

## **The effects of in- and outward articulation dynamics**

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Two of the most ubiquitous human motor behaviors are related to oral movements, namely ingestion and language. To articulate different consonants (e.g., B or K) the tongue and lips are pressed against various spots in the mouth (e.g., lips, palate and rear). Topolinski et al. (2014) found that words that feature consonantal stricture spots wandering from the lips to the rear of the mouth, this is, inwards (e.g., BENOKA) are liked more than words with outward wanderings (e.g., KENOBA), possibly because they resemble the oral kinematics during ingestion (swallowing-like, inward movement) or expectoration (spitting-like, outward movement). The articulation of inward and outward words might induce motivational states associated with deglutition and expectoration, namely approach and avoidance. Results showed that inward words were preferred over outward words, being labelled as nonsense words, company names, or person names, with control words falling in between. To further examine this preference we tested the hypothesis that language itself features articulation inward dynamics more frequently, presumably because this direction is similar to positive ingestion movements. Thus, inward-words feel more familiar than outward-words, as inward moving dynamics are better trained, which in turn triggers positive affect. To test this idea we analyzed the 10.000 most frequently used words in English, German, Spanish, Hungarian and Mandarin. Analyzes revealed that in fact language shows a systematic wandering of consonantal stricture spots, namely inwards. These findings stimulate the ongoing debate on language evolution by demonstrating a close link between verbal articulation- and ingestion dynamics.

Another interesting question concerns the impact of inward vs. outward wanderings in words on memory. First results found that participants indeed showed better recognition of inward words in that they identified them more often as having been previously presented, whereas there was no difference in the response toward new in- or outward words. To further explore whether the results reflect a true memory advantage or rather a bias to judge inward words as previously seen because of a general feeling of familiarity, a second experiment repeated the first one with the only difference that the later presented target words were actually all new, so no real recognition was possible. Under these circumstances, the effects vanished completely; there even was a trend toward more correct rejections of new inward compared to outward words, indicating a memory advantage rather than a bias for inward words.