

Verb Position, Argument Order and Tense: Transfer Effects in Latin

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Background and research questions. Learning Latin typically does not focus on communication skills but on translating Latin texts into the learner's L1. Despite this unique acquisition profile, psycholinguistic research on Latin remains scarce [1]. This study investigates L1 transfer effects in German-speaking learners, examining whether the intensive focus on translation shapes real-time sentence processing. We address four key research questions: **(Q1)** Can learners process Latin in a strictly linear fashion? **(Q2)** Is there a subject-first preference (as in German) despite unambiguous case marking? **(Q3)** Does the verb-second (V2) position – typical of German main clauses – facilitate processing compared to verb-final structures? and **(Q4)** Does the correspondence of the main verb position between Latin and German tense systems (Imperfect: V2, Perfect: V-final) mitigate processing effort?

Method. In a pre-registered online self-paced reading experiment, 48 highly proficient German-speaking learners of Latin (university level) read 96 Latin sentences (12 sentences per condition). The study employed a 2x2x2 factorial design manipulating **argument order** (subject-before-object [SO] vs. object before subject [OS]), **verb position** (V2 vs. V-final), and **tense** (Imperfect vs. Perfect) (see Table 1). Each sentence was followed by a translation task in German (50% accurate; 50% grammatical/lexical errors) to ensure comprehension.

Results. Overall accuracy was high (90.8%), suggesting that participants successfully engaged in incremental, linear processing despite their primary training in translation **(Q1)**. Linear mixed-effects models revealed a significant main effect of **argument order**: SO sentences were read significantly faster than OS structures in total reading times ($t=7.79$), as well as specifically in the combined subject and object region ($t=10.26$; **Q2**). Regarding **verb position** **(Q3)**, reading times at the verb were higher in V2 compared to V-final sentences ($t=4.00$; see Figure 1); however, the V2 structure significantly facilitated processing in the argument regions ($t=-5.95$; see Figure 2). For **the main verb position** **(Q4)**, a **significant interaction of tense and verb position** was observed in the verb region ($t=-2.24$), with shorter reading times when the main verb position corresponded to the German tense structure (see Figure 1).

Discussion. These findings demonstrate robust L1 transfer from German to Latin. The SO preference **(Q2)**, the facilitatory effect of V2 on arguments **(Q3)**, and the tense-verb position interaction **(Q4)** reflect German structural properties [2], suggesting that learners project L1-based syntactic expectations onto Latin. High accuracy confirms that learners can achieve incremental comprehension **(Q1)** despite their translation-based training [1]. Overall, our results underscore the verb's pivotal role in integration [3] and suggest that even highly proficient Latin learners immediately translate the Latin phrases into a German sentence structure.

References

- [1] Weiss, A. F. (2023). How do L2 learners deal with a “dead” language? A psycholinguistic study on sentence processing in Latin. *Journal of Cultural Cognitive Science*, 7(1), 43-61.
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- [3] Gibson, E. (2000). The dependency locality theory: A distance-based theory of linguistic complexity. *Image, language, brain*, 2000, 95-126.

Figures and Tables

Table 1: Example Stimuli

SO	V2	Heri nocte Last night	servabat / servavit rescued-IMP/PER	miles the soldier-NOM	nautam the sailor-ACC	ex undis maris. from the sea
	V-final	Heri nocte Last night	miles the soldier-NOM	nautam the sailor-ACC	ex undis maris from the sea	servabat. / servavit. rescued-IMP/PER
Last night, the soldier rescued / has rescued the sailor from the sea.						
OS	V2	Heri nocte Last night	servabat / servavit rescued-IMP/PER	nautam the sailor-ACC	miles the soldier-NOM	ex undis maris. from the sea
	V-final	Heri nocte Last night	nautam the sailor-ACC	miles the soldier-NOM	ex undis maris from the sea	servabat. / servavit. rescued-IMP/PER
Last night, the sailor rescued / has rescued the soldier from the sea.						

Abbreviations: SO = subject-before-object, OS = object-before-subject, V2 = verb second, V-final= verb final, IMP = Imperfect, PER = Perfect, NOM = nominative case, ACC = accusative case. The German translation always corresponds to the Latin tense (Latin Imperfect → German Präteritum, Latin Perfect → German Perfekt).

Figure 1

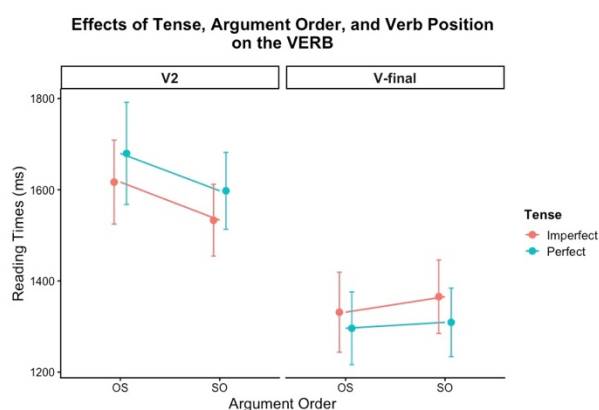
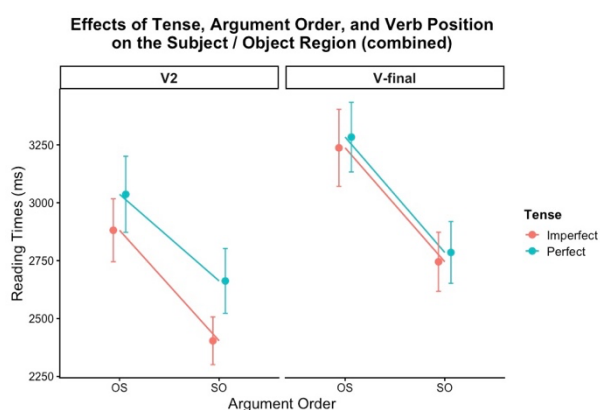


Figure 2



Supplemental Information on Latin and German

Morphological Structure and Syntax in Latin

Latin is characterized by a highly productive inflectional system comprising six cases. Unlike many modern languages, Latin lacks determiners; instead, case is marked morphologically directly on the noun (e.g., *naut-a* [NOM] vs. *naut-am* [ACC]). This synthetic nature extends to the tense system: in the active voice, both Imperfect and Perfect tenses are formed solely through verbal morphology without the use of auxiliaries (e.g., *ama-bat* 'he loved' vs. *ama-vit* 'he has loved').

The richness of the inflectional system allows for a highly flexible word order (scrambling), permitting the object to precede the subject and the verb to occupy any position. However, in pedagogical contexts and many classical texts, the verb typically tends to appear in the final position.

Contrastive Analysis: Latin vs. German

While German also possesses a rich inflectional system that allows for flexible constituent ordering (such as object-before-subject structure), the locus of marking is different: In German, case is primarily marked on the determiner rather than the noun itself. Furthermore, German syntax is governed by a strict Verb-Second (V2) rule in main clauses. In combination with analytically formed tenses, this gives rise to the 'sentence bracket' (*Satzklammer*) phenomenon: When a tense consists of a main verb and an auxiliary (as in *Perfekt* tense), the auxiliary takes the V2 position while the main verb is shifted to the sentence-final position (V-final) (e.g., „Der Junge *hat* den Hund im Garten *gesehen*“).

Regarding tense formation, the German *Präteritum* functions similarly to Latin *Imperfect* by building morphologically on the main verb. In contrast (also to Latin), the German *Perfekt* is an analytical construction requiring an auxiliary. Despite nuanced aspectual differences between the two languages, the Latin Imperfect is conventionally translated by the German *Präteritum* and the Latin Perfect by the German *Perfekt*.

The Tradition of Latin Pedagogy

Finally, the status of Latin as a "dead language"—one no longer used for natural communication—profoundly shapes its instruction in schools and universities. The pedagogical focus remains almost exclusively on the translation of Latin texts into the learner's native language (L1). Even at university level, Latin is rarely used as a medium for communication; consequently, language production (speaking) and listening comprehension are generally not practiced, distinguishing Latin significantly from the teaching practices of modern foreign languages.