu	ni,	ne	a, no	me, ra	wa	e, nu		
# of names	12	11	10	9	8	6	5		

(32)

Last Syllables	yu	ni,	ne	a	no	me	ra	wa	e	nu
# of names	9	7	8	7	7	6	3	4	4	5

[9] The names in Group 1 that have one of the last syllables in (31) are *Ora*, *Onu*, and *Tanu*.

4.2. Questionnaire Survey 2

This section discusses the results of Questionnaire Survey 2. Similar results were obtained from the analysis of Questionnaire Survey 1. For Questionnaire 2, 836 (19x44＝836) given names were made. From those names, 42 names that are commonly used as given names,[10] 19 names that contain a long vowel (*ā, ī, ū, ē,* or *ō*), and 185 names that are found in dictionaries as common nouns were excluded. The reason why common nouns were excluded is to exclude semantic influence. As a result, 590 names were adopted in Questionnaire Survey 2. All 48 participants in the Questionnaire Survey 2 were undergraduate students.

The number of names that one participant chose ① ② or ③ varies from 13 to 480. The names in (33) are the names for which all of the participants chose ④ (this cannot be a given name). It is not clear why these names are not favoured. However, *wa* in the first syllable and *hi, fu,* and *he* in the last syllable might be relevant to their judgements.

(33) Mufu, Yahi, Rahe, Wai, Wau, Wahi, Wafu, Wahe

The total number of ① ② and ③ answers from all the participants is 6,547 and its breakdown is: ① 1,712 (26.1%), ② 3,718 (56.8%), and ③ 1,117 (17.1%).[11] The number of names that sound feminine (②) is greater than the number of the names that sound masculine (①), which suggests that, in answer to Question (a) in the introduction, Japanese disyllabic and bimoraic names do sound feminine. The fact that no commonly used male names are found in Questionnaire 2 and that all the 42 names excluded from Questionnaire 2 can be used as female names also supports this idea.

Besides the 8 names in (33), there are 155 names for which more than 90% of the participants chose ④. The most frequently observed first and last

[10] Interestingly, no commonly used male names are found in the 836 given names. Among the 42 names, 41 names are female names and 1 name is a unisex name, *Rui.*

[11] Option ③ indicates that those names were judged as unisex names. Japanese unisex names are more associated with femininity than masculinity because they are structurally feminine, which means that they have more feminine features than masculine ones, and native speakers of Japanese believe that they are used more for females than for males (Mutsukawa, 2016a). See (20) for feminine and masculine features.

syllables in the 155 names are shown in (34). The names starting with *he, re, ya, ro, ra, ru, wa, me, yo,* or *mo* and the names ending with *he, ha, so, te, nu, hi, ke,* or *fu* are not favoured. When those phonemes appear in a different position (e.g., *yo* in the last syllable), however, they are not disfavoured (see Table (20)). It is not clear why this positional asymmetry is observed.

(34) Most frequently observed first and last syllables

First syllables	he, re	ya, ro	ra, ru, wa	me, yo	mo
# of names	15	13	12	10	9

Last syllables	he	ha	so, te, nu, hi	ke, fu
# of names	15	13	10	9

Next, let us focus on the other 427 names (427=590–(8+155)). I divided the names into three groups based on the judgements of the participants.[12] As shown in (35), the majority of the names fall in Group 2. This supports the idea that disyllabic and bimoraic given names are feminine.

(35) Group 1 "Masculine" (the ratio of ① to ② is 2:1 or higher): 115 names
　　 Group 2 "Feminine" (the ratio of ② to ① is 2:1 or higher): 262 names
　　 Group 3 "Neutral" (not apply any of the above): 50 names

First, let us consider the 115 names in Group 1. The names in Group 1 can be grouped based on their structure as shown in (36).[13] As introduced above,

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[12] In the analysis below, the names for which more than 90% of the participants chose ④ are not discussed. Some of the names adopted in this study may not be acceptable to the majority of participants. But I decided to include those names in the data set for this study, because Japanese parents keep creating new given names and trends in commonly used names keep changing (Mutsukawa, 2008). It is often observed that the names that were popular decades ago do not appear in recent rankings of the most popular given names for new-born babies and that the names that do appear such rankings do not exist in the data set of most popular given names decades ago. This means that native speakers of Japanese often encounter unfamiliar given names. Some of those names may not be acceptable to the majority of native speakers. Once they recognize a name as a name, however, they can judge its gender even if they consider unsuitable as a given name.

[13] The last syllable *o*, which was a masculine feature but is recently used in female names, is categorized as "neutral" in (36).

gender is determined by the ranking in (19). Among the 115 names, the ranking in (19) can explain 26 names in (36g) but not 89 names in (36d-f, i). Among them, the 15 names in (36d) are interesting. If disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" indicate femininity strongly, as discussed in Mutsukawa (2008), the names in (36d) should sound feminine. However, they do not. The names in (36d) suggest that disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" do not show femininity strongly.

(36) a. First syllable=Masculine, Last syllable=Masculine: 0
     b. First syllable=Masculine, Last syllable=Feminine: 0
     c. First syllable=Masculine, Last syllable=Neutral: 0
     d. First syllable=Feminine, Last syllable=Masculine: 15
     e. First syllable=Feminine, Last syllable=Feminine: 1
     f. First syllable=Feminine, Last syllable=Neutral: 46
     g. First syllable=Neutral, Last syllable=Masculine: 26
     h. First syllable=Neutral, Last syllable=Feminine: 0
     i. First syllable=Neutral, Last syllable=Neutral: 27

Next, let us consider the 74 names in (36e-f, i). First, the only name in (36e) is *Hiko*. This name sounds masculine because, among quadrimoraic or longer names, male names ending with *hiko* are common. Next, when you look at the names in (36f), you can see that the last syllables in (37) appear repeatedly.[14] They are frequently found in Group 1 but not in Group 2,[15] which suggests that they could be masculine features. And if those are masculine features, all the names with one of those last syllables have the structure "feminine first syllable + masculine last syllable" and should be categorized in (36d). The fact that the names with one of the last syllables in (37) do not sound feminine strongly suggests that disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" do not sound feminine. The structure "$\sigma_\mu \sigma_\mu$ + First Syllables" in the ranking in (19) needs to be reconsidered. The last

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[14] The feature *o* was found in 7 names but it is not shown in (37).
[15] The names in Group 2 that have one of the last syllables in (37) are *Rise*, *Yusa*, *Mesa*, *Rosa*, and *Hatsu*.

syllables in (37) are observed in the names in (36i) as well, as shown in (38). This also supports the idea that the last syllables in (37) are masculine features.

(37) Last syllables frequently observed in (36f)

Last syllables	se	sa	so, tsu
# of names	9	6	3

(38)

Last syllables	se	sa	so	tsu
# of names	1	3	2	2

Finally, let us focus on the 262 names in Group 2. As in the case of Group 1, the names in Group 2 can be grouped based on their structure as shown in (39).[16] As introduced above, gender is determined by the ranking in (19). Among the 262 names, the ranking in (19) can explain 174 names in (39d-f, h) but not 88 names in (39g, i).

(39) a. First syllable=Masculine, Last syllable=Masculine: 0
     b. First syllable=Masculine, Last syllable=Feminine: 0
     c. First syllable=Masculine, Last syllable=Neutral: 0
     d. First syllable=Feminine, Last syllable=Masculine: 12
     e. First syllable=Feminine, Last syllable=Feminine: 35
     f. First syllable=Feminine, Last syllable=Neutral: 95
     g. First syllable=Neutral, Last syllable=Masculine: 6
     h. First syllable=Neutral, Last syllable=Feminine: 32
     i. First syllable=Neutral, Last syllable=Neutral: 82

The 12 names in (39d) are shown in (40). They have the structure "feminine first syllable + masculine last syllable". The majority of the participants judged that these names sound feminine, which seems to support the idea that disyllabic and bimoraic names with the structure "feminine first

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[16] The last syllable *o*, which was a masculine feature but is recently used in female names, is categorized as "neutral" in (39).

syllable + masculine last syllable" indicate femininity strongly. However, there is an alternative analysis. Half of the names in (40) have *ma* in their last syllable. These names might have been judged as female names because of this. As discussed in the analysis of Questionnaire Survey 1, male names ending with *ma* and female names ending with *ma* are different in terms of length and "$\sigma_\mu$ma" could be feminine while "$\sigma_\mu\sigma_\mu$ma" and "$\sigma_{\mu\mu}$ma" are masculine. Names in (41) are the 6 names in (39g) and all of them have the structure "$\sigma_\mu$ma", which also supports the idea that "$\sigma_\mu$ma" is feminine. The feminine feature "$\sigma_\mu$ma" explains why the 6 names in (40) and all the names in (41) are judged as female names.

(40) Heshi, Homa, Mike, Mita, Mito, Mima, Muma, Meku, Meto, Mema, Moma, Wama

(41) Yoma, Rama, Rima, Ruma, Rema, Roma

Next, let us consider the rest of the names in (40): *Heshi*, *Mike*, *Mita*, *Mito*, *Meku*, and *Meto*. As mentioned above, the majority of the participants judged that these names sound feminine, which seems to support the idea that disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" indicate femininity strongly. But they can also be explained in an alternative way. That is, *mi* and *me* in their first syllable can be the reason why they were judged as female names. In my previous studies, as shown in (20), "nasals (*m-* and *n-*)" in the first syllable were analyzed as feminine features. However, there is a possibility that all the five phonemes starting with *m* in (22), i.e., *ma*, *mi*, *mu*, *me*, and *mo*, do not indicate femininity equally. Names starting with *ma* or *mu* are observed in names in Group 1 but names starting with *mi*, *me* or *mo* are not, whereas all the five phonemes are found in names in Group 2. This suggests a possibility that *mi*, *me* and *mo* in the first syllable are more feminine and play a more important role in determining the gender.

Finally, let us consider the 82 names in (39i). In those names, the last syllables in (42) are commonly found. They are frequently found in Group 2 but not in Group 1,[17] which suggests that they could be feminine features. The last syllables in (42) are observed in the names in (39f) as well, as shown in (43). This also supports the idea that the last syllables in (42) are feminine features.

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[17] The only names in Group 1 that have one of the last syllables in (42) were *Rewa* and *Mamo*.

(42) Last syllables frequently observed in (39i)

Last syllables	ra	ni, ne, yu	no, ru	re	a, e, me, mo, wa
# of names	8	7	6	5	4

(43)

Last syllables	ra	ni	ne	yu	no	ru	re	a	e	me	mo	wa
# of names	5	7	5	7	8	2	5	7	4	8	1	9

5. Conclusions

The present study discussed Japanese disyllabic and bimoraic given names and considered the three questions in (44). By analyzing the results of Questionnaire Survey 1 and Questionnaire Survey 2, this study reached the conclusions that the answer to (44a) is "Yes" and the answer to (44b) is "No" and that one candidate for masculine first syllable, seven candidates for masculine last syllables (among them two strong ones), and thirteen candidates for feminine last syllables (among them nine strong ones) are observed. None of these candidates have been reported in the literature.

(44) a. Are Japanese disyllabic and bimoraic names feminine?
    b. Do disyllabic and bimoraic names with the structure "feminine first syllable + masculine last syllable" sound feminine?
    c. Are there any other phonological gender differences that have not been reported in the literature?

(45) Masculine First Syllable: *o*
    Masculine Last Syllables: *so, tsu, (sa, se, te, mu, ro)*
    Feminine Last Syllables: *a, e, ni, ne, no, me, yu, ra, wa, (nu, mo, ru, re,)*

Finally, let us go back to the counterexamples in (18) (see (46)). These counterexamples can be explained as follows. These names sound feminine because they consist of two light syllables and end with *ki*. In my previous

studies, as shown in (20), *ki* in the last syllable was analyzed as a masculine feature. In fact, male names ending with *ki* are more common (e.g., *Kazuki* and *Yūki*), but female names ending with *ki* are also observed, as shown in (46). Female names ending with *ki* and male names ending with *ki* are different in terms of length. Male names ending with *ki* are trimoraic, whereas female names ending with *ki* are bimoraic. This suggests that "$\sigma_\mu\sigma_\mu$ki" and "$\sigma_{\mu\mu}$ki" are masculine and "$\sigma_\mu$ki" is feminine. That is why these names are judged as female names.

(46) Counterexamples (=(18))
        Female Names   a. Aki
                            b. Maki
                            c. Miki

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