Gendered sound symbolism in Urdu names interacts with gender morphology

Introduction   A recent turn in sound symbolism research suggests that names exhibit gendered sound symbolism, finding certain sounds are associated with feminine names and others with masculine names in English (Slater & Feinman 1985; Cutler, McQueen, & Robinson 1990; Lieberson & Bell 1992; Barry & Harper 1995; Pitcher, Mesoudi, & McElligott 2013) and cross-linguistically (Kang 2021; Ackermann & Zimmer 2021). For example, sonorants are a robust feminine cue (Kang 2021). While some argue this is evidence for universal, synesthetic sound symbolism (e.g. Cutler, McQueen, & Robinson 1990; Oelkers 2003), others maintain that these sound-meaning associations are conventionalized and language-specific (e.g. Cassidy, Kelly, & Sharoni 1999; Hough 2000; see discussion in Nübling 2009).

This study examines how gendered sound symbolism behaves in names with and without feminine suffixes in Urdu names. Previous research found feminine names not to have significantly more sonorants in Urdu. Instead, masculine names were found to have fewer and heavier syllables than feminine names (Mohsin & Kang 2018).

The presence of a feminine suffix affects the phonological makeup of a name, increasing its length, changing syllable weights, and so on. To account for these confounding effects, previous studies have removed gendered suffixes (as in Kang 2021) or treated all final segments separately (as in Ackermann & Zimmer 2021). These methods work under the assumption that phonological cues for gender behave uniformly across names with and without gendered morphology. For example, if sonorants are feminine, feminine names both with and without feminine suffixes should have more sonorants than masculine names.

However, while phonological qualities may serve as cues for gender, a feminine suffix is decidedly a stronger one. Names with morphological gender markers could conceivably pattern differently from names without, since the morphological cue fills the communicative function of gendered sound symbolism (see Oelkers 2003).

Methods   The 102 most popular boys' names and 101 most popular girls' names were collected from matriculation results for the Board of Intermediate and Secondary Education (2022) in Gujranwala, Pakistan. They were coded for length in SYLLABLES; proportions of LIGHT SYLLABLES, SONORANTS, HIGH VOWELS, FRONT VOWELS, and PALATAL CONSONANTS; GENDER (F or M); and APPARENT MORPHOLOGY, which marks whether a name's ending resembles one of several feminine morphemes present in Urdu names.

A binary logistic regression model was created in *R* using *RStudio* (R Core Team 2023; Posit team 2023), predicting GENDER from APPARENT MORPHOLOGY, all phonological variables, and their interactions. Insignificant predictors were procedurally elimiated using the Akaike Information Criterion with *buildmer* package (Voeten 2023).

Results & Discussion   As Figure 1 shows, for names without APPARENT MORPHOLOGY, sonorant proportions are higher for feminine names than masculine names, as predicted. This is not true, however, of names with APPARENT MORPHOLOGY. Table 1 demonstrates that this is a significant difference.

For names without feminine morphological markers, more sonorants makes a name more likely to be feminine ($p < 0.01$), which significantly differs from names with morphology ($p < 0.05$). A

post-hoc chi-squared test with the phia package (De Rosario-Martinez 2015) shows no significant effect of SONORANTS in names with feminine morphology (p = 0.664), matching our prediction that morphology achieves the communicative function of gendered sound symbolism.

Our finding in Urdu names demonstrate that in the debate around universal, synesthetic sound symbolism, meaningful morphological markers present a challenging confound that can obscure active phonological cues. This opens the door for cross-linguistic and empirical research methods to test the synchronicity and robustness of such results. Future research should take these interaction effects into account.

Figure 1: Relative average sonorant proportions by presence of morphology and gender.
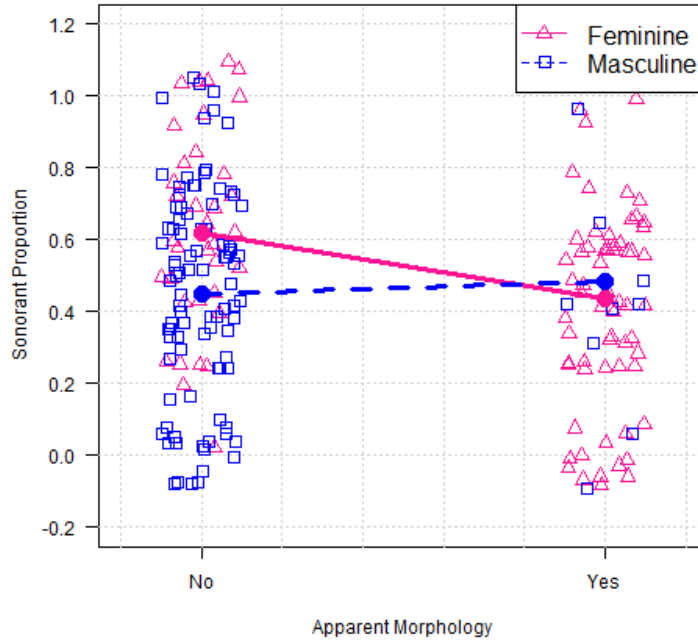

Table 1: Predictors and coefficients for binary logistic regression model predicting gender. A negative output is feminine.

	Coefficient	Std. Error	Z value	$\Pr(> |Z|)$
(Intercept)	1.0443	0.2163	4.827	1.38e−6***
APPARENT MORPHOLOGY	−6.7789	286.5978	−0.024	0.98113
SONORANTS	−2.2891	0.7779	−2.943	0.00325**
PALATALS	−1.2661	1.4150	−0.895	0.37091
APP MORPH:SON	2.8054	1.4189	1.977	0.04802*
APP MORPH:PAL	−47.4993	3262.3920	−0.015	0.98838
Log Likelihood		-96.73		
Akaike Information Criterion		205.46		

Significance codes: *p < 0.05; **p < 0.01; ***p < 0.001

References

Ackermann, Tanja & Christian Zimmer. 2021. The sound of gender – correlations of name phonology and gender across languages. *Linguistics* 59(4). 1143–1177.

Barry, Herbert, III & Aylene S. Harper. 1995. Increased choice of female phonetic attributes in first names. *Sex Roles* 32(11/12). 809–819.

Board of Intermediate and Secondary Education. 2022. *Secondary School Certificate Second Annual Examination Result Gazette*. `https://bisegrw.edu.pk/result-gazatte.html`. Gujranwala, Pakistan.

Cassidy, Kimberly Wright, Michael H. Kelly, & Lee'at J. Sharoni. 1999. Inferring gender from name phonology. *Journal of Experimental Psychology* 128(3). 362–381.

Cutler, Anne, James McQueen, & Ken Robinson. 1990. Elizabeth and John: Sound patterns of men's and women's names. *Journal of Linguistics* 26(2). 471–482.

De Rosario-Martinez, Helios. 2015. *phia: Post-Hoc Interaction Analysis*. R package version 0.2-1. URL `https://CRAN.R-project.org/package=phia`.

Hough, Carole. 2000. Towards an explanation of phonetic differentiation in masculine and feminine personal names. *Journal of Linguistics* 36. 1–11.

Kang, Yoonjung. 2021. Phonology of gender in personal names. Colloquium speaker. Department of Linguistics, University of Southern California.

Lieberson, Stanley & Eleanor O. Bell. 1992. Children's first names: An empirical study of social taste. *American Journal of Sociology* 98(3). 511–54.

Mohsin, Nazia & Yoonjung Kang. 2018. Gender phonology of Urdu first names. Summer Phonology Forum 2018. University of Toronto.

Nübling, Damaris. 2009. Von Monika zu Mia, von Norbert zu Noah: Zur Androgynisierung der Rufnamen seit 1945 auf prosodisch-phonologischer Ebene. *Beiträge zur Namenforschung* 44. 67–110.

Oelkers, Susanne. 2003. *Naming gender: Empirische Untersuchungen zur phonologischen Struktur von Vornamen im Deutschen*. Frankfurt am Main: Lang.

Pitcher, Benjamin J., Alex Mesoudi, & Alan G. McElligott. 2013. Sex-biased sound symbolism in English-language first names. *PLOS ONE* 8(6). 1–6.

Posit team. 2023. *RStudio: Integrated Development Environment for R*. Posit Software, PBC. Boston, MA. URL `http://www.posit.co/`.

R Core Team. 2023. *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing. Vienna, Austria. URL `https://www.R-project.org/`.

Slater, Anne Saxon & Saul Feinman. 1985. Gender and the phonology of North American first names. *Sex Roles* 13(7/8). 429–440.

Voeten, Cesko C. 2023. *buildmer: Stepwise Elimination and Term Reordering for Mixed-Effects Regression*. R package version 2.9. URL `https://CRAN.R-project.org/package=buildmer`.