

Animacy does not modulate the subject relative clause advantage in Tagalog

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The cross-linguistic advantage for subject relative clauses (SRCs) over object relative clauses (ORCs) has been well-documented [1,2,3]. However, in some languages animacy appears to modulate the effect, such that the SRC advantage is reduced or eliminated with inanimate RC heads [4,5,6]. In two studies we show that unlike in other languages previously tested, head animacy does not neutralize the SRC advantage in Tagalog.

Tagalog is a verb-initial language with a rich voice-marking morphology. Distinct verbal affixes identify (i) which nominal is syntactically prominent in the clause (the ‘pivot’, marked with ‘*ang*’) and (ii) the pivot’s argument structural role in the clause. In head-initial RCs, the nominal head precedes the RC-internal verb, which bears different affixes depending on the role of the RC head. Because the pivot is the most accessible element for relativization, comprehenders should be able to use the voice morphology on the RC-internal verb to determine whether the RC is an SRC or an ORC: In subject/agent RCs, the RC-internal verb bears the agent voice (AV) affix -*um*- (see examples in 1). In object/patient RCs, the RC-internal verb bears the patient voice (PV) affix -*in*- (see examples in 2). We compared RTs beginning at the RC-internal verb to see whether participants were more surprised to see PV verbs than AV verbs (the SRC advantage) and whether that surprise was reduced when the RC head was inanimate.

Self-Paced Reading Exp 1 ($n=66$). We created items in which an RC was attached to the object N of a main clause. Our items followed a fully-crossed design where we manipulated *Animacy* of the RC head (*police* vs. *car*) and RC Type (whether the RC-initial verb was marked with the AV or PV affix). In order to minimize argument structure differences across conditions, we used reversible predicates that could take both animate and inanimate subjects and objects (e.g. ‘collide (with)’). We also made sure that our set of AV and PV verb+affix combinations did not differ in surface frequency ($t = 0.71$). See Table 1 for an example item. **Results.** Analysis employed maximal LMEMs with deviation-coded predictors Animacy, RCType, and their interaction and scaled Verb Frequency as a covariate. At the critical RC verb (Region 7), the model showed a significant main effect of RCType ($t = 2.29$) and of Verb Frequency ($t = 5.16$). No other significant effects were found in the other regions, suggesting that the SRC advantage holds, unaffected by head animacy.

Self-Paced Reading Exp 2 ($n=102$). We considered the possibility that the lack of animacy effects in Experiment 1 might have been due to verb-argument semantics, i.e., the inanimates we used (e.g., *car*, *truck*) could still be highly “agentive” when matched with highly transitive verbs (e.g., *bump*, *collide*). Hence, in Experiment 2 we used “low-agentive” inanimates to probe for animacy effects. Items followed a structure similar to Experiment 1, with one change: We did not use reversible predicates across conditions. In SRC conditions we used verbs that could take animate/inanimate subjects (e.g., {*maid/fork*} *that pricked the meat*), while the ORC conditions used verbs that could take animate/inanimate objects (e.g. {*actress/nail*} *that the politician pulled*). As above we controlled for the surface frequency of the different AV and PV verbs ($t = -1.83$). We also ensured that all sentences were acceptable in a norming study (mean acceptability of 3.12-3.34 out of 4; $n=24$). **Results.** We found no significant effects at the critical RC verb, but we did observe faster RTs at the subsequent regions for SRCs compared to ORCs ($t = 3.23$ at spillover Adv region; $t = 2.92$ at NPVT region). Animacy did not interact with RC Type.

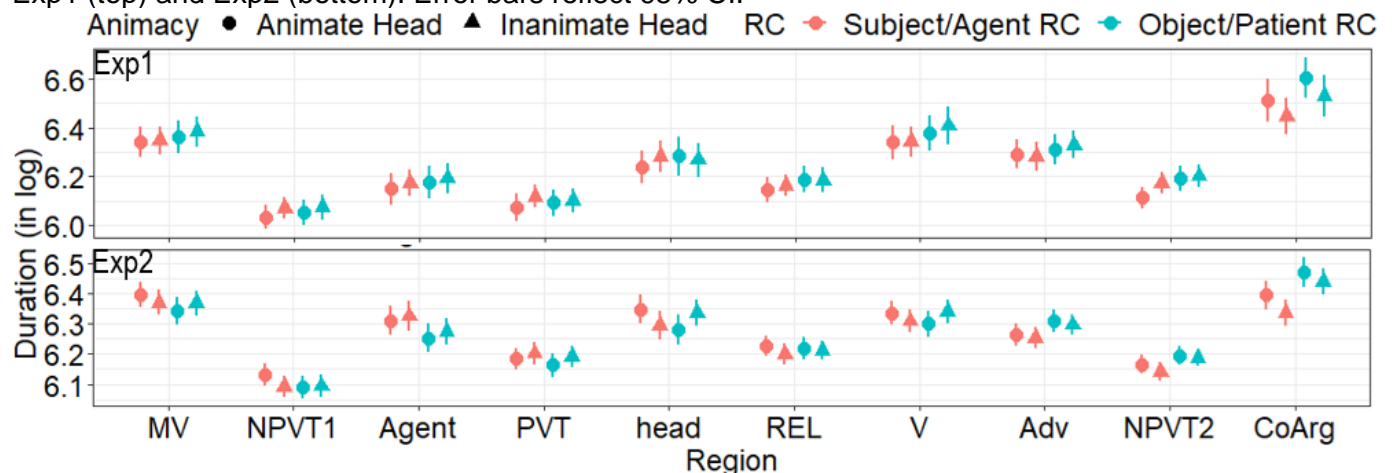
Both experiments show support for the SRC advantage, congruent with previous work, but fail to find evidence for modulation by animacy. Under an expectation-based explanation, our results suggest that comprehenders predict SRCs upon seeing either an animate or inanimate head. It remains to be determined whether these expectations are experience-based or if they emerge from other parsing preferences.

Table 1. Experimental conditions and example sentences in Exp1.

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
MV	NPVT	Agent	PVT	head	REL	V	Adv	NPVT	CoArg
(1) Subject/Agent Relative Clause, Animate/Inanimate Head									
Inilista	ng	ginoo	ang	pulis/kotse	na	sumalpok	kahapon	sa	kidnaper
<i>listed</i>	<i>the</i>	<i>man</i>	<i>the</i>	<i>police/car</i>	<i>that</i>	<i>collided</i>	<i>yesterday</i>	<i>at the</i>	<i>kidnapper</i>
'The man listed the police/car that collided with the kidnapper yesterday.'									
(2) Object/Patient Relative Clause, Animate/Inanimate Head									
Inilista	ng	ginoo	ang	pulis/kotse	na	sinalpok	kahapon	ng	kidnaper
<i>listed</i>	<i>the</i>	<i>man</i>	<i>the</i>	<i>police/car</i>	<i>that</i>	<i>collided</i>	<i>yesterday</i>	<i>the</i>	<i>kidnapper</i>
'The man listed the kidnapper that the police/car collided with yesterday.'									

Table 2. Experimental conditions and example sentences in Exp2.

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
MV	NPVT	Agent	PVT	head	REL	V	Adv	NPVT	CoArg
(1) Subject/Agent Relative Clause, Animate Head									
Binanggit	ng	serbidor	ang	katulong/tinidor	na	tumusok	kanina	sa	karne
<i>said</i>	<i>the</i>	<i>waiter</i>	<i>the</i>	<i>maid/fork</i>	<i>that</i>	<i>pricked</i>	<i>earlier</i>	<i>the</i>	<i>meat</i>
'The waiter mentioned the maid/fork that pricked the meat earlier.'									
(2) Object/Patient Relative Clause, Animate Head									
Inalis	ng	ginoo	ang	aktres/pako	na	hinila	kahapon	ng	pulitiko
<i>removed</i>	<i>the</i>	<i>man</i>	<i>the</i>	<i>actress/nail</i>	<i>that</i>	<i>pulled</i>	<i>yesterday</i>	<i>the</i>	<i>politician</i>
'The man removed the actress/nail that the politician pulled yesterday.'									

Figure 1. Log-transformed reading times by RCType and Animacy across sentence regions in Exp1 (top) and Exp2 (bottom). Error bars reflect 95% CI.**References**

- [1] Gordon & Lowder, (2012) *L&LC*. [2] Lau & Tanaka. (2021). *Glossa*. [3] Pizarro-Guevara & Wagers. (2020). *Front. Psych.* [4] Mak, Vonk & Schriefers. (2002). *JML*, [5] Gennari & MacDonald. (2008). *JML*. [6] Wagers & Pendleton. (2016). *WCCFL*.