

## The role of split ergativity in Georgian relative clause processing

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**Summary** • Subject-gap relative clauses (SRCs) are generally easier to process than object-gap relative clauses (ORCs) [1,2], but the underlying causes for this **Subject Gap Preference (SGP)** are difficult to disentangle. According to a structural hypothesis [3], subject gaps are easiest to process by virtue of being in the most structurally prominent syntactic position. But, typological undersampling has led to a confound: data are drawn mostly from NOMinative–ACCusative languages, where morphological case and syntactic structure covary. According to a case-informativity hypothesis [4], the processing asymmetry stems from whether the RC filler bears uninformative, *unmarked case* (NOM) or informative, *dependent case* (ACC). Because ACC's distribution is more restricted, it may be costly to eliminate incompatible continuations, or to project the necessary transitive structure.

To test these hypotheses, we conducted two reading-time experiments in Georgian. Though nearly absent from sentence-processing research [cf. 5], it is ideal for this issue: as a split-ergative language, Georgian totally disassociates case and grammatical position. And we found a clear SGP. RC complexity primarily tracked structural subjecthood and not unmarked case. Moreover, we found separable effects of disambiguation and argument integration.

**Background** • In ERGative–ABSolutive languages, unmarked ABS case can be realized in subject or object position. If case-informativity of the filler matters, we expect an *absolutive* gap preference in transitive clauses — i.e., an ORC preference. Recent research on ERG–ABS languages has yielded mixed results: an SGP in Ch'ol and Q'anjob'al [6]; an apparent ABS preference in Basque [7]; a combination of both in Avar [4]. As for Georgian, case alignment depends on the clause's tense–aspect–mood (TAM) features. Verbal arguments show either NOM–ACC alignment, or one of two ERG–ABS patterns (Table 1).

**Design** • We tested whether the difficulty of RC processing in Georgian depends on syntactic structure or case informativity in two self-paced reading experiments ( $N_{\text{SUBJ}}=56$ ), presented in the Georgian script. In Exp. 1 (described here) 36 item sets were constructed in a  $2 \times 3$  design crossing extraction site (SRC, ORC) and TAM (FUTURE: NOM–ACC; AORist: ERG–ABS; EVIDential: DAT–ABS). Table 2 gives a glossed example item set. RTs were analyzed at the RC-initial filler (*wh*-phrase), adjunct spillover region, two-word DP co-argument, and RC-final verb.

**Results** • Reading times indicated a SGP in several ways. (i) At the RC-final verb, there was a slowdown for ORCs compared to SRCs for FUT and AOR clauses; in EVID clauses, an ORC slowdown was observed one word later. (ii) At the filler phrase (and spillover), there was no difference between reading an RC-initial NOM or ERG filler, even though ERG is more informative. Crucially *both* could serve as subjects. (iii) But when participants read an ERG co-argument—forcing an ORC analysis—RTs were significantly higher compared to an ERG–NOM sequence. (iv) There was a significant slowdown for a DAT filler compared to NOM or ERG; [5] previously showed that DAT DPs are initially parsed as objects. Exp. 2 examined a different relative clause type, using only ERG–ABS aligned clauses, and again we found an ORC disadvantage.

**Conclusion** • We found a strong SGP in Georgian, a split-ergative language, evidenced in two ways: by differing patterns of sensitivity to combinations of case morphology on fillers and their co-arguments, *and* by an overall ORC slowdown at the RC verb. Thus, in AOR (ERG–ABS) ORCs, there were two loci of difficulty: the site of disambiguation and the site of integration, reminiscent of recent findings in English [8] and German [9].

	Trans Subj	Unacc Subj	Direct Obj	Alignment Pattern
FUT	NOM		DAT	NOM-ACC
AOR	ERG	NOM		ERG-ABS
EVID	DAT	NOM		DAT-ABS (= ERG-ABS #2)

Table 1: Case alignment patterns for three TAMs in Georgian.

Alignment	RC Type	Head	WhP	XP	CoArg	V
NOM-ACC	SRC	<i>cxeni</i>	<i>romel-ic</i> <sub>NOM</sub>	<i>bnel t̃q̃e-ši</i>	<i>čkar-∅ irem-s</i> <sub>DAT</sub>	<i>naxavs</i> <sub>FUT</sub>
	ORC		<i>romel-sac</i> <sub>DAT</sub>		<i>čkar-i irem-i</i> <sub>NOM</sub>	<i>naxa</i> <sub>AOR</sub>
ERG-ABS	SRC		<i>romel-mac</i> <sub>ERG</sub>		<i>čkar-ma irem-ma</i> <sub>ERG</sub>	
	ORC		<i>romel-ic</i> <sub>NOM</sub>		<i>čkar-i irem-i</i> <sub>NOM</sub>	
DAT-ABS	SRC		<i>romel-sac</i> <sub>DAT</sub>		<i>čkar-∅ irem-s</i> <sub>DAT</sub>	
	ORC		<i>romel-ic</i> <sub>NOM</sub>			
		horse	which <sub>CASE</sub>	dark forest-in	quick deer <sub>CASE</sub>	see <sub>TAM</sub>

<p>“the horse [RC which ____ {will see, saw, apparently saw} the quick deer in the dark forest.”</p> <p>“the horse [RC which the quick deer {will see, saw, apparently saw} ____ in the dark forest.”</p>	<i>or</i>
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Table 2: Example item set. Matrix clause material irrelevant to the relative clause (a one-word adjunct preceding the head noun, and a four-word continuation following the RC verb) is omitted.

**References** • [1] Gibson, E. (1998). Linguistic complexity: Locality of syntactic dependencies. *Cognition* 68. [2] Kwon, N., et al. (2010). Cognitive and linguistic factors affecting subject/object asymmetry. *Language* 86. [3] Frazier, L. (1987). Syntactic processing: Evidence from Dutch. *Natural Language and Linguistic Theory* 5. [4] Polinsky, M., et al. (2012). Subject preference and ergativity. *Lingua* 122. [5] Skopeteas, S., et al. (2011). Case inversion in Georgian: Syntactic properties and sentence processing. In *Case, Word Order, and Prominence*, eds. M.J.A. Lamers & P. de Swart. Springer. [6] Clemens, L.E., et al. (2015). Ergativity and the complexity of extraction: a view from Mayan. *Natural Language and Linguistic Theory* 33. [7] Carreiras, M., et al. (2010). Subject relative clauses are not universally easier to process: Evidence from Basque. *Cognition* 115. [8] Staub, A. (2010). Eye movements and processing difficulty in object relative clauses. *Cognition* 116. [9] Levy, R. P., & Keller, F. (2013). Expectation and locality effects in German verb-final structures. *Journal of Memory and Language*, 68(2).