

## The powerful mix of animacy and initial position: A psycholinguistic investigation of Estonian case and subjecthood

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In nominative-accusative languages, the grammatical role of subject has a privileged status, as reflected in various cross-linguistic tendencies. This observation opens up interesting questions when combined with the psycholinguistic finding that sentences are interpreted incrementally<sup>1</sup>: Readers and hearers begin building an interpretation immediately, even when the sentence is still unfolding and the input is ambiguous. We capitalise on these observations to investigate case interpretation and grammatical role assignment, with a focus on the sentence-initial position often associated with subjects. We look at Estonian – which has flexible word order and rich morphology – and investigate how native speakers interpret case-marked nouns *before* encountering the verb.

In Estonian, not only is word order flexible, but morphological case is also flexibly interpreted and syntactically ambiguous. We focus on Nominative, Genitive and Partitive: NOM and PAR can mark subjects, while all three can mark objects, depending on various factors.<sup>2</sup> *To better understand what factors influence the likelihood of a noun being interpreted as the subject in a flexible word-order language*, we conducted a study investigating grammatical role assignment with clause-initial count nouns. Estonian speakers (n=42) who took part in our sentence-completion task were shown case-marked noun prompts and asked to write sentences beginning with them (e.g. *Hiirt...* ‘mouse-PAR’; *Porgand...* ‘carrot-NOM’). We manipulated the case (NOM, GEN, PAR), number (singular, plural) and animacy (animate, inanimate) of the nouns, based on previous work on factors relevant to preverbal argument interpretation.<sup>3,4</sup> Continuations were coded and analyzed using mixed-effects models to see what grammatical role was assigned to the nouns.

**Results:** The morphologically unmarked **Nominative** case was ascribed subject status in ca. 90% of responses, with no effect of number or animacy. This is compatible with the idea of a ‘simplicity-based system’<sup>3</sup>, as is the finding that participants are much more likely to produce intransitive (SV) than transitive (SVO) sentences: *intransitives are structurally simpler than transitives, and hence assumed to be cognitively less costly*. A cognitive preference for clause-initial subjects has been posited by processing accounts,<sup>5,6</sup> and is also to be expected given the high frequency of subject-initial sentences in Estonian.<sup>7</sup>

Grammatical role assignment with initial **Partitive** nouns shows significant effects of animacy and number. We find an overarching object preference (ca. 60%), modulated by number and animacy. Crucially, Partitive *subject* continuations – which involve existential/presentational constructions and, with count nouns, are only possible with plurals – are more likely with animates (35%) than inanimates (14%). This points to a bias to interpret sentence-initial animate nouns as subjects, and suggests that *cross-linguistic observations on the link between subjecthood and animacy extend to existential subjects*, and are not limited to agentive subjects.

Although **Genitive** has been analysed as the realisation of an abstract accusative object case, only 13% of inanimate genitive nouns (and 0% of animates) were assigned object roles. Instead, (i) animate genitive nouns were often assigned the status of *possessor inside a subject NP* (e.g. *sõbra ema*, friend-GEN mother-NOM: ‘friend’s mother’; 70% of singular animates, 50% of plural animates) – we view this as participants striving to interpret animate clause-initial nouns in a *subject-like* way; and (ii) inanimate genitive nouns were often embedded in complex NPs (ca.30%).

Our results point to (i) a strong association between nominative and subject, even in a language where nominative can also be used for object marking, as well as (ii) an animacy-modulated bias for clause-initial constituents to be interpreted as subjects or modifiers of subjects, *even in a flexible-word order language, and even when this necessitates more complex structures*. This is striking, especially since we observe a competing preference for simpler structures when possible (intransitive over transitive). Our findings highlight the interplay between animacy and grammatical role interpretation, and suggest that the bias for interpreting sentence-initial *animates* as *subjects/modifiers of subjects* is strong, even in a flexible word-order language.

## References

- <sup>1</sup> Tanenhaus, M.K., Spivey-Knowlton, M.J., Eberhard, K. & J.C. Sedivy. 1995. Integration of visual and linguistic information in spoken language comprehension. *Science* 268, 1632–1634.
- <sup>2</sup> Ereht, M. (ed.) 2003. *Estonian Language. Linguistica Uralica Supplementary Series, vol. 1.* Tallinn: Estonian Academy Publishers.
- <sup>3</sup> Bornkessel, I. & Schlesewsky, M. 2006. The Extended Argument Dependency Model: a neurocognitive approach to sentence comprehension across languages. *Psychological Review* 113, 787–821.
- <sup>4</sup> Lamers, M. & P. de Swart (eds.). 2012. *Case, Word Order and Prominence. Interacting cues in Language Production and Comprehension.* Dordrecht: Springer.
- <sup>5</sup> Demiral, S.B., Schlesewsky, M. & I. Bornkessel-Schlesewsky. 2008. On the universality of language comprehension strategies: Evidence from Turkish. *Cognition*, 106, 484–500.
- <sup>6</sup> Bornkessel-Schlesewsky, I. & M. Schlesewsky. 2009. *Processing Syntax and Morphology: A Neurocognitive Perspective.* Oxford: OUP.
- <sup>7</sup> Lindström, L. 2004. Sõnajärg lause tuumargumentide eristajana eesti keeles. [Word order distinguishing between core arguments in Estonian]. In L. Lindström (ed.), *Lauseliikmeist eesti keeles* [Grammatical relations in Estonian]. Tartu Ülikooli eesti keele õppetooli preprintid 1. Tartu, 40–49.