

Semantics, orthography and/or morphology in relatedness judgement?

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When people indicate the relation between two words in a relatedness judgement task, they are typically asked to rely on semantic information [1]. These word relations can be plotted in a network reflecting the organization of words in the mind [1]. In such organization, orthography and/or morphology may also play a role [2, 3]. The aim of the present study was to understand what information (i.e., semantics, orthography, morphology) people use in relatedness judgement tasks when prompted for specific types of information compared to when no specific instructions are provided.

Native speakers of Dutch ($N = 120$, aged 18-35 years old) were divided into four instruction-based groups. Each group rated the relatedness of word pairs on a scale from 0 to 100 based on one particular instruction targeting semantics, orthography, or morphology, or without further specification (i.e., unspecified). Four word relation types were used in the stimuli: semantically-related, orthographically-related, morphologically-related or unrelated words (see Examples). Weighted undirected networks were constructed with words as nodes and ratings as edges (see Figure 1).

A significant interaction between instruction and word relation ($\chi^2(9) = 464.03$, $p < .001$) revealed that people attributed stronger ratings to word relations that matched the instructions. Importantly, people rated orthographically-related words significantly higher under unspecified than under semantic instructions ($SE = 3.08$, $t(9989) = -3.31$, $p = .006$). Also, they provided lower ratings for unrelated word pairs under morphological instructions compared to all other instructions ($SE = 1.94$, $t(9989) = -6.45$ - -4.24 , $p < .001$). Structurally, unspecified networks differed significantly from semantic ($W = 657$, $p = .01$) but not orthographic networks ($W = 575$, $p = .39$).

These results suggest that people access semantic but also orthographic and morphological information when determining the relatedness of words. The effects can be modulated by prompting participants with different instructions. Still, access to information beyond semantics (i.e., orthography) remains when no instructions are provided, reflecting the interaction of word relations in the mind.

[1] Mathias Benedek, Yoed N. Kenett, Konstantin Umdasch, David Anaki, Miriam Faust, & Aljoscha C. Neubauer. How semantic memory structure and intelligence contribute to creative thought: A network science approach. *Thinking & Reasoning*, 23(2), 158-183, 2017.

[3] Adrià Rofes, Elisabeth Beyersmann, Alessia Rossetto, & Nichol Castro. Limited evidence of morphology in semantic and phonological free association tasks. *Language and Cognition*, 18, Article e15, 2026.

Examples of words used in the Dutch relatedness judgement task:

- ## Figures

