
Untangling the relationship between acceptability, grammaticality and processing

Michelle Suijkerbuijk & Stefan Frank

Radboud University

[michelle.suijkerbuijk, stefan.frank]@ru.nl

Although acceptability judgments were originally introduced to measure grammaticality (Chomsky 1957), recent research has questioned the extent to which factors beyond grammaticality influence them, such as sentence processing (Hofmeister et al. 2013). While studies have independently linked grammaticality and sentence processing (via reading times) to acceptability judgments (Suijkerbuijk et al. 2025), it remains unclear how the two jointly contribute when tested in the same experiment: does lower acceptability reflect ungrammaticality, increased processing difficulty, or both? This study addresses that question.

As reported in Suijkerbuijk et al. (2025), 8400 Dutch sentence pairs were created, each consisting of a grammatical and a minimally different ungrammatical sentence. These pairs cover 84 paradigms across 22 syntactic phenomena (e.g., number and person paradigms for anaphor agreement phenomenon). Each pair was rated for acceptability by at least 30 participants, after self-paced reading recorded word-by-word reading times. Thus, grammaticality, acceptability and reading times were measured within the same experiment for the same participants.

First, using a linear mixed effects model, we show that, independently, grammaticality and reading times (at critical region, so the point at which sentence becomes ungrammatical) both significantly predict acceptability judgments: grammatical sentences receive higher acceptability than ungrammatical ones ($\beta=0.64$, 95% CI [0.63, 0.63], $p<.001$), and acceptability increases when reading times decrease ($\beta=-0.08$, 95% CI [-0.13, -0.03], $p=.003$). Second, using path analysis, we explored the relationship between all three variables and show that reading times do not mediate the strong relationship between grammaticality and acceptability (indirect effect=0.002). This means that ungrammaticality *directly* leads to a perception of unacceptability (direct effect=-1.271), without the mediation of reading times.

Our findings show that both grammaticality and reading times independently influence participants' perceived sentence acceptability. However, they do not reinforce each other, as ungrammaticality seems to mainly drive acceptability.

References: • Chomsky, N. (1957). *Syntactic Structures*. Mouton de Gruyter. • Hofmeister, P., Jaeger, F. T., Arnon, I., Sag, I. & N. Snider (2013). The source ambiguity problem: Distinguishing the effects of grammar and processing on acceptability judgments. *Language and Cognitive Processes* 28(1-2), 48–87. • Suijkerbuijk, M., Prins, Z., de Heer Kloots, M, Zuidema, W. & S. Frank (2025). BLiMP-NL: A Corpus of Dutch Minimal Pairs and Acceptability Judgments for Language Model Evaluation. *Computational Linguistics*, 1–35.