EARLY LEARNED WORDS ARE MORE ICONIC

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Laboratory studies show that iconicity, the correspondence between form and meaning, can help young children to learn and generalize the meanings of new words (Imai, Kita, Nagumo, & Okada, 2008). These findings suggest that iconicity may serve an important function in language acquisition by jumpstarting early word learning (Imai & Kita, 2014). This mechanism has important implications for language evolution: Because languages evolve to be learnable by children (Christiansen & Chater, 2008), if iconicity is an aid to word-learning, early-learned words should be more iconic.

Recently, Perry et al. (2015) asked speakers of English and Spanish to rate the iconicity of ~600 words in their respective language (see also a study with British Sign Language: Vinson, Cormier, Denmark, Schembri, & Vigliocco, 2008). They found that iconicity predicted age of acquisition (AoA), even after controlling for a number of related factors. In the current paper, we ask *why* such

a relationship might exist and what consequences it has for our understanding of language evolution.

We asked English-speaking participants to rate the iconicity of 1,952 English words. 705 participants rated 25-26 words each. These iconicity ratings predict AoA: words rated as more iconic are acquired earlier even when we control for word frequency and systematicity (from Monaghan, Shillcock, Christiansen, & Kirby, 2014). Systematicity measures language-internal regularities between words' forms and meanings, which is in theory, independent of iconicity. In support of this distinction, we found that iconicity is not correlated with systematicity, and iconicity explains more variance in AoA than systematicity.

Next, we compared children's production frequencies (from CHILDES) to adult's production frequencies (from SUBTLEX), yielding a measure of how much a word is used by children compared to adults (e.g., "spoon" is used more by children; "before" more by adults). More iconic words were more likely to be used by children (above and beyond systematicity). In a related finding, words increasing in frequency over development were relatively *less* iconic, while those decreasing in frequency were relatively *more* iconic, showing that more mature vocabularies become increasingly dominated by arbitrary words.

Our findings suggest iconicity is not distributed equally across the lexicon but specifically characterizes early-learned words. Given the experimental evidence that iconicity aids word learning, this is exactly the distribution we would expect in a lexicon that is adapted to fit the cognitive systems of its users.

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