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SYNOPSIS This study is a case study of sound symbolism (Hinton et al. 1994; Sapir 1929), and focuses on sound symbolic patterns in names (Cassidy et al. 1999; Cutler et al. 1990; Whissell 2001). Previous studies have shown that in English, obstruents are more likely to be used for male names, while sonorants are more likely to be used for female names (Slater & Feinman 1985; Wright et al. 2005). Experiment I confirmed the productivity of this correlation using nonce words. Building on this result, Experiment II explored the (psycho)acoustic bases of this correlation using non-speech stimuli. The results show that square waves and white noise are more often associated with male names than sine waves. We thus conclude that there is a sound symbolic relationship between abrupt amplitude changes and masculinity.

EXPERIMENT I: METHOD The experiment was a forced-choice task in which listeners were presented with a sound and asked to judge whether the stimulus sounds like a male name or a female name in a language that they were not familiar with. The stimuli were all disyllabic words. The first and second consonants were independently varied between obstruents and sonorants, resulting in four conditions. Within each condition, we controlled for vowel quality and prepared 20 items each. Each stimulus was pronounced three times by two native speakers of English. The stimuli were resynthesized with uniform F0 contours and amplitudes. 25 English listeners judged whether each stimulus was a male name or a female name in a sound-attenuated room.

EXPERIMENT I: RESULT AND DISCUSSION Figure 1 shows the percentages of male responses. We observe that obstruents in each syllable increase male responses. Statistically, a logistic linear mixed model regression shows that obstruents significantly increase male responses in initial ($z = -4.45, p < .001$) and second ($z = -6.51, p < .001$) syllables. The current result thus confirms the productivity of the sound symbolic relationship between obstruents and male names.

EXPERIMENT II: METHOD The second experiment investigated the acoustic bases of the association between obstruents and male names. Two possibilities exist for the source of masculinity of obstruents: aperiodicity or abrupt amplitude changes of obstruents. To tease apart these two possibilities, the experiment presented English speakers with sine waves (periodic, gradual amplitude change), square waves (periodic, abrupt amplitude change), and white noise (aperiodic, abrupt amplitude change). We in addition varied the frequencies of sine waves and square waves to investigate whether fundamental frequencies affect the perception of masculinity (cf. Ohala 1994). Experiment II was conducted after Experiment I with the same participants.

EXPERIMENT II: RESULT AND DISCUSSION Figure 2 shows the percentages of male responses. Square waves and white noise were more likely to be associated with male names than sine waves ($z = 4.09, p < .001$ and $z = 6.61, p < .001$). In addition, sine and square waves with lower frequencies were more likely to be associated with male names ($z = -3.70, p < .001$).

SUMMARY Experiment I shows that English speakers associate obstruents with male names. Experiment II shows that non-speech sounds that involve abrupt amplitude changes are associated with male names. We thus conclude that there is a sound symbolic relation between male names and abrupt amplitude changes. One general implication of this study is that non-speech sounds can evoke certain semantic meanings, exemplifying an acoustic-based, rather than articulatory-based, sound symbolic pattern (Brown 1958; Ohala 1983, 1994; cf. Boyle & Tarte 1980).

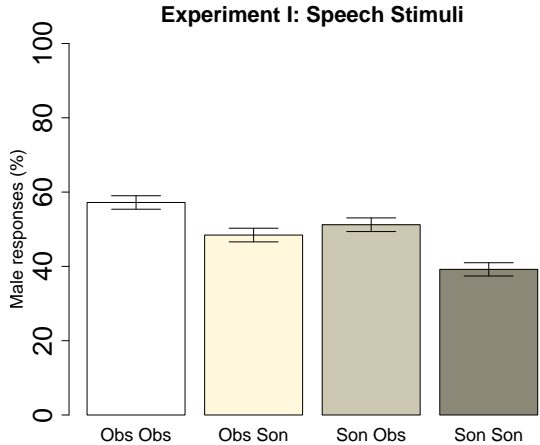


Figure 1: The percentages of male responses: Speech stimuli. The error bars are 95% CIs.

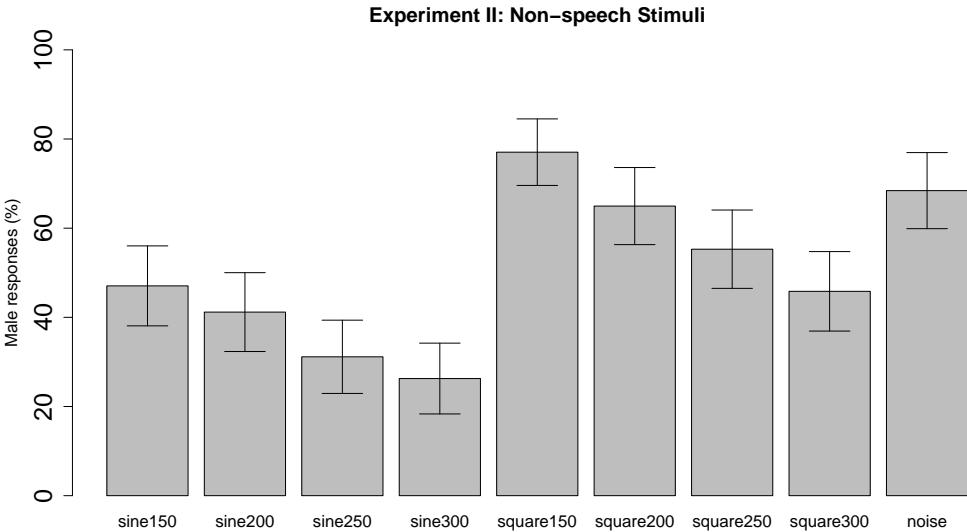


Figure 2: The percentages of male responses: Non-speech stimuli.