

Iconicity—the resemblance between form and meaning—is increasingly being recognized as an important feature of language (Dingemanse et al., 2015; Perniss et al., 2010), including in formal approaches to phonology (e.g., Alderete & Kochetov, 2017). Among other things, this work has shown that specific sounds are statistically over-represented in words with certain meanings, such as /i/ in words for ‘small’ (e.g., Johansson et al., 2019). Here, we investigate the iconic potential of rhotics. We had previously shown that trilled /r/ is more common in translational equivalents of the textural descriptor ‘rough’ across 300+ languages from 80 families (Winter et al., 2022). In addition, an experiment conducted with 1,000 participants from 28 languages and 12 families showed that people reliably match auditorily presented alveolar trills to rough/jagged lines over smooth ones (Ćwiek et al., 2024). Building on these findings, we present two new studies. The first one is targeted on the stable meanings of /ɹ/ sounds in the English lexicon; the second one looks at phonetic modulation of these sounds in conventional words. First, we conducted a quantitative analysis of English to examine the distribution of /ɹ/ in the lexicon, using roughness ratings for textural adjectives (Stadtlander & Murdoch, 2000) and the Carnegie Mellon University (CMU) Pronunciation Dictionary. Using a resampling approach, we created bootstrap samples of touch adjectives to derive 95% intervals for the relative frequency of /ɹ/ in words rated high on roughness (e.g., ‘abrasive’, ‘prickly’, ‘rugged’, ‘rocky’). The relative frequency in these words (47%, CI: [35%, 42%]) far exceeds what is observed for ‘smooth’ words (10%) and the general vocabulary using the entire CMU as a baseline (10%). Compared to /ɹ/, no other sound shows as strong a difference between touch and baseline vocabulary, suggesting that the sound may serve special functions in this corner of the lexicon. As we previously showed that the association of rhotics and roughness can be traced all the way back to Proto-Indo-European (Winter et al., 2022), we speculate that this pattern in the lexicon may have formed when the sound was still a trill. Interestingly, our second analysis uses a range of qualitative examples from various media (ads, films, music) to show that even in languages that do not have a trill as a primary variant, trilling surfaces during the dynamic modification of words to achieve iconic effects. For example, the American advertisement slogan “Rrrrruffles have ridges” employs exaggerated trills to evoke the texture of crisps, and in *Lord of the Rings*, Golumn iconically modulates

“rrrrrrraw and wrrrrriggling”. Similarly, the Japanese singer Sheena Ringo uses aggressive trilled /r/ sounds in her rock music to underscore her edgy persona, and trills have been associated with yakuza “gangster speech” (Calvetti, 2020). The fact that non-trill rhotics are converted to trills in clearly expressive contexts highlights the iconic potential of this sound, which serves as the likely explanation of its over-representation in words meaning ‘rough’ in English and other languages.

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Title

Rhotics and iconicity: The expressive power of /r/