

Grammatical category in the neural representation of derived forms: Evidence from Italian.

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Grammatical category plays an important role in word formation processes, which typically modify both meaning and grammatical properties of existing words by combining them with derivational affixes. Here we investigate how grammatical category affects the neurocognitive representations of derivationally complex forms focusing on the distributional contrast in Italian between denominal and deverbal derivational mechanisms. Denominal derivation combines independent lexemes (e.g. pin-o “pine”) with suffixes (e.g., pin-eta “pine forest”), triggering cohort competition between the derived form and its embedded stem. Conversely, deverbal derivation employs verbal roots, abstract morphemes which surface as separate lexemes only when combined with suffixes (e.g.: parlatore, “talker”, from verbal root: parl-, “to speak” plus thematic vowel -a-, agentive suffix -tor- and inflectional ending -e). These combinatorial differences predict reduced cohort competition effects for deverbal forms, typically reflected by bilateral temporal lobe activations, and higher demand of grammatical decomposition engaging the left-lateralised language system.

We recorded fMRI responses to 320 Italian denominal and deverbal derived words (auditorily presented in a listening task), co-varying semantic transparency and morphological productivity across four conditions.

Combined univariate and multivariate pattern analyses revealed that, in semantically opaque productive forms, increased semantic relatedness produced stronger bilateral temporal activation to denominal forms, but weaker activation to deverbal forms. This dissociation suggests that semantic relatedness between derived words and their embedded stems differentially modulates cohort-based perceptual conflict within the denominal and deverbal sets. Increased semantic relatedness in opaque denominal forms would add to the processing complexity of discriminating the two lexemes involved. In contrast, increased semantic relatedness between the verbal root and the deverbal derived word may increase representational overlap between the two forms, reducing cohort competition.

These results suggest that the neural representation of derived forms in the language system is highly sensitive to grammatical category.

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