The pattern of age differences in self-esteem is similar between males and females in Japan: Gender differences in developmental trajectories of self-esteem from childhood to old age

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Abstract: The current research examined gender differences in age difference patterns of self-esteem in Japan. Previous research has shown that self-esteem is high in childhood, decreases in adolescence, and increases gradually in adulthood and old age in Japan. However, gender differences in the pattern of age differences in self-esteem had not been investigated sufficiently. Gender differences are important for understanding human psychology and behavior. Therefore, I analyzed two cross-sectional datasets from large and diverse samples ranging from elementary school students to older adults in their 60s. Results showed that the patterns of age differences in self-esteem are consistent between males and females. Thus, regarding the global evaluation of the self, males and females show a similar pattern over the life course.

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PUBLIC INTEREST STATEMENT
The current research examined gender differences in how self-esteem (the positivity of a person's global evaluations of the self) differs with age in Japan. Self-esteem is not constant throughout the lifetime, but changes with age. Thus, it is crucial to understand how self-esteem changes across the life span.

Previous research has shown that self-esteem is high in childhood, decreases in adolescence, and increases gradually in adulthood and old age in Japan. However, gender differences in the pattern of age differences in self-esteem had not been investigated sufficiently. Therefore, I analyzed two datasets from large and diverse samples ranging from elementary school students to older adults in their 60s.

Results showed that the patterns of age differences in self-esteem are consistent between males and females. Thus, regarding the global evaluation of the self, males and females show a similar pattern over the life course in Japan.
Keywords: gender difference; age difference; self-esteem; culture; development; sex difference

1. Introduction

The present research examined gender differences in age difference patterns of self-esteem in Japan. Self-esteem, the positivity of a person’s global evaluations of the self (e.g., Baumeister et al., 2003), is an important concept in psychological studies. For example, the sociometer theory suggests that self-esteem reflects the subjective evaluation of a person’s social situation, which encourages adaptive social behavior (e.g., Leary et al., 1995). It is crucial to understand how self-esteem changes across the life span based on changes in social, cultural, and economic environments (e.g., Robins et al., 2002; Twenge & Campbell, 2001).

Importantly, these changes across ages might differ between genders. Such gender differences are crucial for understanding human psychology and behavior. Therefore, revealing gender differences in age difference patterns of self-esteem is important for understanding human psychology and behavior.

1.1. Age differences in self-esteem

Self-esteem is not constant throughout the lifetime, but changes with age. A cross-sectional study demonstrated that in the U.S., self-esteem is high in childhood, decreases in adolescence, increases gradually in adulthood, and decreases in old age (Robins et al., 2002). This developmental trajectory has been found in a meta-analysis (Twenge & Campbell, 2001) and a series of longitudinal studies (for a review, see, for example, Orth & Robins, 2014). These developmental changes have been explained in prior research as described below (for reviews, see, for example, Robins & Trzesniewski, 2005; Robins et al., 2002). Children have higher self-evaluation because they do not have sufficient cognitive capacity to evaluate themselves by social comparison and accept unconditional love and care from their families. Adolescents tend to face difficulties in maintaining this positive self-evaluation. They gain sufficient capacity for social comparison, which enables a more objective self-evaluation. Moreover, their association with their families becomes relatively looser, and instead they spend more time with people other than family members such as friends and teachers, who provide more objective and negative feedback. However, they gradually overcome such difficulties by constructing and maintaining positive relationships with others and themselves through social skills and self-esteem, which can work as a meter of social status.

Prior research has shown that self-esteem is remarkably influenced by culture (e.g., Heine et al., 1999; Schmitt & Allik, 2005). Thus, to examine the developmental trajectory of self-esteem, the cultural perspective is important. Studies that have investigated the developmental patterns of self-esteem in Japan have reported similar results. Ogihara (2016) examined age differences in self-liking in Japan from elementary school students to older adults in their 60s. Self-liking is one of the two components of self-esteem and is highly correlated with the other component of self-esteem, self-competence (e.g., Tafarodi & Swann, 2001). Analyses demonstrated that the level of self-liking was high in elementary school students, decreased among middle and high school students, and gradually continued to increase in adults. This pattern replicated the developmental trajectory of self-esteem found in the U.S. (e.g., Orth & Robins, 2014). These age differences were also reported independently in a different dataset in Japan (Ogihara, 2018). Moreover, Ogihara (2019) investigated age differences in self-liking in Japan from young adults aged 20 years to older adults aged 69 years. The results indicated that self-liking scores linearly increased from young adulthood to old age, which was consistent with previous research (Ogihara, 2016).

1.2. Gender differences in age difference patterns of self-esteem

Specific factors might moderate patterns of age differences in self-esteem. It is important to reveal these moderating factors because it can contribute to the understanding of how self-esteem works over the life course. One of these possible and fundamental factors is gender.
The existing literature has indicated that gender does not strongly affect the developmental trajectory of self-esteem in the U.S. (for a review, see, for example, Orth & Robins, 2014). Although age difference patterns of self-esteem are consistent between genders, some studies have indicated age differences are slightly larger in females than in males (Orth et al., 2010; Robins et al., 2002). Prior research has also shown that the developmental pattern of self-esteem does not differ by gender in Germany (Orth et al., 2015).

However, gender differences in age difference patterns of self-esteem in Japan have not been sufficiently examined in previous research. Because how gender affects psychology and behavior might differ across cultures (e.g., Buss & Schmitt, 1993), it is important to investigate gender differences in age difference patterns of self-esteem across cultures. Ogihara (2016) reported the absolute magnitudes of self-esteem in each transition of the developmental stage by gender, which implies that the absolute magnitudes of self-esteem differences were slightly larger for females than for males. But, because the analysis was conducted separately by gender, the differences between genders were not directly investigated. Similarly, Ogihara (2019) examined age differences in self-esteem by gender and reported that the slope of the self-esteem line for women was $B = 0.010$ and that for men was $B = 0.009$, which implies that the slope for women was slightly steeper than that for men. However, because the analysis was conducted separately by gender, these gender differences were not tested directly. In contrast, Ogihara (2018) directly investigated gender differences and found that age difference patterns from middle school students aged 13 or 14 years to older adults in their 60s were consistent between males and females. But, the analysis used categorial age data (e.g., 20s, 60s) instead of sequential age data, which may have not been able to detect gender differences in age difference patterns of self-esteem.

In summary, prior studies have implied that gender differences in age difference patterns of self-esteem might be absent or if any, small, with slightly larger differences in females than in males. However, the amount of research directly examining gender differences in the pattern of age differences in self-esteem is limited, which remains it unclear whether age differences in self-esteem differ with gender.

1.3. Present research
The present research investigated gender differences in the age difference patterns of self-esteem by analyzing two cross-sectional datasets from large (Study 1: $N = 15,965$, Study 2: $N = 5,258$) and diverse samples (ranging from elementary school students to older adults in their 60s, collected from all over Japan). These datasets were used to examine age differences in self-esteem in prior research (Ogihara, 2016, 2018, 2019), but the analyses were conducted separately by gender (Ogihara, 2016, 2019) and did not examine sequential age differences (Ogihara, 2018). Therefore, gender differences were not directly investigated. I predicted that gender differences in age difference patterns of self-esteem would be absent or if any, small, with slightly larger differences in females than in males.

2. Study 1

2.1. Method

2.1.1. Data
The data were collected by the National Institute for Youth Education (NIYE) in 2009 (for details see, National Institution for Youth Education [NIYE], 2010; Ogihara, 2016). These data were available for analysis by registering with the NIYE.

2.1.2. Respondents
A large and representative sample in Japan responded to the study. The sample sizes are shown in Table 1. A total of 8,020 males and 7,945 females responded.
|                | Elementary School | Middle School | High School | 20s  | 30s  | 40s  | 50s  | 60s  | Total |
|----------------|-------------------|---------------|-------------|------|------|------|------|------|-------|
| **Study 1**    |                   |               |             |      |      |      |      |      |       |
| Male           | 2,849             | 1,263         | 1,408       | 500  | 500  | 500  | 500  | 500  | 8,020 |
| Female         | 2,834             | 1,201         | 1,410       | 500  | 500  | 500  | 500  | 500  | 7,945 |
| **Total**      | 5,683             | 2,464         | 2,818       | 1,000| 1,000| 1,000| 1,000| 1,000| 15,965|
| **Study 2**    |                   |               |             |      |      |      |      |      |       |
| Male           | -                 | -             | -           | 522  | 527  | 521  | 528  | 525  | 2,623 |
| Female         | -                 | -             | -           | 527  | 529  | 530  | 525  | 524  | 2,635 |
| **Total**      | -                 | -             | -           | 1,049| 1,056| 1,051| 1,053| 1,049| 5,258 |
The student respondents were comprised of 5th and 6th grade elementary school students (aged 10 to 12 years), 2nd-year middle school students (i.e., the 8th grade; aged 13 or 14 years), and 2nd-year high school students (i.e., the 11th grade; aged 16 or 17 years). A two-stage stratified sampling was used to collect representative data for the school-aged population in Japan. In the first stage, school-level stratification was conducted. One hundred elementary schools, 80 middle schools and 80 high schools were assigned to reflect the actual rates of public schools in Japan according to school and city sizes. In the second stage, class-level stratification was conducted. Classes of each grade were randomly selected at each school.

The adult sample was comprised of respondents in their 20s to 60s. Five hundred respondents were assigned to each of the 10 cells (2, gender x 5, generation). Respondents were allocated to the cells in rates that were proportional to the actual population in terms of region, city size, marital status, and employment status.5

2.1.3. Items
Respondents answered to what extent the sentence “I like myself” applied to them by using a 4-point scale: 1 (does not apply at all), 2 (does not apply much), 3 (applies somewhat), 4 (applies very much).6 For ease of interpretation, 1 was subtracted from the score (i.e., 0: does not apply at all, 1: does not apply much, 2: applies somewhat, 3: applies very much). Self-liking is one of the two components of self-esteem (e.g., Tafarodi & Swann, 2001).

Respondents reported their gender category as either man (boy) or woman (girl).8 Data from student respondents who did not report their gender were not included in the following analyses (7 elementary school students, 16 middle school students, 26 high school students). Adult respondents also reported their age as one of five generational categories (20s, 30s, 40s, 50s, or 60s).

2.1.4. Analysis
A two-way analysis of variance (ANOVA) was conducted with gender (male, female) and age-group (elementary school students, middle school students, high school students, 20s, 30s, 40s, 50s, or 60s) as between-subject factors.

2.2. Results & discussion
The average scores for self-liking by gender and age-group are shown in Figure 1 and Table S1 (Supplementary Material). The main effect of gender was significant (F(1, 15,925) = 36.81, p < .001), but its effect size was small (ηp² = .002). The average score for males (M = 1.52, SD = 0.89) was slightly higher than that for females (M = 1.40, SD = 0.86, d = 0.14).

Figure 1. Average self-liking scores across generations by gender in Japan (Study 1).

Note. Error bars represent 95% confidence intervals.
The main effect of age-group was significant \( (F(7, 15,925) = 217.43, p < .001, \eta^2_p = .09) \). Multiple comparisons (Tukey HSD) showed that there were significant differences among age-groups \( (p < .001, \text{except for the difference between 30s and 50s: } p = .003) \), except for six comparisons between middle school students and high school students \( (p = 1.000), 20s \) and 30s \( (p = .355), 30s \) and 40s \( (p = .991), 40s \) and 50s \( (p = .051), 50s \) and 60s \( (p = .157) \), as well as 20s and 40s \( (p = .051) \).

The interaction effect between gender and age-group was significant \( (F(7, 15,925) = 2.77, p < .01) \), but its effect size was small \( (\eta^2_p = .001) \). Therefore, self-liking differed among age-groups, but the patterns of differences were similar between males and females. Specifically, for both males and females, self-liking was high in elementary school students, but low in middle and high school students. After that, self-liking continued to increase throughout adulthood.

3. Study 2

3.1. Method

3.1.1. Data
The data were collected by the NIYE in 2012 (for details see, NIYE, 2013; Ogihara, 2019). These data were available for analysis by registering with the NIYE.

3.1.2. Respondents
Adults aged 20 to 69 years from all over Japan participated in this survey. The sample sizes are shown in Table 1. A total of 2,623 men and 2,635 women responded.

3.1.3. Items
Respondents answered the same question as in Study 1 using the same anchors. Respondents also provided information about their gender and age.

3.1.4. Analysis
A hierarchical regression analysis was conducted. In Step 1, age and gender \( (0 = \text{men}, 1 = \text{women}) \) were independent variables for predicting self-liking. In Step 2, the interaction term of age and gender \( (i.e., \text{age x gender}) \) was added as an independent variable. In Step 3, age squared and its interaction with gender \( (i.e., \text{age}^2 \times \text{gender}) \) were added. In this analysis, the age-related variables were centered, and sample sizes were weighted.

3.2. Results & discussion
A summary of the results is shown in Table 2. In Step 1, age and gender significantly predicted self-liking. In Step 2, the age x gender interaction term did not significantly increase the \( R^2 \) value. Moreover, in Step 3, neither the age squared term nor its interaction with gender significantly increased the \( R^2 \) value. These results indicate that the patterns of age differences in self-liking did not differ between men and women. Specifically, in both men and women, self-liking continued to increase from 20 to 69 years of age (Figure 2; also see, Figure 3, which includes the observed scores with their confidence intervals).

4. General discussion
The present research examined whether the pattern of age differences in self-esteem varies between males and females in Japan. Two studies consistently demonstrated that gender differences in age difference patterns of self-esteem were absent or if any, small. Both males and females showed a similar trend in self-esteem: it was high in elementary school students, low in middle and high school students, and continued to increase from 20s to 60s. Adolescents and young adults overcome this difficulty with the help of self-esteem regardless of gender. Therefore, the developmental trajectory of self-esteem is assumed to be congruent between the genders. Regarding the global evaluation of the self, males and
Table 2. Summary of regression models in which age and gender predicted self-liking (Study 2)

|                | Step 1 | | Step 2 | | Step 3 |
|----------------|--------|---|--------|---|--------|
|                | $B$    | $SE$ | 95% CI | $\beta$ | $p$   | $B$    | $SE$ | 95% CI | $\beta$ | $p$   | $B$    | $SE$ | 95% CI | $\beta$ | $p$   |
| Age            | 0.01   | 0.001 | [0.008, 0.011] | .76 | *** | 0.01 | 0.001 | [0.007, 0.012] | .76 | *** | 0.01 | 0.001 | [0.007, 0.012] | .76 | *** |
| Gender         | 0.04   | 0.02  | [0.00002, 0.08676] | .13 | *   | 0.04 | 0.02  | [-0.00002, 0.0870] | .13 | .51 | 0.02 | 0.03  | [-0.05, 0.08] | .06 | .56 |
| Age x Gender   |        |       |        | 0.0002 | 0.002 | [-0.003, 0.003] | .01 | .90 | 0.0002 | 0.002 | [-0.003, 0.003] | .01 | .91 |
| Age$^2$        | -0.00002 | 0.0001 | [-0.00002, 0.00002] |        |        |        |        |        |        |        |        |        |        |        |
| Age$^2$ x Gender | 0.0001 | 0.0001 | [-0.0001, 0.00004] |        |        |        |        |        |        |        |        |        |        |        |
| $\Delta R^2$   |        |       |        |        |        |        |        |        |        |        |        |        |        |        |
| $R^2$          | .599 | ***  |        |        |        | .599 | ***  |        |        |        | .605 | ***  |        |        |

Note. *** $p < .001$, * $p < .05$. Age was centered. Gender was coded as men = 0, women = 1.
females demonstrated a similar pattern over the life course. This result was consistent with previous research in the U.S., (Orth & Robins, 2014), Germany (Orth et al., 2015), and Japan (Ogihara, 2018).

This research has some limitations. First, the present research analyzed cross-sectional data, so age changes in self-esteem are unclear. Age differences include not only age changes but also cohort differences. Findings from cross-sectional studies on self-esteem have been consistent with those from longitudinal studies (for a review, see Orth & Robins, 2014), but this limitation should be noted. Thus, it is
necessary to conduct longitudinal research that can distinguish between age changes and cohort differences. Second, this research focused on one of the two components of self-esteem (self-liking), whereas the other component (self-competence; e.g., Tafarodi & Swann, 2001) was not examined. Considering that self-liking and self-competence are highly correlated (e.g., Tafarodi & Swann, 2001), it is strongly predicted that self-competence would show the same pattern. Yet, this remains an empirical question for future research.

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Author contribution
The author confirms being the sole contributor of this work and approved it for publication.

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Notes
1. Although this research indicated that the developmental pattern of self-esteem is basically consistent between European American cultures and Japanese culture, it also suggested a cultural difference in the developmental pattern of self-esteem (Ogihara, 2019). Previous research in European American cultures have demonstrated that self-esteem reaches a peak in one’s 50s or 60s, and then decreases in old age (e.g., Orth & Robins, 2014; Robins & Trzesniewski, 2005). In contrast, cross-sectional research in Japan has shown that self-esteem is positively associated with age even after the age of 60 years (for details, see Ogihara, 2019).

2. The aim of Ogihara (2018) was to examine whether the age difference pattern of self-esteem found in Ogihara (2016) was replicated in another independent dataset. Because the dataset used in Ogihara (2016) did not include sequential age data and presented only categorical data (i.e., elementary school students, middle school students, high school students, 20s, 30s, 40s, 50s, 60s), Ogihara (2016) compared the average scores of self-esteem in the eight categories. Thus, following Ogihara (2016), Ogihara (2018) did not examine sequential age differences.

3. I did not have a specific hypothesis about when and why to expect larger differences in age differences of self-esteem in females than in males. This was because the amount of previous research suggesting such gender differences was limited and the findings were inconsistent. Robins et al. (2002) reported that self-esteem decreased in adolescence for both genders but to a greater extent for girls than for boys. Orth et al. (2019) showed that the increase in self-esteem among adults was greater for women than for men. Furthermore, these studies were conducted in the U.S.; so it was unclear whether the same results would be found in Japan.

4. I was given approval from the NIYE to analyze the data and publish the results.

5. Data collection was conducted based on these factors and other factors were not considered.

6. The original wording in Japanese is “自分のことが好きである [jibun no koto ga suki de aru].”

7. Because single-item measurements have both positive (e.g., relatively low cost for respondent to answer and for researcher to include in study) and negative aspects (e.g., relatively low validity) compared to multi-item measurements, it is desirable to examine age differences in self-esteem using a well-constructed scale (e.g., the Rosenberg Self-Esteem Scale, 1965) as an additional investigation.

8. Respondents were not required to report their biological sex (assigned at birth). For example, participants who were born as biological males could choose woman.

9. Binary gender options might not be appropriate because contemporary societies have accepted more diversities in gender. It has become more difficult for respondents to answer their gender by using binary options. Thus, more diverse options might be desirable.

Supplementary material
Supplemental data for this article can be accessed here.

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