SOLAB

Sound-Space Mappings in Italian: Effects of Vocal Tract and Tongue Positioning

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Abstract

Sound symbolism research demonstrates systematic associations between phonemes and spatial concepts. This study investigated whether spatial associations exist for Italian vowels /a/ and /u/, and whether consonants /b/ and /g/ show differential spatial mappings across vertical versus horizontal response dimensions. Eighteen participants completed color discrimination tasks for vowels and consonants in separate blocks. They pressed response buttons corresponding to the ink color of the letters (yellow/blue) in two conditions: A silent task (manual responses) and an overt task (manual responses and letter reading). The yellow and blue response keys were positioned up/down for vowels and both up/down and forward/backward for consonants. Repeated measures ANOVAs on response times (RTs) and percentage errors (PEs) were conducted with space-sound congruency (congruent vs. incongruent) and task type (silent vs. overt) for vowels, and with these factors plus response arrangements (vertical vs. horizontal) for consonants. Both RTs and PEs showed spatial-phonetic effects for vowels, with /a/ faster/more accurate for upper responses and /u/ for lower responses. For consonants, which were presented as syllables ("ba" and "ga"), RTs revealed spatial-phonetic effects with faster /b/-forward and /b/-down for horizontal and vertical arrangements, respectively, with these effects limited to /b/. PEs showed larger spatial-phonetic effects in silent tasks. The study reveals complex spatial-phonetic associations that differ from previous findings, suggesting that sound-space mappings may be influenced by articulatory features (i.e., vocal tract length and front-back tongue positioning. While speculative, these results raise the possibility that such associations could be language-specific, a hypothesis that awaits further investigation.

Keywords: Sound symbolism, Spatial cognition, Phonetics, Response congruency

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