

How our brains influence language change

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Our language is changing constantly. Researchers of the University of Vienna found that, over centuries, frequently occurring speech sound patterns get even more frequent. The reason for this development is that our brain can perceive, process and learn frequent, and thus prototypical sound patterns more easily than less frequent ones. The results of the

study were published in the journal *Cognitive Linguistics*.

Languages from the past are very different from today's languages. This is not only true for their vocabulary and grammar, but also for their [speech sounds](#). Theresa Matzinger and Nikolaus Ritt from the Department of English at the University of Vienna investigated which factors were responsible for these sound changes and what such sound changes can tell us about processing capacities of our brains.

People prefer those speech patterns that occur frequently

For example, in the Early Middle Ages, the English word make was pronounced as "ma-ke" (with two syllables and a short "a" similar to the vowel in cut), whereas in the Late Middle Ages, it was pronounced as "maak" (with one syllable and a long "a" similar to the vowel in father). Many Middle English words lost their second syllable and lengthened their vowel like it happened for the word make. But what was the reason for this lengthening of vowels in words that lost their second syllable?

To explore this, Matzinger and Ritt analyzed more than 40,000 words from English texts from the Early Middle Ages. They determined their vowel lengths by, for example, using dictionaries or taking neighboring sounds into account. Then, they counted the occurrence frequencies of words with long and short vowels. They found that the majority of monosyllabic Middle English words had long vowels and only a minority had short vowels. "This means that, when speakers pronounced monosyllabic words with a short vowel, those words sounded 'strange' and were not recognized clearly and quickly by listeners because they did not fit the prototypical [sound patterns](#) that listeners were used to. In contrast, words that fitted the prototypical sound patterns with a long [vowel](#), could be processed by the brain more easily," explains Matzinger

who currently works as a visiting researcher at the University of Toruń.

Language change works like a telephone game

Over centuries, the easier processibility and learnability of monosyllabic words with long vowels influenced that more and more monosyllabic words got long vowels. "One can imagine language change like a telephone game," says Matzinger. "One generation of speakers speaks a particular language variety. The children of this generation perceive, process and acquire frequent patterns from their parents' generation more easily than less frequent ones and therefore use those patterns even more frequently. This second generation of speakers then transmits a slightly changed language to their own children." We also notice this gradual language change by the fact that our grandparents, ourselves and our children speak slightly differently.

However, if this process happens over many generations and over centuries, language changes so much that past varieties are hard to understand for people today. "In our study, we showed that the general capacity of our brain to preferentially perceive and learn frequent patterns is an important factor that influences how languages change," summarizes Matzinger. One next step in investigating the influence of the brain on [language change](#) will be to investigate the frequencies of sound patterns during other language changes and in other languages than English.

More information: Theresa Matzinger et al, Phonotactically probable word shapes represent attractors in the cultural evolution of sound patterns, *Cognitive Linguistics* (2022). [DOI: 10.1515/cog-2021-0087](https://doi.org/10.1515/cog-2021-0087)

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