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Reassessing Gender Bias in Japanese Spousal Terms: A Replication of Nin and Mori (2025) with Elderly Participants

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ABSTRACT: This study replicated Nin and Mori (2025), which used a paper-based Implicit Association Test (FUMIE test) to examine gender bias in Japanese spousal terms. While the original study involved undergraduates, the present study targeted older citizens aged 40 and above. Forty-three participants completed two FUMIE tests assessing implicit preferences for the traditional terms *shujin–kanai* and the more neutral *otto–tsuma*. The results largely mirrored those of younger participants: both age groups showed stronger associations favoring male-oriented terms. However, older female participants still implicitly preferred *shujin* over *kanai*, while showing no preference between *otto* and *tsuma*. Younger females in Nin and Mori (2025), by contrast, showed no significant preference for both pairs. These findings suggest a generational shift toward gender neutrality in implicit attitudes among Japanese women. Despite this trend, both older and younger males continued to associate male spousal terms more positively. The study highlights the value of implicit measures in detecting subtle gender biases across age groups in Japanese society.

Key words*: Aging and attitudes, gendered language, implicit association, paper-and-pencil IAT, spousal terms.*

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1. Introduction

The present study aimed to replicate Nin and Mori (2025) with an elderly sample, focusing on gender bias in Japanese spousal terms. First, we summarize the findings of Nin and Mori (2025), then explain the rationale for replication and describe the procedures used in the present study.

1.1. The Nin and Mori (2025) Study

Prior to Nin and Mori (2025), Nin conducted a series of online surveys in China (Nin, 2023a), Japan (Nin, 2023b), Korea (Nin, 2024), and Indonesia (Nin, 2025), showing that gender equality remains a persistent issue in East Asia, where traditional patriarchal values continue to shape cultural and linguistic norms. Among these, Japanese spousal terms—such as *shujin* (主人, "master") for husband and *kanai* (家内, "inside-the-house") for wife—have long been criticized for encoding male-dominant ideologies. While modernization and Westernization are often assumed to promote gender equality (Inglehart & Norris, 2003), recent studies have shown that Japan, despite being an early adopter of Western cultural influences, retains more male-centric spousal terminology than neighboring countries like China and Korea. For example, in China, a similar pair of

terms, *laogong* (老公; old lord) and *laopo* (老婆; old granny), are used for husbands and wives, respectively (Nin, 2023a). This paradox has drawn scholarly attention to the psychological and ideological factors that sustain gendered language beyond surface-level use.

Previous sociolinguistic research has mostly relied on explicit self-reports and discourse analysis, which often fail to capture unconscious attitudes. To address this gap, Nin collaborated with Mori, an expert in psychological measurement, to apply the FUMIE test (Mori, Uchida, & Imada, 2008)—a paper-and-pencil version of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). The FUMIE Test measures implicit associations by assessing the speed at which participants categorize evaluative words when paired with target concepts. If participants hold a positive implicit association with a term (e.g., "master"), they will respond more quickly when it appears with positive words than with negative ones.

Nin and Mori (2025) examined two sets of Japanese spousal terms: the traditional pair *shujin–kanai* and the neutral pair *otto–tsuma* (夫–妻, "husband–wife"). A total of 246 undergraduate students (162 male, 84 female) in engineering and agriculture completed a 16-line FUMIE Test, where the target terms were randomly embedded among positive and negative evaluative words. Participants marked each target with either a circle or a cross, with the assignment rule alternating every few lines. After excluding outliers, data from 224 students were analyzed using the Implicit Association Quotient (IAQ_{100}), which quantifies implicit preferences on a normalized scale.

The results showed no significant difference between the IAQ_{100} scores for the two term pairs, suggesting that *shujin* and *kanai* may no longer carry overt hierarchical connotations at the unconscious level. However, a significant gender difference emerged: male participants showed a strong preference for male-associated terms in both pairs, while female participants showed no preference. This asymmetry suggests that implicit gender bias persists particularly among men, even as women appear to adopt more neutral evaluative patterns.

These findings challenge the assumption that linguistic modernization leads to cognitive change (Slobin, 2003). Despite increasing criticism of traditional spousal terms, implicit male-dominant attitudes remain strong—especially among men. Thus, linguistic reform alone may be insufficient to dismantle deeply rooted gender bias.

1.2. The Importance of Generational Differences in Gender Equality Research

A limitation of Nin and Mori (2025) is its reliance on a homogeneous sample of young university students aged 19–24. Although the sample size was adequate (N = 246), it lacked age diversity.

Globally, gender equality has advanced under the influence of Western liberalism, and Japan is no exception. Following the Meiji Restoration, Japan initiated several reforms to address gender disparities rooted in its Confucian feudal history. In 1872, the Meiji government introduced compulsory elementary education for both boys and girls. However, the Meiji Constitution denied women political rights, and the 1898 Civil Code positioned women as legally subordinate to men.

Substantial progress was made post–World War II. Under Allied Occupation, women gained suffrage in 1945, and 39 women were elected in the 1946 general election. The postwar Constitution (1947) established legal equality under Article 14, and the Basic Education Law mandated co-education. Japan's economic recovery further accelerated reforms. These included ratification of ILO Convention No. 100 in 1967, the Equal Employment Opportunity Law in 1986, and the 1999 Basic Act for a Gender-Equal Society. In 2001, the Gender Equality Bureau was established. In 2018, the Act on Promotion of Gender Equality in the Political Field was revised, though it remains non-binding.

Nonetheless, Japan ranked 118th of 148 countries in the 2025 Global Gender Gap Index—the lowest among OECD nations (World Economic Forum, 2025). This paradox reveals both steady progress and persistent stagnation in Japan's path toward gender equality.

This background motivates the current study, which aims to replicate Nin and Mori (2025) with older participants. If elderly individuals show more male-centric biases, this may reflect generational changes. Alternatively, if results mirror those of younger participants, it might suggest a stagnation of gender attitudes across generations.

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1.3. Purpose of the Present Study

This study replicates Nin and Mori (2025) using a sample of participants aged 40 and older. By comparing the new results with the original study, we aim to assess whether gender bias in Japanese spousal terms has diminished over time or remained unchanged despite decades of societal and legislative reform.

2. Method

2.1. Participants

A total of 56 residents (13 men and 43 women) from the Matsumoto district of Nagano Prefecture participated in the study after providing informed consent. They were attending an exercise program for older adults organized by one of the co-authors. Participants were fully informed of the purpose of the study. Participation was entirely voluntary, and all data were collected anonymously, either before or after the exercise sessions. They were informed that submitting the completed test sheet would indicate their voluntary agreement to participate. If they chose not to participate, they were free to refrain from submitting the test sheet and take it home without any consequences.

2.2. Construction of the FUMIE Test

Following Nin and Mori (2025), this study assessed the implicit connotations of two pairs of Japanese spousal terms—*shujin* ("master") vs. *kanai* ("inside-the-house") and *otto* ("husband") vs. *tsuma* ("wife")—using the FUMIE Test (Mori et al., 2008), a paper-and-pencil version of the Implicit Association Test (IAT). The test sheet consisted of rows of evaluative words with either positive or negative connotations, into which the two target term pairs were randomly embedded. The sheet was printed on A3-sized paper, and each row included a balanced, randomized mix of evaluative and target words, arranged to avoid consecutive appearances of target terms.

For this re-assessment, the same 16-line FUMIE Test sheet used in Nin and Mori (2025) was employed. The first 7 lines assessed the *shujin–kanai* pair, and the following 7 lines assessed the *otto–tsuma* pair. The final 2 lines were included to minimize any final-effort effects (see Appendix).

Participants were instructed to mark a circle on each positive word and a cross on each negative word as quickly as possible within 20 seconds. The first line of each pair contained only evaluative words and served as a practice trial. From the second line onward, target terms were randomly included. Participants were instructed to mark the target terms with either a circle or a cross, alternating the assignment on each line (e.g., *shujin* = circle, *kanai* = cross in line 2, reversed in line 3).

The logic of the FUMIE Test is that participants respond more quickly when the instructed response aligns with their implicit attitude. Response speed was operationalized as the number of words marked within the 20-second time limit. The difference in the number of items marked between the two response conditions served as an index of each participant's implicit evaluation of the term pair.

2.3. Administration Procedure

The FUMIE Test was administered on different days selected during exercise sessions for older adults. The procedure followed that of Nin and Mori (2025) precisely. One of the co-authors, who also served as the instructor, distributed the test sheets and provided instructions using PowerPoint slides. Before starting the assessment, participants were assured of the anonymity of their responses and were asked to indicate their age and gender at the top of the sheet.

The marking task was then conducted using the standard procedure described in Nin and Mori (2025). After completing the task, participants were reminded to check their age and gender entries and were informed that submitting the completed sheet constituted their consent to participate. The instructor then collected the test sheets and expressed appreciation. The entire procedure took approximately 10 minutes.

3. Results

All participants submitted their test sheets, indicating voluntary participation in the study. Eight younger individuals (three males and five females) also took part, likely as companions to senior attendees. Although their data were included in the calculation of descriptive statistics, they were excluded from the inferential statistical analyses.

The final sample comprised 48 participants aged 40 or older: 10 males (ages 45–81, M = 62.6) and 38 females (ages 40–81, M = 64.6). The distribution of age and gender is shown in Table 1.

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Table 1. Distribution of Participants by Age Group and Gender.

Age / Gender	Males	Females	Total
70s and over	2	14	16
60s	5	10	15
50s	1	7	8
40s	2	7	9
Total	10	38	48

3.1. Calculation of the IAQ_{100} Scores

Following the *FUMIE Test Administration Manual* (Ver. 2.2; Uchida & Mori, 2018), we calculated the Implicit Association Quotient (IAQ_{100}) for each participant using the following formula: $IAQ_{100} = 100 \times (WP - WN) / (WP + WN)$

where where WP is the number of words marked under the positive combination—marking "master/husband" as good (circle) and "inside-the-house/wife" as bad (cross)—and WN is the number of words marked under the negative combination—marking "master/husband" as bad and "inside-the-house/wife" as good.

The IAQ_{100} represents the normalized difference between the two response combinations per 100 words. A positive IAQ_{100} score indicates a stronger implicit preference for male spousal terms, while a negative score indicates the opposite.

In accordance with the manual, we excluded outliers whose scores exceeded ±2 standard deviations from the mean. These excluded cases included one male each from the 60s and 40s age groups, and one female each from the 80s, 60s, and 40s groups. The final sample for analysis thus comprised 43 participants (8 males, 35 females).

Figure 1 displays the mean IAQ_{100} scores for each spousal term pair by gender. Male participants consistently showed a more favorable implicit evaluation of male-oriented spousal terms across both pairs. Female participants exhibited positive scores for the *shujin–kanai* pair, but were nearly neutral toward the *otto–tsuma* pair.

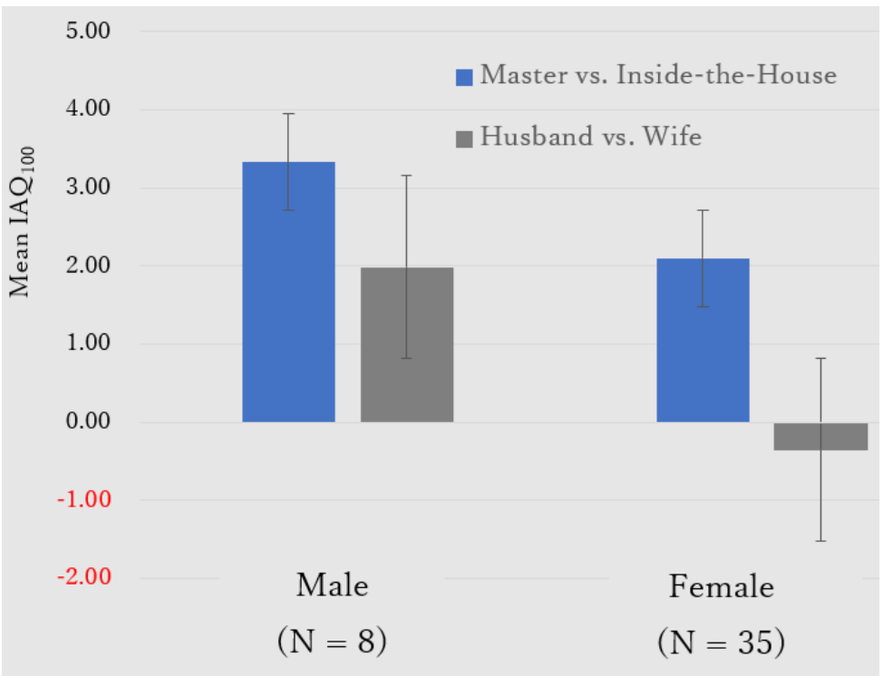

Figure 1. Mean IAQ_{100} Scores by Gender and Spousal Term Pair.

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Mean IAQ_{100} scores for two spousal term pairs— "Master vs. Inside-the-House" and "Husband vs. Wife"—by gender among elderly participants (N = 43). Error bars represent standard errors. A higher IAQ_{100} score indicates a stronger implicit positive association toward male-oriented terms.

3.2. Analysis of Variance on IAQ_{100} Scores

Although the number of male participants was limited, we conducted a two-way mixed-design ANOVA on the IAQ_{100} scores, with gender (male vs. female) as a between-subjects factor and spousal term (*shujin–kanai* vs. *otto–tsuma*) as a within-subjects factor. No significant main effects were found for Gender, $F_{(1,41)}$ = 1.55, p = .22, n.s., or for Spousal Term, $F_{(1,41)}$ = 2.73, p = .11, n.s. The interaction was also non-significant, $F_{(1,41)}$ = 0.24, p = .63, n.s.

Given the small male sample, we conducted a separate one-way repeated-measures ANOVA on the female participants' data. This analysis revealed a significant difference between the IAQ_{100} scores for the two spousal term pairs, $F_{(1,34)}$ = 5.97, p = .0199, indicating that female elderly participants responded differently to traditional versus neutral spousal terms.

3.3. Comparisons with Nin and Mori (2025)

Due to the small number of male participants, we refrained from statistical comparisons of male data between the present study and Nin and Mori (2025).

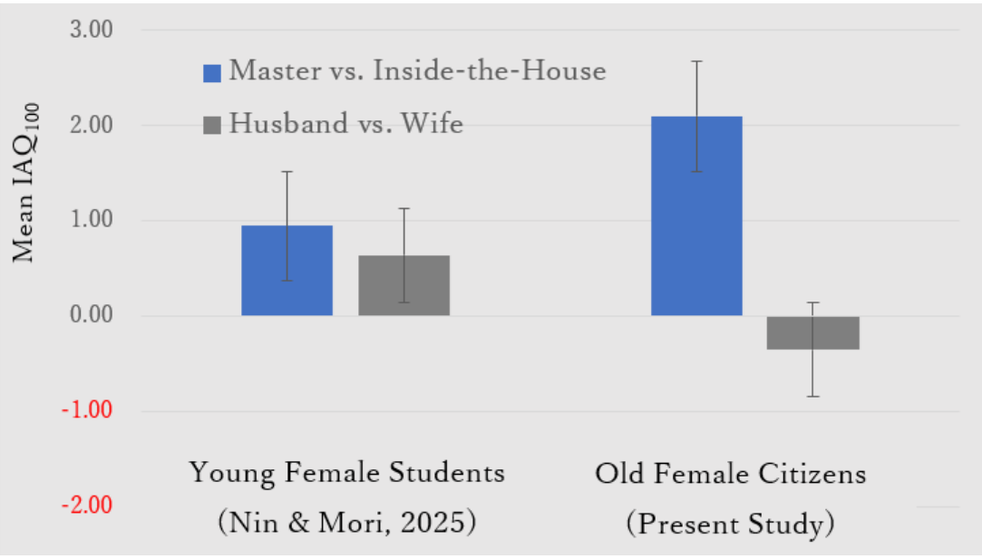

Figure 2. Comparison of IAQ100 Scores Between Young Female Students and Elderly Female Citizens.

Mean IAQ100 scores for two spousal term pairs comparing young female students (Nin & Mori, 2025) and elderly female citizens (present study). Error bars indicate standard errors. The comparison illustrates generational differences in implicit evaluations of male- and female-oriented spousal terms.

Nonetheless, the IAQ patterns appeared similar between the two groups. In contrast, a notable difference was observed in the female participants' data across the two studies (see Figure 2).

A two-way mixed-design ANOVA was conducted on the IAQ_{100} scores for females, with age group (young vs. old) as a between-subjects factor and spousal term as a within-subjects factor. The main effect of spousal term approached statistical significance, $F_{(1,111)}$ = 3.91, p = .05048, n.s., while neither the main effect of age group $F_{(1,111)}$ = 0.01, p = .92, n.s.) nor the interaction $F_{(1,111)}$ = 2.35, p = .128, n.s.) was significant.

4. Discussion

4.1. Overview of the Research Purposes and Findings

The central research question of the present study was whether the findings of Nin and Mori (2025) with young participants in their 20s would be replicated with older participants over the age of 40. Nin and Mori

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(2025) compared the IAQ_{100} scores of two sets of Japanese spousal terms: the traditional pair (*shujin* and *kanai*) and the more neutral pair (*otto* and *tsuma*), to examine whether these terms carried similar connotations among undergraduate students. Their results showed that both pairs were evaluated similarly.

The findings of the present study, conducted with an older sample, were generally consistent with those of Nin and Mori (2025), with only minor differences. The IAQ_{100} scores revealed similar response patterns for both spousal term pairs, which closely resembled those observed among younger participants.

However, a slight difference emerged regarding the *otto–tsuma* pair. Young participants in Nin and Mori (2025) showed low but positive IAQ_{100} scores, indicating a mild implicit preference for *otto* over *tsuma*. In contrast, older participants in the present study exhibited slightly negative IAQ_{100} scores, suggesting a subtle implicit preference for *tsuma* over *otto*.

4.2. Old Female Citizens Still Showed the Preference of Shujin over Kanai

Figure 2 reveals two critical characteristics of the older female participants compared with their younger counterparts:

a) The mean IAQ_{100} score for the *otto–tsuma* pair was slightly negative— the only negative score among the four groups;

b) The mean IAQ_{100} score for the *shujin–kanai* pair was clearly positive.

Of these, the latter seems more significant, as the other three group means were within the range of -1 to +1. According to the *FUMIE Test Administration Manual* (Ver. 2.2; Uchida & Mori, 2018), IAQ_{100} scores falling within the range of ±1 should be considered "neutral" due to the resolution limits of the test. Therefore, the slightly negative score for *otto–tsuma* in older females may be treated as neutral, while the clearly positive score for *shujin–kanai* is more meaningful.

Based on this interpretation, we may infer that older female participants still hold a male-centric view regarding the *shujin–kanai* pair, while exhibiting no clear preference for the more neutral *otto–tsuma* pair. In contrast, younger female students in Nin and Mori (2025) showed no preference for both pairs. Taken together, these findings may support the idea that gender bias is gradually declining across generations: younger women regard both spousal terms as neutral, while older women have not yet fully reached the same level of gender neutrality. It is also notable that Japanese males in both age groups consistently showed a male-centric bias, with positive I AQ_{100} scores for both term pairs.

5. Limitations and Future Directions

Despite these findings, the present study has several important limitations, and its conclusions should be interpreted with caution. First and foremost, the sample size was insufficient, especially for male participants. Even among older women, the number of participants (n = 35) was barely adequate. Ideally, each gender–age subgroup should consist of at least 30 participants. Future studies should aim to use a larger and more balanced sample, while keeping the same experimental procedure.

Second, the participants were recruited from a local lifelong learning program, which may have introduced selection bias. Third, IAQ_{100} scores measure implicit associations and may not directly reflect explicit attitudes or actual language usage. Even simple questionnaires might provide additional valuable insights.

Future studies should seek to recruit more diverse and gender-balanced participants across multiple regions. Integrating explicit attitude measures and examining background variables such as education level, marital status, and language use frequency would provide a more comprehensive picture of generational differences in the perception of spousal terms.

Finally, as in Nin's prior studies (Nin, 2023a; 2023b; 2024; 2025), future research should expand to include participants from other Asian countries. For example, Chinese spousal terms have been perceived as less gender-biased compared to their Japanese counterparts. However, an investigation of the implicit meanings of spousal terms in Chinese may still reveal subtle gender biases.

6. Conclusions

This study aimed to examine whether the implicit evaluations of Japanese spousal terms identified in Nin and Mori (2025) among younger participants would be replicated in an older adult population. Using the FUMIE test, we found largely consistent patterns across age groups: both younger and older participants

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showed similar implicit associations for traditional and neutral spousal terms. However, a subtle generational shift was observed. While younger female participants exhibited no preference for either term pair, older female participants still showed a mild preference for the traditional male-dominant terms (*shujin–kanai*), suggesting that traditional gender norms persist more strongly among older generations.

Although the results should be interpreted with caution due to limitations such as small sample size and regional bias, the findings tentatively support the view that gendered language perceptions are gradually changing in Japanese society. The consistent male-centered preferences among male participants across age groups, however, highlight the need for further investigation into the persistence of implicit gender bias among men.

Future studies should adopt larger, more diverse samples and incorporate both implicit and explicit measures to better understand how generational, cultural, and social factors interact in shaping attitudes toward gendered language. Expanding this research framework to other East Asian languages may also provide valuable comparative insights into the cultural dynamics of gender and language.

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Data Availability:

The raw data and the statistical results of the present study can be downloaded in Excel format from the following URL:
https://researchmap.jp/multidatabases/multidatabase_contents/download/230813/c121a9f1bcf5d0e552cebf70048c7657/41363?col_no=2&frame_id=575977

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Appendix. FUMIE Test Sheet Used in the Present Study.

(To be placed horizontally with the right side facing down during administration.)

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