

Ellipsis with garden-path antecedents in French

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The reactivation hypothesis

- ▶ Paape (2016) found a reduction in reading times at a sluicing site if the antecedent had been syntactically reanalyzed
- ▶ In cue-based retrieval parsing (e.g., Lewis & Vasishth, 2005), syntactic phrases are stored in memory as chunks
- ▶ Observed speedup is hypothesized to be the result of reactivation of the antecedent's memory trace during reanalysis

Garden-path sentence:

Anna forgot the baby_{act=100} ← base activation Chunk created
 Anna forgot the baby_{act=90} ← decay had spit up Reanalysis trigger
 Anna forgot the baby had spit up_{act=120} Attachment = Activation boost

Control sentence:

Anna forgot that the baby
 Anna forgot that the baby had spit up_{act=100} ← base activation Chunk created
 ... but I don't know why ____ . Retrieval speed ∝ Activation

Issues

- ▶ Evidence comes from a late spillover region in a self-paced reading study
- ▶ Result has failed to replicate (Paape, 2015)
- ▶ Previous studies were limited to German

A new eye-tracking study

- ▶ Three types of potential garden-path sentences were identified in French: Reduced relative clauses, sentences featuring subject-object inversion and clauses involving **triple lexical ambiguity** ('triple trouble'):

Context The market is known for its large sides of beef which are delivered during the night.

Ambiguous Le boucher sale₁ les₂ tranche₃,
 the butcher filthy them cuts

Unambiguous Les bouchers sales les tranchent,
 the butchers filthy.pl them cut

Ellipsis mais les clients se demandent quand,
 but the clients self ask when

Control mais les clients en demandent la technique,
 but the clients of.it ask the technique

vu que la viande est vendue déjà marinée
 seen that the meat is sold already marinated
 en début de matinée.
 at beginning of morning

Garden-path reading Le boucher sale les tranche₃
 (impossible with sales) the butcher salts₁the₂slices₃

Reduced relative clause

Le(s) héros décrit(s) dans cette histoire a/ont vaincu une bête.
 the hero(es) described in this story has/have defeated a beast

Subject-object inversion

Quelles journalistes de la chaîne a/ont soudoyé le président ?
 which journalists of the channel has/have bribed the president

- ▶ Pretest (Internet-based, n = 56): 'Triple trouble' and subject-object inversion sentences received lower ratings in their ambiguous/dispreferred versions
- ▶ In the main study, 41 native speakers of French read 20/16/20 sentences of each type, plus 24 unrelated fillers
- ▶ Comprehension was probed after each trial (80% mean accuracy)
 - ▶ Accuracy was highest for reduced relative clauses (86%), intermediate for 'triple trouble' sentences (80%) and lowest for subject-object inversion (74%)*

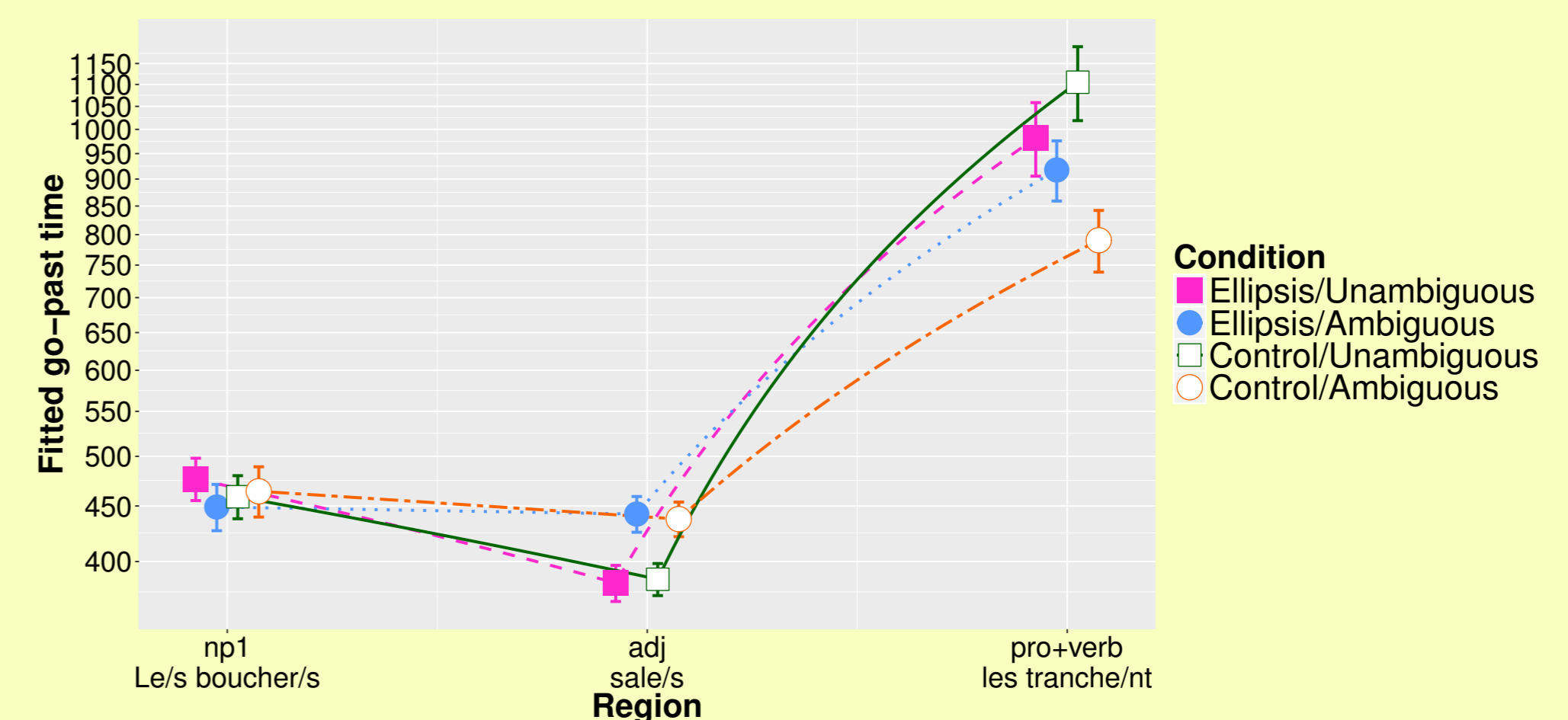
* Higher proportion of questions targeting argument structure

Results

- ▶ **Reduced relative clauses:** Garden-path effect visible in the disambiguating region (go-past times & total reading times*)
- ▶ **Subject-object inversion:** Garden-path effect on the auxiliary (go-past times & total reading times*; continues into the following regions)
- ▶ **'Triple trouble':** Garden-path effect on the adjective (go-past times, see below); reversed on the verb

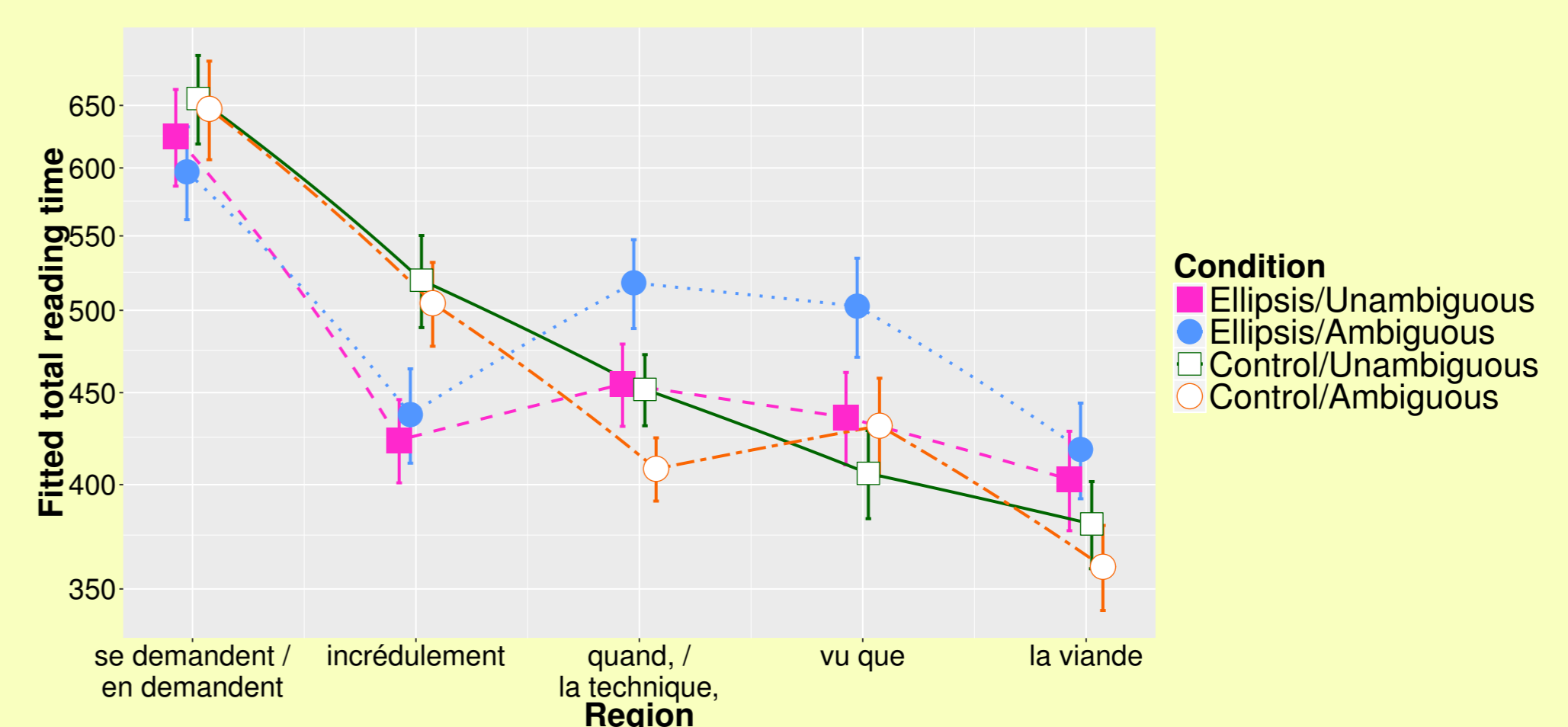
* Pre-ellipsis fixations only

Antecedent (Go-past times), 'Triple trouble'



- ▶ Shorter regression path durations for ellipsis versus control sentences across sentence types
- ▶ In 'triple trouble' sentences only, longer total reading times in the ellipsis region with ambiguous antecedents (not in control sentences)

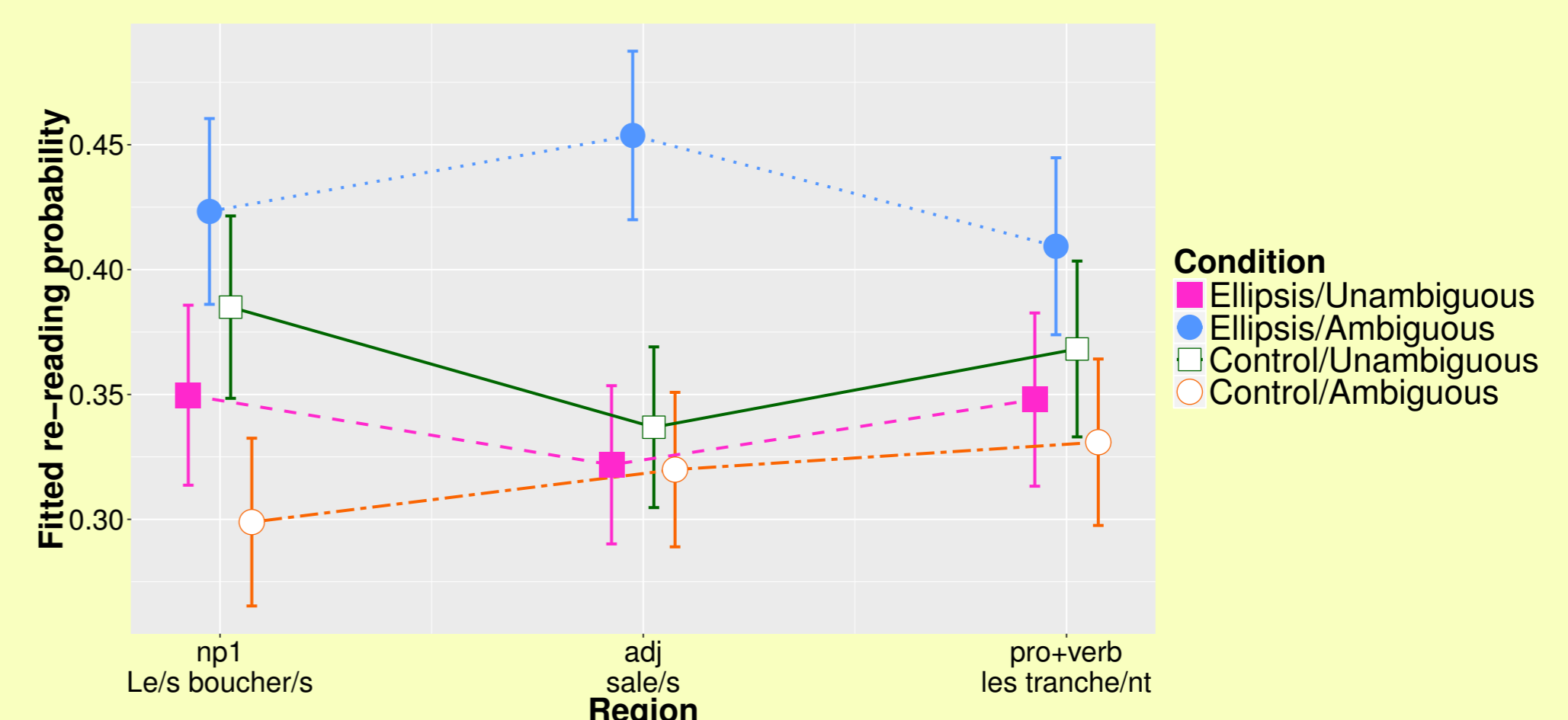
Ellipsis site (Total reading times), 'Triple trouble'



- ▶ In 'triple trouble' and **subject-object inversion** sentences, longer re-reading times for the antecedent region in the ambiguous conditions*
- ▶ In 'triple trouble' sentences, more refixations on the initial noun and the adjective in the ambiguous/ellipsis condition*

* Post-ellipsis fixations only

Post-ellipsis antecedent refixations, 'Triple trouble'



Discussion

- ▶ Garden-path effects were observed in all three sentence types
- ▶ Only in 'triple trouble' sentences, additional ellipsis processing difficulty (elevated reading times at the ellipsis site + antecedent re-reading) was observed with temporarily ambiguous antecedents
- Results do not support the reactivation hypothesis, but are compatible with accounts in which ellipsis acts as a memory pointer (Frazier & Clifton, 2001/2005; Martin & McElree, 2008)
- Results for 'triple trouble' sentences suggest that subjects fail to resolve the garden-path before reaching the ellipsis site → implies 'good enough' processing (e.g., Ferreira & Patson, 2007)
- Why is this visible only in 'triple trouble' sentences? Were the other garden-paths easier to resolve?

References. Ferreira & Patson (2007). *Lang Linguist Compass*, 1(1-2), 71–83. Frazier & Clifton (2001). *Syntax*, 4(1), 1–22. — (2005). *Syntax*, 8(2), 121–174. Lewis & Vasishth (2005). *Cognitive Sci*, 29, 375–419. Martin & McElree (2008). *J Mem Lang*, 58(3), 879–906. Paape (2015). Poster presented at AMLaP 2015. — (2016). *Front. Psychol.*, 27(7), doi 10.3389/fpsyg.2016.00027.