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## LOCALITY

Subject Relative Clauses (SRC) are easier to process than Object Relatives Clauses (ORC) [King & Just 1991; Gibson 1998; Gordon et al. 2001; Van Dyke & Lewis 2003; Lewis & Vasishth 2005; Lewis et al. 2006; Hale 2006; Kwon et al. 2013, among many others].

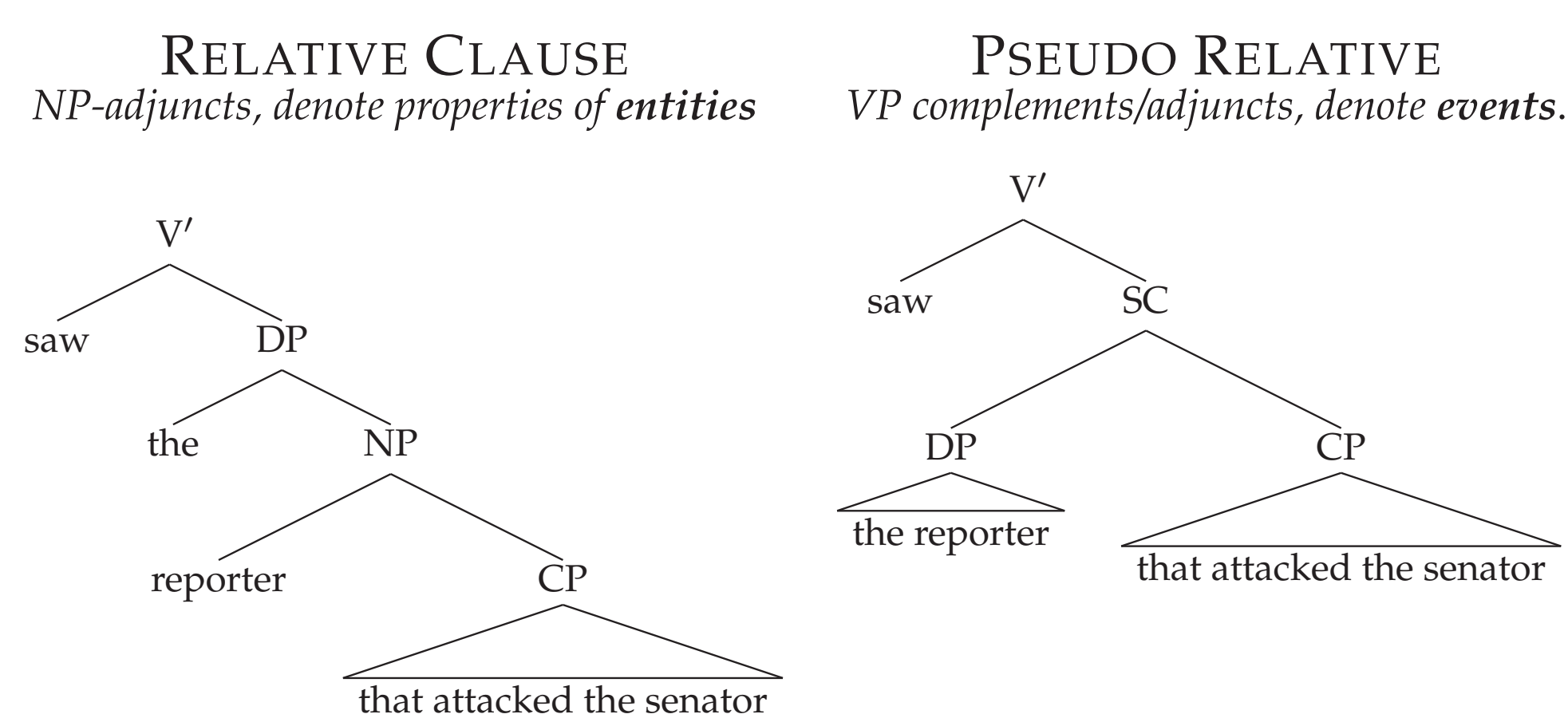
- (1) a. John criticized the reporter that *e* attacked the senator.  
b. John criticized the reporter that the senator attacked *e*.

- Several factors have been shown to modulate locality effects (*Person, Number, Animacy* and *Referentiality*, a.o.)
- Present work focuses on effects of Matrix Verb type and availability of Pseudo Relative interpretation.

## (PSEUDO)RELATIVES

- Verbs differ in their ability to select for different types of complements:
  - Across languages **stative verbs** typically only select for nominal complements.
  - **Perceptual verbs**, however, select for a number of clausal complements besides nominal complements.
- Number and Type of clausal complements varies across languages.
- In French, but not in English, Subject RCs under perceptual verbs can also be interpreted as Pseudo Relative (PRs) (2).

- (2) Jean a vu [<sub>PR</sub> le journaliste qui attaquait le sénateur.]  
John has seen the reporter that attacked the senator.  
'John saw the reporter that attacked the senator.'



**RC semantics:**  
∃e [see(e) & EXPERIENCER(e)(John) & THEME(the unique reporter that attacked the senator)(e)]

**PR semantics:**  
∃e ∃e' [see(e) & EXPERIENCER(e)(John) & attack(e') & AGENT(e')(the reporter) & THEME(e')(the senator)]

## PR-FIRST HYPOTHESIS

- (Grillo & Costa 2014): When PRs are available, everything else being equal (e.g. lexical, contextual and prosodic factors), they will be preferred over RCs.
  - Rationale 1: PRs have impoverished structures (Cinque 1992),
  - Rationale 2: PRs introduce information relevant to the main assertion of the sentence (Frazier 1990)
  - Rationale 3: PRs are supported by simpler contextual representations than those required by RCs (Crain & Steedman 1985; Altmann & Steedman 1988).

- PRs (but not RCs) are only selected by a restricted set of predicates, e.g. perceptual (*see, hear*) but not stative predicates (*live with*).

- (3) Jean a critiqué le journaliste qui attaquait le sénateur.  
John has criticized the reporter that attacked the senator.  
'John criticized the reporter that attacked the senator.' **RC only**

- Grillo et al. (2014a,b): Manipulating PR-availability through Matrix Verb Type strongly impacts Relative Clause Attachment, indirectly supporting *PR-first*
- Grillo et al. (2015) Embedded clauses under perceptual verbs judged *more acceptable* and *read faster* when followed by PR-compatible than RC-only continuation.
- Today: Interaction of PR-availability and Locality.

## DISCUSSION

- We contrasted the processing of right branching SRCs and ORCs in the environment of perceptual and stative verbs across a PR (French) and a nonPR (English) language.
- Verb Type had a strong, but different, effect in PR languages (e.g., French) vs. non-PR languages (e.g., English): comprehension of RCs is worse under perceptual verbs, unless a PR analysis is made available (SRCs in French).
- This supports our hypothesis that a clausal complement analysis should be preferred by the parser in these environments.
- Consequences for Sentence to Picture Matching Task, a PR-compatible environment (ask us).
- Asymmetry online vs. offline results.
  - Effect obscured by strength of Locality effect?
  - Alternatively: The parser might sometimes interpret the RC as a Center Embedded subject modifier:

- (5) John saw [<sub>SC</sub> [<sub>DP</sub> the boy [<sub>CP</sub> that the girl kissed]] running]

- This parse, only available at the earliest stages of processing, disappears when the sentence is over, creating confusion which ultimately leads to worse performance in non PR environments

## EXPERIMENT 1 & 2

**Goal:** Assess effects of PR-availability on Locality in a PR-language.

**Means:** We compared subject-object relatives introduced by PR-compatible and RC-only verbs.

- The PR/RC ambiguity is limited to Subject RCs (4)

- (4) Le président a vu le journaliste que le sénateur attaquait.  
The president has seen the reporter that the senator attacked.  
'The president saw the reporter that the senator attacked.' **RC only**

**Prediction:** Stronger effects of Locality in PR-compatible environments.

**Method:** Self-paced Reading followed by comprehension question.

**Participants:** 56 French native speakers

**Design:** 2x2 crossing *Verb Type*(PR-verbs vs. non-PR-verbs) and *Locality* (Subject vs. Object RCs). 24 sets of target sentences (4 versions each), 48 unrelated fillers.

	PR/RC	RC-only
A. <i>PR predicate / Subject</i>	Sarah a aperçu le policier qui tabassait le chauffeur en pleine rue.	
B. <i>PR predicate / Object</i>	Sarah a aperçu le policier que le chauffeur tabassait en pleine rue.	
C. <i>RC-only predicate / Subject</i>	Sarah est divorcée du policier qui tabassait le chauffeur en pleine rue.	
D. <i>RC-only predicate / Object</i>	Sarah est divorcée du policier que le chauffeur tabassait en pleine rue.	

## RESULTS FRENCH

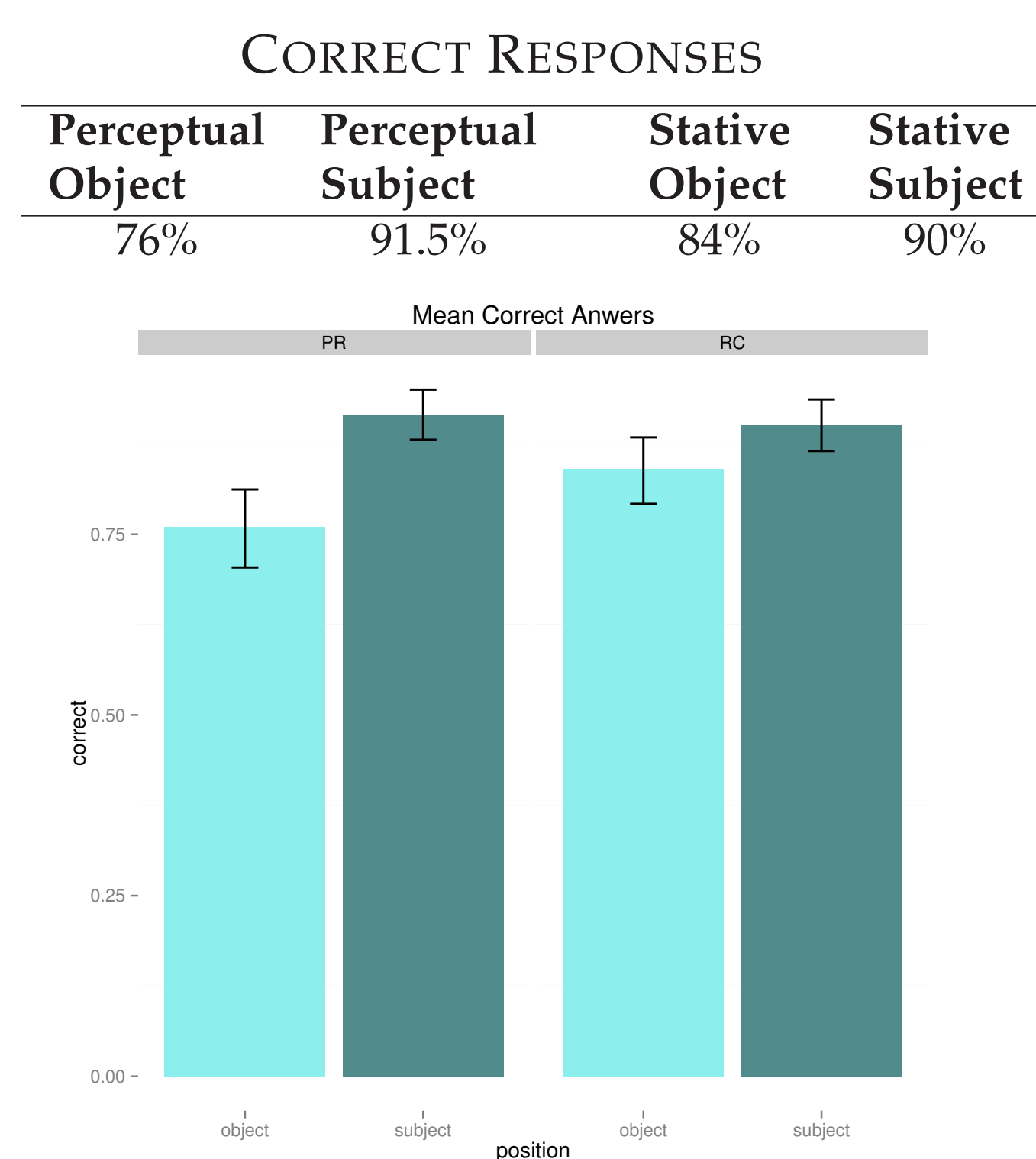


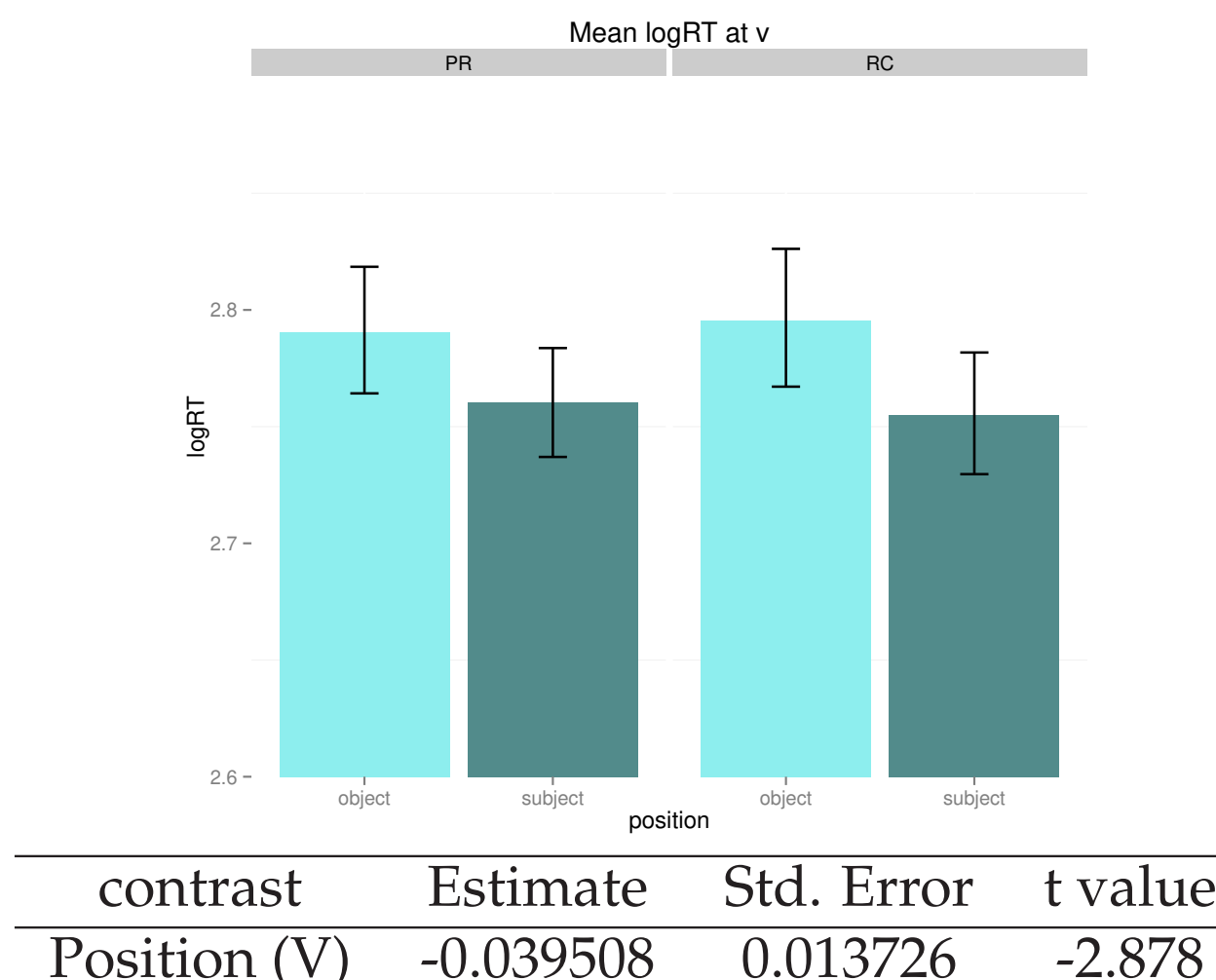
Table 1: Results of linear mixed model fit for Attachment Preferences in Experiment 1. Items and participants were crossed random factors.

contrast	coefficient	SE	z-value	p-value
Locality	0.8980	0.1949	4.608	4.06e-06 ***
Vtype*Locality	-0.7591	0.3872	-1.960	0.0499 *

Interaction:				
contrast	coefficient	SE	z-value	p-value
Locality(PR/RC)	1.3728	0.4708	2.916	0.00355 **
Locality (RC-only)	0.4413	0.4350	1.014	0.31
V-Type(SRC)	-0.4938	0.4665	-1.059	0.29
V-Type(ORC)	0.5573	0.2511	2.219	0.0265 *

- Locality effects not significant in RC-only environments.
- Lower accuracy for ORCs in PR-compatible than RC-only environments.

## FRENCH: READING TIMES AT EMBEDDED VERB



Main effect of Locality: Faster RTs for SRCs than ORCs  
No effect of V-Type, no effects at other positions.

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**Goal:** Assess whether verb distinction alone can alternatively account for prior results by testing a non-PR language, English.

- Grillo et al. (2014) show PR-first generalizes to a preference for eventive over entity complements, including Small Clauses over NPs in English.

**Prediction:** Higher complexity of both Subject and Object RCs under *perceptual* than under *stative* verbs in English.

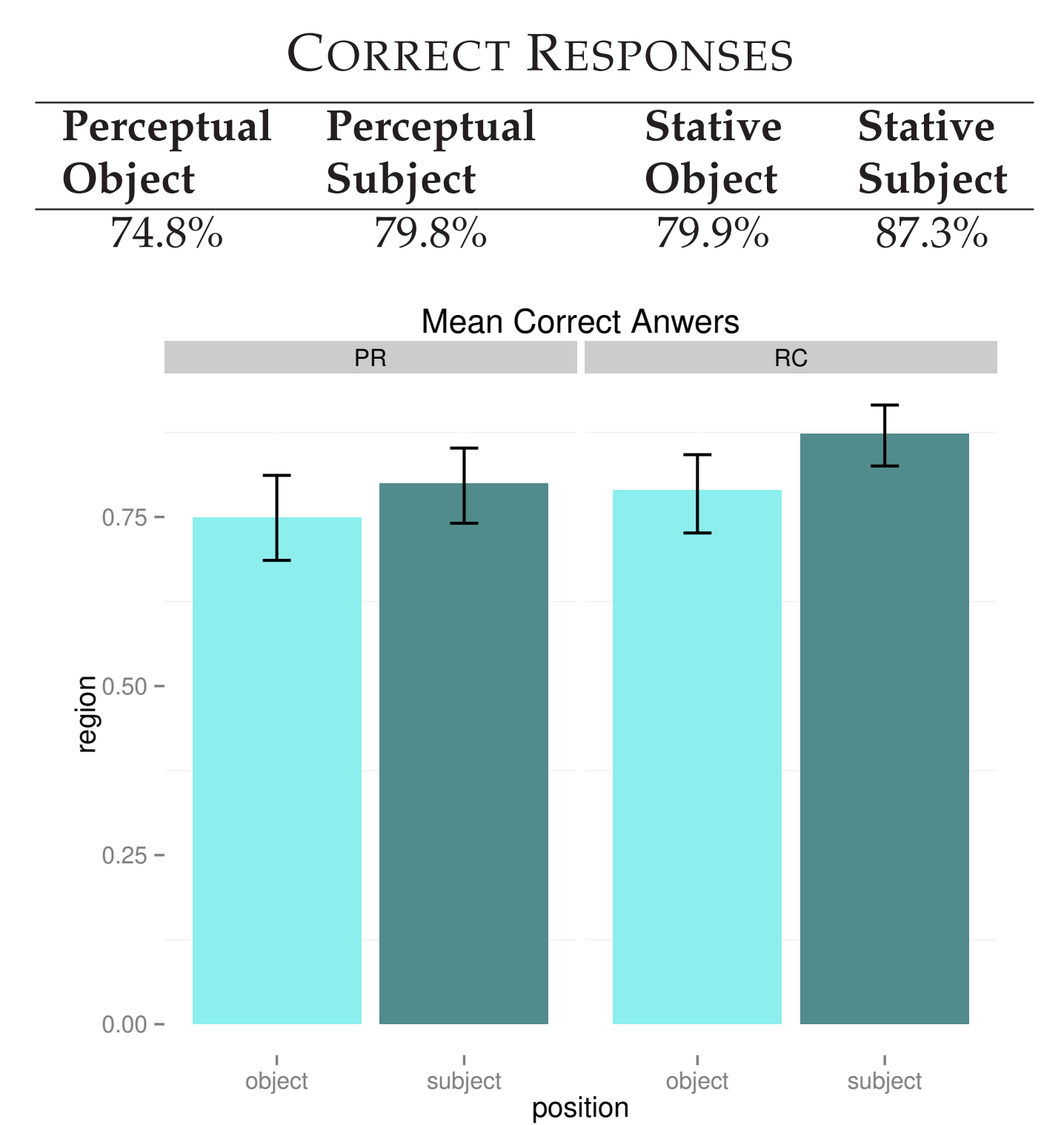
**Method, Procedure and Design:** Same as French

**Participants:** 36 English native speakers.

*Stimuli*

A. <i>SC-predicate / Subject</i>	RC-only
Sarah saw the policeman who was beating the driver in the street.	
B. <i>SC-predicate / Object</i>	RC-only
Sarah saw the policeman who the driver was beating in the street.	
C. <i>RC-only predicate / Subject</i>	RC-only
Sarah is divorced from the policeman who was beating the driver in the street.	
D. <i>RC-only predicate / Object</i>	RC-only
Sarah is divorced from the policeman who the driver was beating in the street.	

## RESULTS ENGLISH

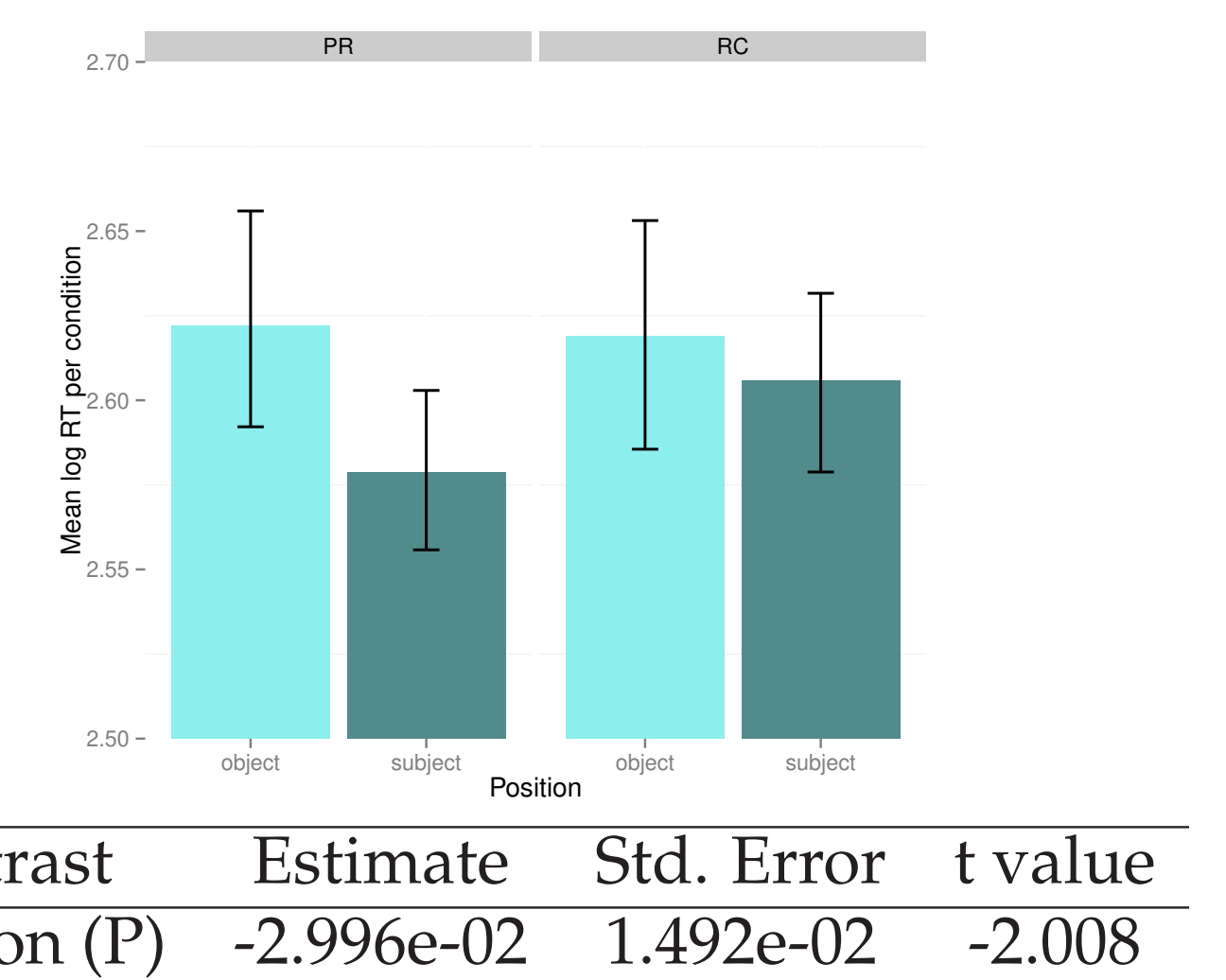


contrast	coefficient	SE	z-value	p-value
V-Type	0.4093	0.1912	2.141	0.03231 *
position	0.5121	0.1921	2.666	0.00769 **

- Main effects of *V-type* and *Position*:

- Better performance with RC-Only than SC-Compatible Verbs.
- Better performance with SRC than ORC across V-Type.

## ENGLISH: READING TIMES AT PREPOSITION



- No effects at Embedded Verb
- Main effect of Position at PP (one region downstream from embedded V): faster RTs for SRCs than ORCs.
- No effect of V-Type, no effects at other positions.

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