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Semantic, not positional distances between words affect processing difficulty for sentences with relative clauses

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Abstract: Linearly organized structures in language are supposed to be easy, while hierarchical information is difficult to process. Traditional accounts attribute the difficulty of processing hierarchical sentences (the dog the man walks, barks) to the long positional distances between dependencies (Gibson, 1998). Alternately, linear structures (the man walks the dog that barks) are easier to process. In a sentence comprehension study, structure (i.e., positional distance between dependencies) was manipulated (hierarchical versus linear), and congruency between the semantic and the positional dependencies, being either congruent as in the dog the man walks, barks, neutral, as in the dog the man sees, walks, or incongruent as in the man the dog walks, barks (barks being syntactically dependent on man, but semantically on dog). The data show that structure did not, whilst semantic-syntactic congruency did strongly affect comprehension, suggesting a striking new perspective on the cognitive versus formal complexity of human language.