Phonology of Gender in English and French Given Names

Lisa Sullivan & Yoonjung Kang
University of Toronto

Introduction

- Traditionally, the relationship between form and meaning is seen as arbitrary [7]
- More recently, research suggests sound symbolism is more common than previously assumed [5,9]
- Phonology of given names may encode information about gender [9]

Phonological Gender Patterns in Given Names

- Corpus studies show correlations between phonological patterns and gender
  - Studies focus mostly on English [3,9,10]
  - Some work shows similar patterns in Japanese [8], French [10], Urdu [4] and Cantonese [11]
  - Table 1 shows a selection of patterns in English and French [10]
- Experimental work shows these patterns can be extended to nonce names, but it only looks at English speakers' use of native English patterns [2, 9]

Languages	Factor	Pattern
EN, FR	Number of Syllables	Female > Male
EN, FR	Open Final Syllable	Female > Male
EN, FR	Proportion of Back Vowels	Female < Male
EN, FR	Proportion of Round (/l,m,n/) Consonants	Female > Male
EN	Non-initial Stress Placement	Female > Male
FR	Proportion of Nasal Vowels	Female < Male

Table 1: Phonological gender patterns in French and English given names

Current Study

- Question: How are these patterns encoded?
- Hypotheses:
  - If patterns are encoded in a language-nonspecific way, listeners should be able to:
    - Make use of them regardless of speaker language
    - Extend them to other languages
  - If they are encoded in a language-specific way, native English listeners should only be able to make use of English patterns when spoken by native English speakers
- Methodology: This study addresses this question by examining if and how native English speakers use sound-gender correlations in native (English) and foreign (French) names to assign gender to nonce names

Methods

- Participants: 27 monolingual native speakers of North American English (9 excluded, 18 used in analysis)
- Stimuli: CVCV nonce words
  - 20 minimal pairs, manipulated to vary according to one of the factors in Table 1, so that one variant was more male and the other, more female
    - 2 pairs for each factor, in each language
  - 20 fillers & 4 training items
  - Recorded by female native speakers of Canadian French and English
- Procedure: Listeners heard each stimulus item and had to rate whether they thought it was male or female on a 6 point scale (Figure 1)
  - 1 block for each language; blocks were counterbalanced
  - AX task with language-specific factor after each block
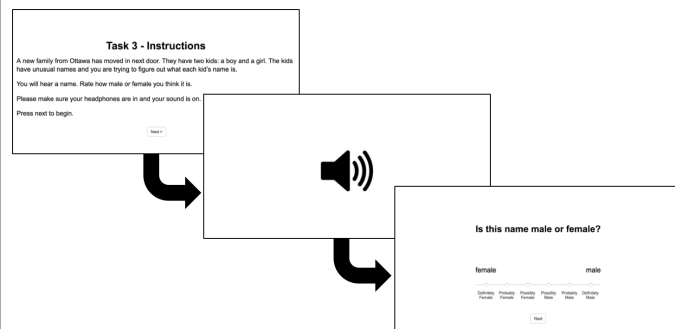 - Language background questionnaire


Figure 1: Name gendering task methodology

Results

Note: Rating scale ranges from 1 (most female) to 6 (most male)

Regression Model

- A mixed effects logistic regression model was built in R [6] using the lmer() [1] function
  - **Response variable**: rating
  - **Predictor variables**: gender bias, phonological factor, speaker language and their interactions
  - **Random intercepts**: minimal pair, participant
  - **Random slopes**: gender bias for participant
- Significant effects: gender bias (male or female) and intercept (average rating)

Overall Results

- Participants rated female-biased names as more female than male-biased names
- Only significant effect
- Consistent with previous results [2, 9] – suggests speakers may have knowledge of these patterns that they can use to assign gender to nonce gender to nonce names
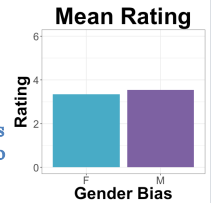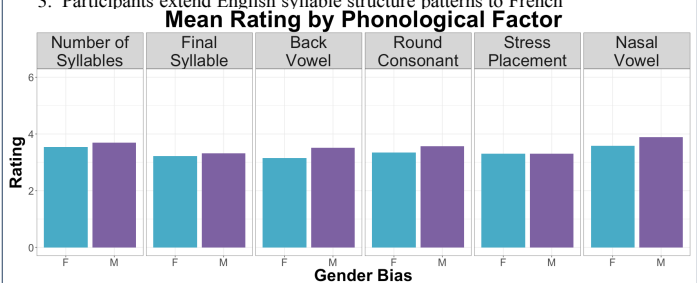

Speaker Language

- Pattern from overall results holds regardless of speaker language
- No significant difference between the two languages
- Suggests patterns may be available to speakers in a language-nonspecific way
- However, it's not clear how these patterns are learned
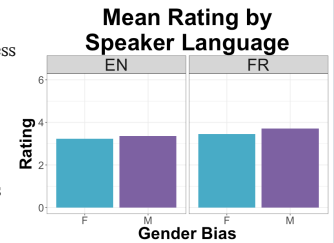
Phonological Factor

- Pattern hold for all phonological factors except stress (where there is no difference)
- No significant different between the phonological factors
- Suggests English speakers use the French-only nasal vowel pattern in the same way as patterns found in English
- 3 possible explanations
  1. The nasal vowel pattern is cross-linguistic
  2. Limited exposure to French is sufficient to acquire the nasal vowel pattern
  3. Participants extend English syllable structure patterns to French

Conclusion

- Phonological patterns correlated with gender are found in French and English given names
- English speakers can make use of these patterns to assign gender to nonce names
- They do so regardless of speaker language or the factor being manipulated
- Furthermore, they do so for the French nasal vowel pattern (see Table 1), which is not present in English
- The lack of difference between languages suggests these patterns may be encoded in a language-nonspecific way
- This does not provide insight into how the patterns were acquired. Possible explanations, given the results include:
  - The patterns themselves are universal and are acquired as such
  - The patterns are acquired through the languages they are found in & non-native patterns can be acquired through exposure to those languages
  - People acquire the patterns through their native language, but can abstractly extend them to other languages, and unfamiliar patterns

 References: [1] Bates, D., Mächler, M., Bolker, B., Walker, S. 2015. Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67(1), 1–48. [2] Cassidy, K. W., Kelly, M. H., Sharoni, L. J. 1999. Inferring gender from name phonology. *Journal of Experimental Psychology* 128(3), 362–381. [3] Cutler, A., Mcqueen, J., Robinson, K. 1990. Elizabeth and john, sound patterns of men's and women's names. *Journal of Linguistics* 26(2), 471–482. [4] Mohsin, N., Kang, Y. 2018. Gender phonology of urdu first names. *Summer Phonology Forum 2018*. University of Toronto. [5] Monaghan, P., Shillcock, R. C., Christiansen, M. H., Kirby, S. 2014. How arbitrary is language? *Phil. Trans. R. Soc. B* 369. [6] R Core Team, 2016. *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing Vienna, Austria. [7] de Saussure, F. 1916. *Course in General Linguistics*. [8] Shinohara, K., Kawahara, S. 2013. The sound symbolic nature of Japanese maid names. *Proceeding of the 13th meeting of Japanese Cognitive Linguistics Association* 183–193. [9] Sidhu, D. M., Pexman, P. M. 2015. What's in a name? sound symbolism and gender in first names. *PLoS ONE* 10(5), 1–22. [10] Sullivan, L. 2018. Phonology of gender in french and english given names. Master's thesis. University of Toronto. [11] Wong, K., Kang, Y. in prep. Phonology of gender in cantonese first names. Manuscript in preparation.