

# Study: Word sounds contain clues for language learners

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(PhysOrg.com) -- Why do words sound the way they do? For over a century, it has been a central tenet of linguistic theory that there is a completely arbitrary relationship between how a word sounds and what it means.

"Arbitrariness is in part what makes it hard to learn words in a new [language](#)," says Morten Christiansen, professor of psychology and co-director of the Cornell Cognitive Science Program. "Even though the meaning of our concepts stays roughly the same across languages, the words for them can vary quite dramatically. For example, we refer to canine pets in English with the sound 'dog.' Whereas Danish speakers say *hund* and the French *chien*."

This summer, Christiansen organized a symposium at a [language acquisition](#) conference in Montreal where evidence showed that some systematic sound-to-meaning correspondences do exist. For instance, toddlers consistently matched rounded vowels, such as "koko," to rounded shapes and non-rounded vowels, such as "kiki," to jagged shapes.

"Such systematic relationships between sound and meaning make it easier to figure out what the rough meaning of a word is," said Christiansen. "So, from a learning perspective, it's paradoxical that most words have an arbitrary sound-to-meaning relationship."

A study published by Christiansen and two colleagues in the August

[Journal of Experimental Psychology](#): General provides new insight into this paradox. They uncovered a trade-off between arbitrariness and "systematicity" within the sound of words.

"One group of subjects were asked to learn novel words for objects and actions with a completely arbitrary sound-meaning relationship; another group learned words with systematic relationships; a third group had to learn words whose beginnings were arbitrary but their endings were systematic," Christiansen said. "We found that learners who were exposed to words incorporating a trade-off between arbitrariness and systematicity were not only better at remembering the correct meaning of a word but also better at determining which category it belonged to: object or action."

The researchers further confirmed that words in French and English have the same mix of arbitrariness and systematicity in their sound patterns.

"We've shown that the sound of a word reflects the best of both worlds," said Christiansen. "By having arbitrariness at the beginning of a word, the sound becomes unique more quickly. This makes it easier and faster for people to determine its exact meaning, whereas the ends of a word are then free to incorporate systematic information about the role that word plays in a sentence."

If a word's sound indicates how it might be used -- for example, as a noun or a verb -- it makes it easier for children learning language to use that word.

"Our prior research showed that there are, in fact, differences in the sounds of nouns and verbs and that people are sensitive to this when learning and using a language," said Christiansen, who demonstrated that nouns and verbs sound differently, and that this is true across English,

Japanese and French. "These sound differences are quite subtle; you won't consciously be aware of such differences even though your behavior shows that you're actually sensitive to them.

"Each language has a constellation of sound cues that allow a child to make some initial guesses about whether a new word was a noun or a verb. We were able to show that, indeed, children could use the [sound](#) properties of the [words](#) when they were making these initial guesses," he added.

"Children acquiring their first language already use this information as an important information source. Thus, teachers don't have to stress this. However, it might be useful for second-language learners to have such information highlighted," said Christiansen.

Provided by Cornell University

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