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# Phonological Trends of Gendered Names in Korea and the U.S.A.

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# Phonological Trends of Gendered Names in Korea and the USA

## Abstract

The ascription of gender based on the phonological structure of personal names has been documented independently at varying points of time in several countries. This study adds to this work by examining whether the phonology of gendered names is valid synchronically in cross-linguistic comparisons and diachronically across different decades in two linguistically different countries: Korea and the U.S.A. Two types of data were collected: (1) historical onomastic data from birth registries in the Supreme Court of Korea and the Social Security Administration in the U.S.A. from 1940 to 2020, and (2) online survey data from students in Korea and the U.S.A. The results showed a clear pattern of gendered phonology of vowels in names in the U.S.A. through the decades under review. Female names had more vowels and were more likely to end in "a", "e", or "i", unlike male names. In comparison, the pattern in Korean names changed over the decades. In the earlier decades (1940–1999), there was a clear distinction between male and female names based on phonology, especially vowels "a", "e", and "i". Post-2000, however, this distinction was markedly reduced.

**Keywords**: onomastics, name phonology, gendered names, anthroponyms, Korea, U.S.A.

## 1. Introduction

While personal (given) names may not always have lexical meaning, they are often used to infer gender (Alford 1998). Phono-onomastics, specifically the sound and spelling of a name, is a structural mechanism by which the gendering of names occurs. Research has indicated that female names are more likely to end in vowels in comparison to male names (e.g., Slater & Feinman 1985). To add to this area of research, this paper documents a project designed to determine whether the phonology of gendered names is valid synchronically in cross-linguistic comparisons and diachronically across different decades in two linguistically different countries: Korea and the United States of America (U.S.A.).

The relationship between names, phonology, and gender has been reliably demonstrated in studies focused on English names (Mutsukawa 2014; Cassidy et al. 1999). For example, in an analysis of male ($n$ = 267) and female ($n$ = 222) students, Slater and Feinman (1985) identified several phonological gender differences including: (i) more phonemes, more syllables, and a higher ratio of open syllables in female names in comparison to male names; (ii) a strong stress on the first syllable of both female and male names; (iii) a greater likelihood of female names ending in a vowel in comparison to male names; (iv) male names having a larger percentage of voiced beginnings when names begin with consonants; and (v) male names having a higher percentage of endings with high central unrounded vowels when names end in vowels, in comparison to female names.

Similarly, in a comparison of 783 male names and 884 female names, Cutler et al. (1990) identified the following phonological differences: (i) male names are less likely to have unstressed initial syllables; (ii) are less likely to have a high front tense vowel; and (iii) are usually shorter than female names. Lieberson and Mikelson (1995) extended this work by focusing on African-American names. Participants were asked to guess the gender of 16 African-American names (eight male names and eight female names) and were correct in 13 instances. In a subsequent examination of the most popular African-American and Caucasian names in New York, the researchers identified the following phonological gender differences: (i) male names are less likely to end in an /a/ sound in comparison to female names; (ii) the name-initial /s/ is more common in female names in comparison to male names; (iii) there were no female names ending in a hard /d/-sound; and, (iv) the /s/-ending is less common in female names in comparison to male names.

An analysis of the 500 most frequent first names of males and females born in Pennsylvania, U.S.A. in 1990 reliably demonstrated that the three letters "a", "e", "i" constituted the last letters of 66.5% of female names and only 11.8% of male names (Barry & Harper 2000). These researchers also noted that within their sample, the two last letters "y" and "h" occurred with similar low frequencies in male and female names; there were no first names that ended with "j" or "v"; and that the remaining 19 letters of the alphabet constituted the endings of 73.7% of male names and only 17.7% of female names. Thus, for example, there was a greater likelihood of a male name ending in "d" (5.7%) than a female name (0.4%).



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A few studies have examined phonology, gender, and names in languages other than English. In a series of studies, Mutsukawa (2014) observed that first syllables in Japanese names illustrate gender difference. For example, the letter "a" in the first position is found in female names whereas the letters, "k" and "s" are more common in the name-initial position among males. A cross-cultural comparison of Japanese and English names, however, revealed dissimilarities, such as longer names tended to be masculine in Japanese but feminine in English and monosyllabic names were masculine in both Japanese and English (Mutsukawa 2014). Similarly, a study of German personal given names conducted by Oelkers and reported by Ackermann and Zimmer (2021) demonstrated phonological differences in male and female names. Some differences paralleled those observed in English names, such as female names having more syllables than male names; male names showing the initial stress more often than female names; female names having more vowels and male names more consonants; female names ending in a vowel and male names ending in a consonant; and male names having fewer front vowels in comparison to female names (Ackermann & Zimmer 2021).

Most studies on names, phonology, and gender involved native speakers of the language. Cai and Zhao (2019) examined the determination of names as female and male based on the responses of English and German participants responding to names in Min, a South China language, that participants were unfamiliar with. Participants ranked male Min names as more male-sounding in comparison to female names, ostensibly due to the syllables ending in consonants. This study illustrates the ability of non-native speakers to ascribe gender to personal names based on the phonology of the name.

Scholarship on the relationship between names, phonology, and gender is an important aspect of onomastic research as a mechanism of documenting how the ascribing of gender to names may change over time with phonological changes. This study was therefore designed to explore the phonology of gendered names in Korea and the U.S.A. using both historical and contemporary data. Korea and the U.S.A. have different linguistic and cultural traditions as they belong to disparate geographical regions and language families. Linguistically, English is an Indo-European language and Korean is an Altaic language. The cross-cultural comparison of gender, phonology and names between these countries and languages provides new insight into this topic which adds to the canon of onomastic research. Since gender has been proposed to be phonologically distinct this study explores whether this observation is valid cross-linguistically and cross-culturally.

The specific research questions examined are as follows:

1. Are there differences in the use of vowels to signify gender in names in Korea and names in the U.S.A.?
2. Are there changes in the similarities and differences in the use of vowels to signify gender in Korean names and names in the U.S.A.?
3. Is the ascribing of gender to names comparable among Korean students and students in the U.S.A.?

## 2. Methodology

Two methodological approaches were used in this project: historical analysis of names and online surveys. Historical analysis included the examination of 720 Korean names extracted from the birth registry (Supreme Court of Korea).[1] These names constituted the 20 most frequent names per gender (male, female), type (birth name, changed name), decade (1940–2019) and the endpoint year of 2020. Similarly, 360 names comprising the top 20 U.S. birth names per decade (1940–2019) and the endpoint year of 2020 were extracted from the U.S.A. Social Security Administration registry. Table 1 presents the 20 most frequent names in Korea and the U.S. in the first decade of data collection (1940–1949) and the most recent decade of data collection (2010–2019). The names are ordered column by column from left to right by the popularity rank.



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**Table 1:** Illustration of the Top 20 Popular Birth Names in Korea and the U.S.A.

| Year | Male Birth Names in Korea | | Female Birth Names in Korea | | Male Birth Names in the U.S.A. | | Female Birth Names in the U.S.A. | |
|---|---|---|---|---|---|---|---|---|
| 1940 – 1949 | Yeong-su | Yeong-ho | Yeong-ja | Jeong-ja | James | Robert | Mary | Linda |
| | Yeong-sik | Yeong-gil | Sun-ja | Chun-ja | John | William | Barbara | Patricia |
| | Jeong-ung | Jeong-su | Jeong-sun | Gyeong-ja | Richard | David | Carol | Sandra |
| | Yeong-cheol | Jong-su | Ok-ja | Jeong-suk | Charles | Thomas | Nancy | Sharon |
| | Yeong-il | Yeong-hwan | Suk-ja | Yeong-sun | Michael | Ronald | Judith | Susan |
| | Gwang-su | Jeong-gil | Yeong-suk | Myeong-ja | Larry | Donald | Betty | Carolyn |
| | Jeong-ho | Jeong-nam | Ok-sun | Hwa-ja | Joseph | Gary | Margaret | Shirley |
| | Jeong-sik | Yeong-gi | Geum-ja | Jeong-hui | George | Kenneth | Judy | Karen |
| | Dong-su | Jong-cheol | Bok-sun | Yeong-hui | Paul | Edward | Donna | Kathleen |
| | Chang-su | Jeong-il | Geum-sun | Sun-ok | Jerry | Dennis | Joyce | Dorothy |
| 2020 | Seo-jun | I-jun | Seo-a | Ha-yun | Liam | Noah | Olivia | Emma |
| | Do-yun | Ha-jun | Ji-an | Seo-yun | Oliver | Elijah | Ava | Charlotte |
| | Si-u | Ji-ho | A-rin | Ji-a | William | James | Sophia | Amelia |
| | Eun-u | I-an | Ha-rin | Ha-eun | Benjamin | Lucas | Isabella | Mia |
| | Ye-jun | Yu-jun | A-yun | Ji-u | Henry | Alexander | Evelyn | Harper |
| | Su-ho | Ju-won | Si-a | Ji-yu | Mason | Michael | Camila | Gianna |
| | Seon-u | Jun-u | Su-a | Na-eun | Ethan | Daniel | Abigail | Luna |
| | Geon-u | U-jin | Seo-yeon | Yu-na | Jacob | Logan | Ella | Elizabeth |
| | Seo-jin | Yeon-u | Seo-u | I-seo | Jackson | Levi | Sofia | Emily |
| | Do-hyeon | Min-jun | Ye-na | Seo-ha | Sebastian | Mateo | Avery | Mila |

Korean birth names here are transliterated into the Roman alphabet according to the official Romanization system in Korea (Korea Ministry of Culture, Sports, and Tourism 2000). The original form of Korean birth and changed names in the Korean alphabet is illustrated in Table 2. The names are ordered column by column from left to right by the popularity rank.

**Table 2:** Illustration of the Top 20 Popular Birth and Changed Names in the Korean Alphabet

| Year | Male Birth Names in Korea | Female Birth Names in Korea | Male Changed Names in Korea | Female Changed Names in Korea |
|---|---|---|---|---|
| 1940 – 1949 | 영수 영호 영식 영길 | 영자 정자 순자 춘자 | 영호 영식 영수 종철 | 정숙 영희 정자 영순 |
| | 정웅 정수 영철 종수 | 정순 경자 옥자 정숙 | 정호 영철 종수 영기 | 영자 춘자 영숙 정순 |
| | 영일 영환 광수 정길 | 숙자 영순 영숙 명자 | 영환 정수 창수 광수 | 영애 순자 정희 숙희 |
| | 정호 정남 정식 영기 | 옥순 화자 금자 정희 | 경수 종호 종식 종태 | 복순 명숙 정옥 명자 |
| | 동수 종철 창수 정일 | 복순 영희 금순 순옥 | 창규 상호 상철 철수 | 옥희 숙자 경숙 경자 |
| 2020 | 서준 이준 도윤 하준 | 서아 하윤 지안 서윤 | 민준 서준 도윤 현우 | 지안 서연 지원 수연 |
| | 시우 지호 은우 이안 | 아린 지아 하린 하은 | 도현 지훈 우진 정우 | 유진 서윤 서현 지윤 |
| | 예준 유준 수호 주원 | 아윤 지우 시아 지유 | 주원 건우 진우 준우 | 채원 서영 지우 도연 |
| | 선우 준우 건우 우진 | 수아 나은 서연 유나 | 선우 시우 민재 지호 | 수현 정원 지현 지은 |
| | 서진 연우 도현 민준 | 서우 이서 예나 서하 | 승우 재현 재원 승현 | 민서 서아 지유 민정 |

Online surveys were used to assess the gender specificity of names in Korea and the U.S.A. Korean students ($n$ = 124) completed an online survey to determine the gender for the top 20 most popular names per decade from Korea ($n$ = 267 names excluding 93 reoccurrences).[2] Five-point Likert scales were used to determine whether names were (1) definitely male; (2) likely male; (3) gender neutral; (4) likely female; (5) definitely female. Three gender-neutral names were included twice to ensure the reliability of the responses. The name entries were all randomized across decades and gender. A similar online survey was completed by students in



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the U.S.A. ($n$ = 143) using the top 20 most popular names in the U.S.A. from 1940 to 2020 ($n$ = 179 names excluding 181 reoccurrences). Both the U.S.A survey and the Korea survey participants were recruited from one university each on a volunteer basis. The inclusion criteria required native speakers of Korean (Korean survey) or English (U.S.A. survey) with the university affiliation. The surveys were created only for this study. All respondents passed the reliability criteria of consistent answers for two or three names out of the three duplicated gender-neutral names (over 65%) in each survey. Thus, all responses were used for this study, and none were rejected or removed. The surveys took about 15 minutes to complete and were delivered via Google Docs in Korea and Qualtrics in the U.S.A. Google Docs were sent by ads in university group chats or notice boards, and Qualtrics by e-mail listserv. Figure 1 illustrates an excerpt from the survey provided to Korean students and students in the U.S.A.

**Figure 1:** Sample Section of the U.S. Survey (left) and the Korean Survey (right)

*Note*. Name entries are randomized on a 5-point Likert scale.

**Q3.2 Are the following names male, female, or neutral?**

| | Definitely male (1) | Likely male (2) | Gender neutral (3) | Likely female (4) | Definitely female (5) |
|---|---|---|---|---|---|
| Anthony (1) | 0 | 0 | 0 | 0 | 0 |
| Jacob (2) | 0 | 0 | 0 | 0 | 0 |
| Justin (3) | 0 | 0 | 0 | 0 | 0 |
| Diane (4) | 0 | 0 | 0 | 0 | 0 |
| Mateo (5) | 0 | 0 | 0 | 0 | 0 |

**이름을 보면 남자일까요, 여자일까요?**

| | 남자일 확률 100% | 남자일 확률 75% | 남녀모두 50% 확률 | 여자일 확률 75% | 남자일 확률 100% |
|---|---|---|---|---|---|
| 형준 | 0 | 0 | 0 | 0 | 0 |
| 병철 | 0 | 0 | 0 | 0 | 0 |
| 명자 | 0 | 0 | 0 | 0 | 0 |
| 정민 | 0 | 0 | 0 | 0 | 0 |
| 정현 | 0 | 0 | 0 | 0 | 0 |

# 3. Results

The results show clear patterns of phonological trends of gendered names in both Korea and the U.S.A., both in the historical analysis and the survey analysis of data.

## *3.1 Historical Analysis*

The historical analysis indicated that female names ended more frequently with the letters “a”,“e”, “i”" in comparison to male names both in Korea and the U.S.A. As illustrated in Figure 2(a), through each decade under review, female names were more likely to end in the letters “a”,“e”, or “i”. This finding is consistent with observations documented by Barry and Harper (2000). As illustrated in Figure 2(b), a similar pattern of gender differences in name phonology was observed in the Korean birth name data but with a marked decline from the 1940s to 2000s and a gradual uptick after the 2000s. Thus, older females of the 1940s tended to have more gender-specific first names.



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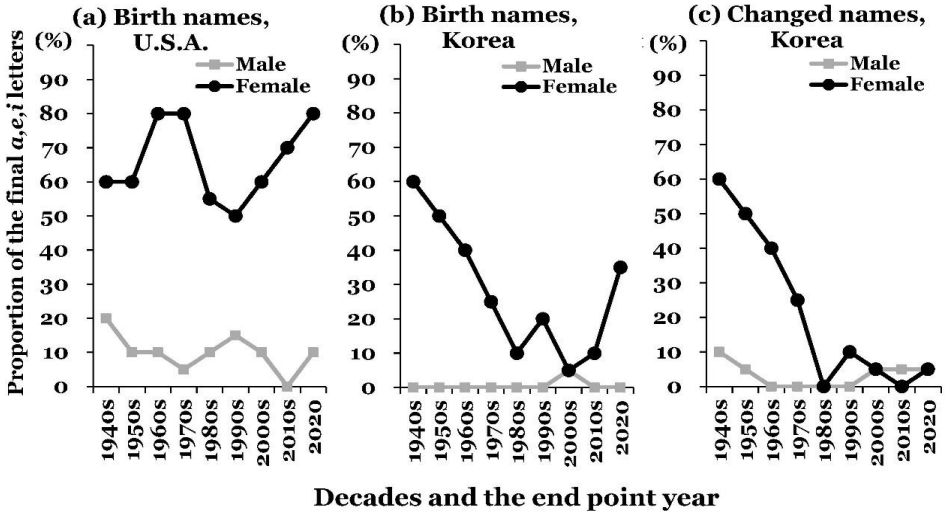


**Figure 2**: First names with the final "a", "e", "i" letters in the U.S.A. and in Korea

*Note*. The final "a", "e", "" letters identify female first names in the U.S.A. in (a), while these letters identify only the older female first names in Korea in (b). Gender specificity is clearer in male than in female changed names in Korea in (c). ($N$ = 360 names in each figure from 20 names x 2 sexes x (8 decades + 1 endpoint year of 2020)).

An analysis of phonology, gender, and names with the changed name data illustrated a similar pattern to that observed with birth name data in Korea. As Figure 2(c) illustrates, from 1940 to 1980, there were distinct differences in the phonology of names based on gender, with female names more likely to end in the letter "a", "e", or "i". This distinction diminished post-1980.

Results from an independent samples $t$-test conducted on both Korean names and names in the U.S.A. showed that female names had significantly more final "a", "e", and "i" vowels than male names through the decades, regardless of whether the names were given at birth by parents or changed later in life. The Korean girl's names at birth ($M$ = 5.67, $SD$ = 3.84, $N$ = 9) showed higher scores of final "a", "e", "i" than boys' names ($M$ = 0.22, $SD$ = 0.44, $N$ = 9, $t$(8.21) = 4.23, $p$ = .003, Glass's $d$ = 1.42, 95% CI [2.49, 8.40], two-tailed). Levene's test indicated unequal variances ($F$ = 21.3, $p$ < .001); hence, degrees of freedom were adjusted from 16 to 8.21. The Korean name changes for females ($M$ = 4.33, $SD$ = 4.61, $N$ = 9) showed higher scores than those for males ($M$ = 0.67, $SD$ = 0.71, $N$ = 9, $t$(8.38) = 2.35, $p$ = .045, Glass's $d$ = 0.79, 95% CI [0.11, 7.22], two-tailed). Levene's test indicated unequal variances ($F$ = 24.9, $p$ < .001); hence, degrees of freedom were adjusted from 16 to 8.38. The U.S. female names ($M$ = 13.11, $SD$ = 2.21, $N$ = 9) showed higher scores than male names ($M$ = 2.00, $SD$ = 1.12, $N$ = 9, $t$(11.86) = 13.48, $p$ < .001, Glass's $d$ = 5.04, 95% CI [9.31, 12.91]), two-tailed). Levene's test indicated unequal variances ($F$ = 8.88, $p$ = .009), and so degrees of freedom were adjusted from 16 to 11.86. The differences of final "a", "e", "i" between male and female names indicated very large effects in all three cases.[3]



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## *3.2 Survey analysis*

As illustrated in Figures 3(a) and 3(b), there is a slight decrease in gender specificity in birth names in the U.S.A. starting around 2000, and a marked decrease in gender specificity in birth names and in changed names in Korea beginning in the 1960s (see Figure 3(c)).

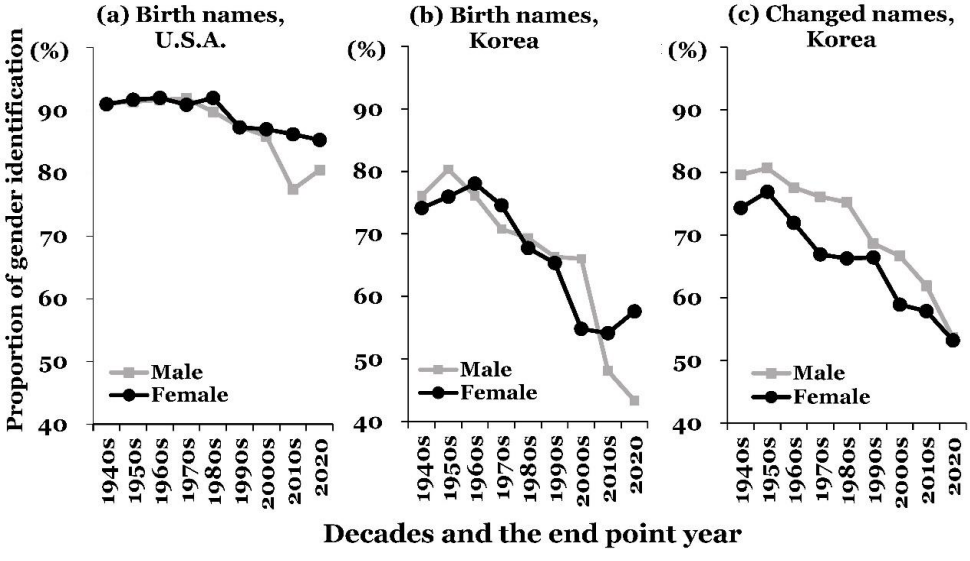


**Figure 3:** Gender Identification of U.S. and Korean First Names in Surveys

*Note.* The surveys were on 267 Korean names by 124 Korean respondents in Korea, and 179 US names by 143 US respondents in the U.S.A. Gendered first names slightly decrease in the U.S.A. in (a), and rapidly decrease in Korea in (b). Gender specificity is clearer in male than female changed names in Korea in (c).

An independent samples *t*-test was performed comparing the mean consistency scores of gender identification in the surveys on 267 Korean names by 124 Korean respondents and 179 U.S. names by 143 U.S. respondents. In the Korean survey result, the average score of male names ($M = -165.8$, $SD = 58.1$, $N = 127$) was significantly different from that of female names ($M = -163.9$, $SD = 47.0$, $N = 136$, $t(243) = 50.4$, $p < .001$, Glass's $d = 7.01$, 95% CI [316.7, 342.5], two-tailed).[4] These mean values were derived from the 5-point Likert scale that ranged from definitely male (score −2) to definitely female (score +2)[5] and conform very well to the predicted score range of 124 responses: male ($-248 < M < 0$) and female ($0 < M < 248$). Levene's test indicated unequal variances ($F = 5.09$, $p = .025$), and so degrees of freedom were adjusted from 261 to 243. In addition, the U.S. survey result also showed that the average score of male names ($M = -237.4$, $SD = 43.8$, $N = 68$) was significantly different from that of female names ($M = 230.3$, $SD = 42.6$, $N = 111$, $t(177) = 70.5$, $p < .001$, Cohen's $d = 10.83$,[6] 95% CI [454.6, 480.8], two-tailed). These mean values for the U.S.A. were also derived from the same 5-point Likert scale as in the Korean survey and conform very well to the predicted score range of maximal 143 responses[7]: male with a negative sum of the scores ($-286 < M < 0$) and female with a positive sum of scores ($0 < M < 286$). The differences between male and female names indicated very large effects in both the Korean and U.S. surveys (*d* values shown above).[8] Overall, data collected in this study suggest that ascribing gender to names based on phonology may be cross-cultural.



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# 4. Discussion

This study adds to the canon of onomastics by examining the relationship between phonology, gender, and onomastics, specifically whether the phonology of gendered names in Korea and the U.S.A. is valid synchronically in cross-linguistic comparisons and diachronically across different decades. Results indicated reliable differences in the frequency of the vowels "a", "e", and "i" at the end of female names in comparison to male names. This pattern was observed in both Korean names (birth names and changed names) as well as names in the U.S.A. Notably, the tendency toward lengthy female names in English (Slater & Feinman 1985) does not apply to Korean names, because nearly all Korean names in our data (1339/1440) have two syllables (Table 1). A possible explanation can be universal markedness: two-syllable words are phonologically unmarked (Broselow et al. 1998). Results also demonstrated cross-linguistic similarities in the perception of names as "male", "female", and "neutral" based on survey results from Korean students and students in the U.S.A.

Thus, our three research questions are answered as follows:

1. There are differences in the use of vowels to signify gender both in Korean names and names in the U.S.A. As illustrated in Figures 2(a & b), female names were more likely to end in the vowels "a", "e", and "i" in both languages.[9]

2. There are changes in the similarities and differences in the use of vowels to signify gender across decades. To elucidate, both Korean and U.S.A. names exhibit gender differences. These gender differences are maintained across decades for U.S.A. names, as shown in Figures 2(a) and 3(a), but less so for Korean names as shown in Figures 2(b & c) and 3(b & c).[10]

3. Based on survey results, both the Korean students and the students in the U.S.A. (Figures 3(a, b, & c)) ascribed gender to names in a manner remarkably consistent with the historical data (Figures 2(a, b, & c)). The responses were considered generally reliable and all responses were included in the data analysis.

While the results of this study are informative, there are certain limitations that must be acknowledged. First, the data examined are only for a specific period of time, contingent on the availability in the name registries. Therefore, it is possible that findings may differ if a wider timespan had been examined. Second, only the top 20 names per decade were examined. It is possible that including more names may result in different observations. Third, there was a limited number of survey participants although we consider it sufficient for the data collection to derive statistically significant results. In addition, demographic information was not collected for privacy reasons. An increase in the number of survey participants and the acquisition of demographic information would permit a more comprehensive examination of the gendering of names based on phonology.

Given the similarity in ascribing gender to names based on phonology observed in Korea and the U.S.A., it would be prudent to expand this research to other languages and countries. Specifically, Figure 3(b & c) illustrates the recent trend that gender specificity in Korea is diminishing so much more for both male names and female names than in the USA. Focusing on the more recent time period the Korean survey participants could not easily identify whether the name is male or female (near chance level identification around 50% from the decade 2000s till the year 2020). In addition, Figure 2(b & c) shows that female markers of names ending in "a", "e", "i" are diminishing from the historical name data. Exploring the socio-cultural reasons would make an interesting future study. A noticeable cultural change in Korea in recent years is that girls are also preferred by parents, whereas, historically boys may have been preferred. Furthermore, in Korea, patriarchy and gender-specific roles in the family are diminishing. However, given that this is also the trend in the USA, it is unclear why the gender specificity in names is diminishing so rapidly only in Korea. Another future research focus could be exploring the developmental aspect of gendering names–for example, how early individuals are able to infer or ascribe gender based on the phonology of names.



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## Notes

[1] A website with the full list of the name data from both the U.S.A. and Korea is located at https://github.com/JongmiKim/GenderedNamesInKoreaUSA. Both datasets are publicly available from the Social Security Administration of the U.S.A. and the Supreme Court of Korea. The Korea name data were initially obtained by the first author from the Supreme Court of Korea (Petition 1301 on November 2, 2018, and Petition 42 on January 28, 2019) and updated by public information (Supreme Court of Korea 2022).

[2] The 267 Korean names and 179 US names remained after the redundant names were removed from the 360 initially gathered names per language (360 names = 20 names x 2 sexes x [8 decades + 1 endpoint year of 2020]).

[3] Glass's delta was used because each group has a different standard deviation. Cohen's *d* returned even larger effect sizes.

[4] There were four gender-neutral names in the Korea survey, which were listed in both the top 20 preferred name sets of male and female. The Welch's test result showed that the effect of gender identification for Korean names among gender-neutral names, male names and female names was significant, $F_{welch}$ (2, 8.5) = 1176.1, $p < .001$. The Welch's test was conducted because of substantial differences in variances among groups and the small sample size. A Games-Howell post hoc test showed that the gender-neutral names ($M = 34.0$, $SD = 32.4$) were significantly distinctive from male names ($M = -165.8$, $SD$=58.0, $p = .001$), and from female names ($M = 163.9$, $SD = 47.0$, $p = .006$). The difference indicated a very large effect ($\eta^2 = .908$).

[5] The full range of values assigned for the survey responses in the 5-point Likert scale are: definitely male (score −2), likely male (score −1), gender-neutral (score 0), likely female (score 1), and definitely female (score 2).

[6] The effect size was also very large by both Hedge's *g* and Glass's delta ($g = 10.86$, Glass's $d = 10.97$). Cohen's *d* or Hedge's *g* are appropriate as we had different sample numbers over 20, while Levene's test indicated equal variances ($F = .35$, $p = .55$).

[7] All Korean respondents completed the survey whereas some U.S.A. respondents did not complete the survey. We included all the incomplete surveys in the data because the answers were all consistent and passed the sincerity check that we implemented by including duplicate names in the survey.

[8] Glass's delta was used because each group has a different standard deviation. Cohen's *d* returned even larger effect size.

[9] The "a", "e", and "i" endings of the Korean names appear to be more phonologically based than morphologically based. First, the survey results in Figure 3 also show the muted gender identification in the names of recent years, with the strong correlation between the trend in ending vowels "a", "e", and "i" in Figure 2. The interpretation from this correlation of gender-muting trends in both historical and the survey data is that female name markers could be the vowels "a", "e", "i" in the mind of the survey respondents. Second, Sino-Korean morphemes do not primarily use "a", "e", "i" for female names, but rather consonantal or other vowel endings. The full list of final Sino-Korean morphemes of birth and changed names from 1940s and 1970s include only four morphemes with "a", "e", "i" endings, *hui* 'female', *ja* 'son', *mi* 'beauty', and *ae* 'love', but eight morphemes with consonantal or other vowel endings, *suk* 'clear', *sun* 'smooth', *ok* 'jade', *kyeong* 'mirror', *jeong* 'straight', *eun* 'silver', *yeon* 'lotus', and *ju* 'gem'. Thus, there are a fewer number of female names with Sino-Korean morphemes ending with the vowels "a", "e", or "i". Yet, there are more female names overall that end with the vowels "a", "e", and "i".

[10] For changed names in Korea, female names lose the gender marking final vowels, "a", "e", or "i", while male names show a slight change for including these female marking vowels (Figure 2c). Such a trend is not shown in birth names after 2005 in Korea (Figure 2(b)), when the Supreme Court decision of extended allowance of name changes was announced (https://shorturl.at/hwH09 Accessed 22 April 2023). Kim & Go (2022) shows that the changed names make a significantly more muting effect of gender features in female names but less in male names. In this study, male markers of syllable final [ŋ] and number of letters are muted significantly more in changed female names than the given female names. The suggestion is that the muting effect is significantly greater in changed female names than birth names or male names in Korea.



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The online surveys in this study were conducted in Republic of Korea and the U.S.A.

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