French speakers' use of sound symbolic patterns to assign gender to French and English nonce names

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Introduction

- Traditionally, the relationship between form & meaning is seen as arbitrary [4]
- More recently, research suggests sound symbolism is more common than previously assumed [2,5]
- Phonology of given names may encode information about gender [5]

Gender-based Sound Patterns in Given Names

- **Corpus studies** document gender-based sound symbolic patterns in given names in several languages (e.g. English, French, Korean, Cantonese, Urdu, Russian, Tamil, Armenian, German, Japanese, Mandarin, Turkish, Bulgarian, Danish, Hebrew, Hungarian, Polish, Romanian, Spanish; see [9] for a summary)
- The table below shows a selection of patterns in Canadian English and French names [6] (**EN**, **FR**= sig. @ p<0.05; EN, FR = n.s. trend)

Language	Factor	Pattern	Female Example	Male Example
EN, **FR**	**Length (Syllables)**	F > M	É.mi.lie (**3**)	Jo.seph (**2**)
EN, **FR**	Open **Final Syllable Type**	F > M	Émi**lie** (Open)	Jo**seph** (Closed)
EN, **FR**	**Back Vowels**	F < M	Émilie (0)	J**o**seph (1)
EN, **FR**	**/l,m,n/ Consonants**	F > M	É**m**i**l**ie (2)	Joseph (0)
EN	**Non-initial Stress**	F > M	Sa**man**tha (Y)	**Jo**seph (N)
FR	**Nasal Vowels**	F < M	Jeanne /ʒɑn/ (N)	Jean /ʒɑ̃/ (Y)

- **Experimental work** with name-gendering experiments shows that many, but not all of these patterns are used to assign gender to nonce names in listeners' native and non-native languages (see [8] for a summary)
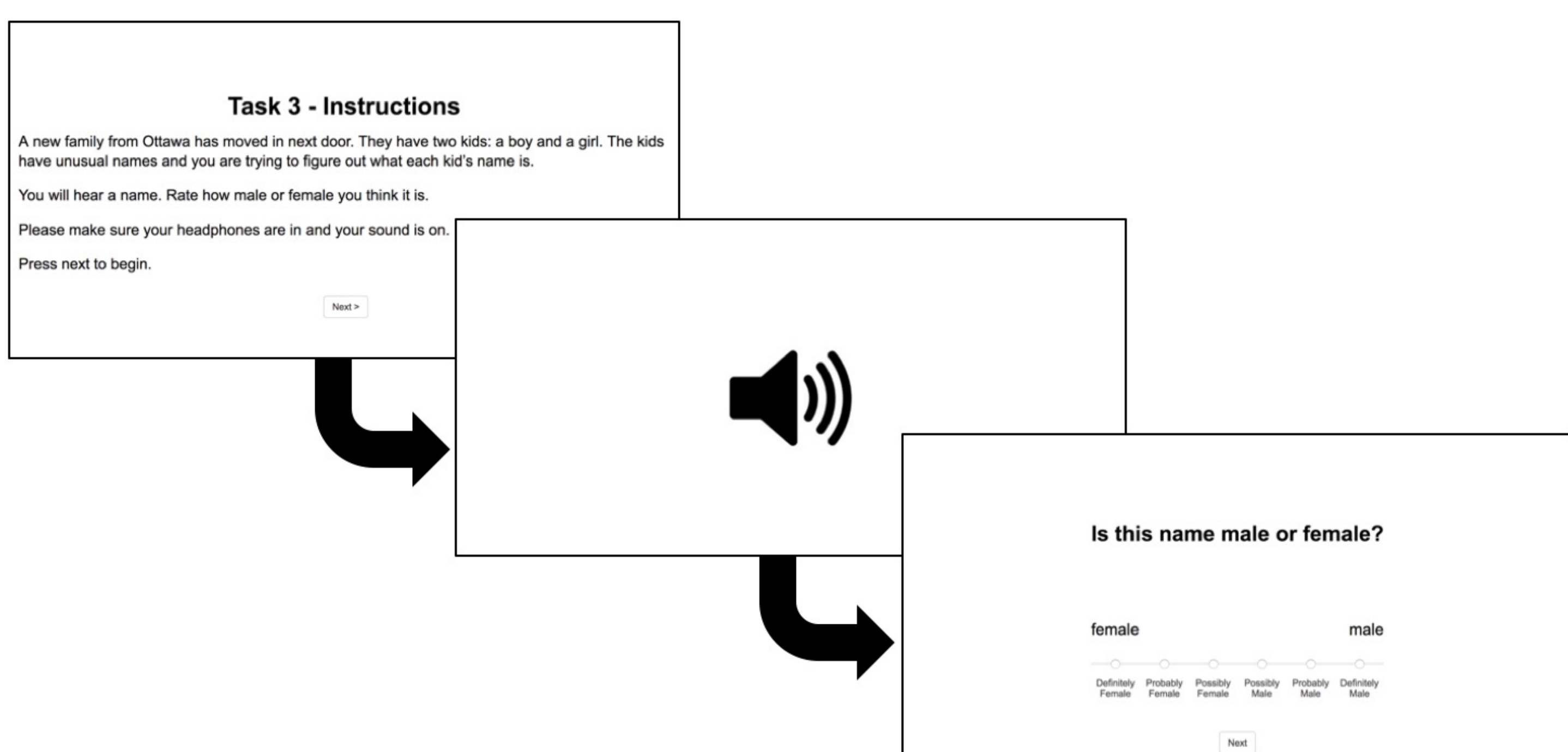
Current Study

- **Extend experimental work to French listeners** (i.e. native French speakers)
- **Question**: (How) do French listeners use sound patterns to assign gender to nonce-names in French and in English?
- **Hypotheses**:
  1. **Phonological Factors**: Experimental results mirror corpus results
  2. **Name Language**: Similar results for English and French names
  3. **Listener Language**: Similar results for English [7] and French participants
- **Methodology**: Name gendering experiment [7,8] where native French and English speakers assign gender to French and English nonce names

Methods

- **Participants**: 16 monolingual French & 18 monolingual English speakers
- **Stimuli**: 20 minimal pairs (2 pairs for each factor, in each language) + 4 training items = 44 nonce names

| Lang.	Factor	Female Bias	Example	Male Bias	Example
EN, FR	**Number of Syllables**	CV.[və].CV	[lɛ.və.to]	**CV.CV**	[lɛ.to]
EN, FR	**Final Syllable Type**	CVCV	[vɑdi]	**CVCV[v]**	[vɑdiv]
EN, FR	**Vowel Backness**	CV[-back]CV	[nukɑ]	**CV[+back]CV**	[nikɑ]
EN, FR	**Consonant Sonority**	CV[l]V	[bole]	**CVC[-son]V**	[boze]
EN	**Stress Placement**	CV'CV	[be'vo]	**'CVCV**	['bevo]
FR	**Vowel Nasality**	CVCV	[ɡɑsi]	**CV[+nasal]CV**	[ɡɑ̃si]

- Recorded by female native speakers of Canadian French and English
- **Procedure**: Listeners heard each stimulus item and rated whether they thought it was male or female on a 6-point scale
  - 1 block for each language; blocks were counterbalanced

Task 3 - Instructions
A new family from Ottawa has moved in next door. They have two kids: a boy and a girl. The kids have unusual names and you are trying to figure out what each kid's name is.
You will hear a name. Rate how male or female you think it is.
Please make sure your headphones are in and your sound is on.
Press next to begin.

Next >

Is this name male or female?

female   male

Definitely / Probably / Possibly / Possibly / Probably / Definitely
Female / Female / Female / Male / Male / Male

Next

- **Analysis**: The rating scale was converted to a numerical scale (1: most female → 6 most male); Mixed effects linear regression models were built in R [3] using lmer() [1] for each factor: Rating~Gender Bias*Name Language*Listener Language +(1|Minimal Pair)+(1|Participant)

Results

Mean Rating by Phonological Factor, Name Language, & Listener Language

Participant's Native Language
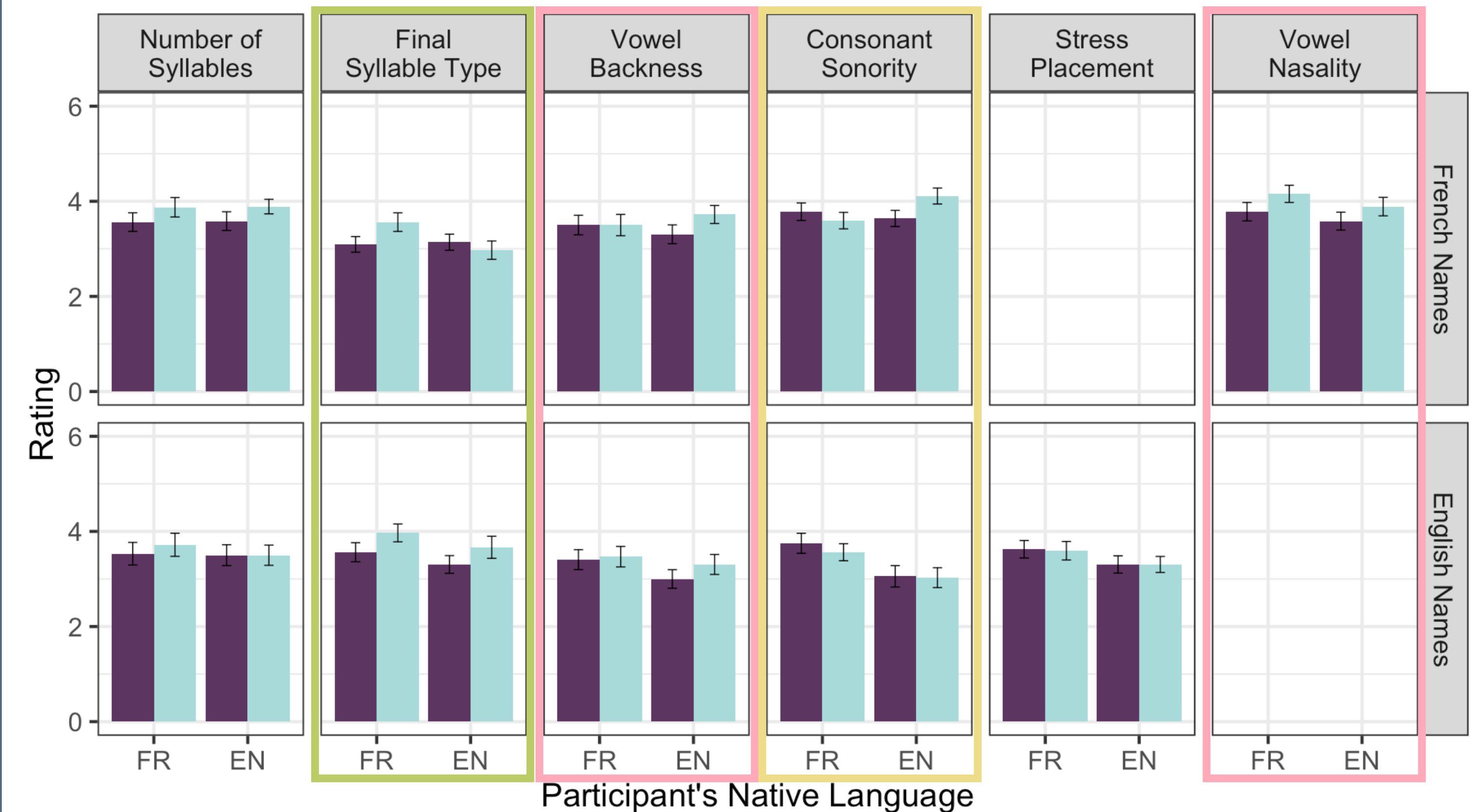
Ratings range from 1 (most female) to 6 (most male)

GenderBias: F / M

Error bars represent the standard error.

Factor	Significant Effects	Interpretation
Number of Syllables	None	
Final Syllable Type	Gender Bias ($\beta = 0.27$; **p = 0.03**)	Male-biased names received more male ratings than female-biased names
	Name Lang ($\beta = -0.43$; p = 0.08)	French names received more female ratings overall than English names
Vowel Backness	Gender Bias ($\beta = 0.20$; p = 0.08)	Male-biased names received more male ratings than female-biased names
Consonant Sonority	Name Lg*Listener Lg ($\beta = -0.80$; **p = 0.001**)	Only English listeners rating French names rate male-biased names as more male than female-biased names
Stress Placement	None	
Vowel Nasality	Gender Bias ($\beta = 0.34$; p = 0.05)	Male-biased names received more male ratings than female-biased names

Discussion & Conclusion

- Gender bias patterns in the expected direction for 3/6 factors: final syllable type, vowel backness & vowel nasality.
  - Only significant for final syllable type, despite this factor not being significant in the French corpus, contrary to H1
  - However, no factors are significant in the unexpected direction, which supports H1
  - Suggests the factors speakers are attuned to may differ from those that are most prominent in the corpus or that another factor may be implicated in this result (e.g. closing the final syllable decreases the proportion of open syllables, which is a significant factor in the French corpus [6])
- Name language and listener language do not play a major role in ratings as hypothesized in H2 & H3
  - Suggests French and English listeners use phonological factors in similar ways to assign gender to nonce names
  - Differs from results for English speakers' responses to Korean names [8], suggesting that familiarity may be a factor here
- While the results aren't conclusive, they are consistent with previous studies (e.g. [7,8]) finding speakers use some, but not all factors, to assign gender to names and adds to a growing body of literature suggesting that gender-based sound symbolic patterns is present in given names, and that these patterns are active in speakers' minds and available for use

Select References
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