

PROCESSING PLURALITIES: SYNTAX AND THE LEXICON

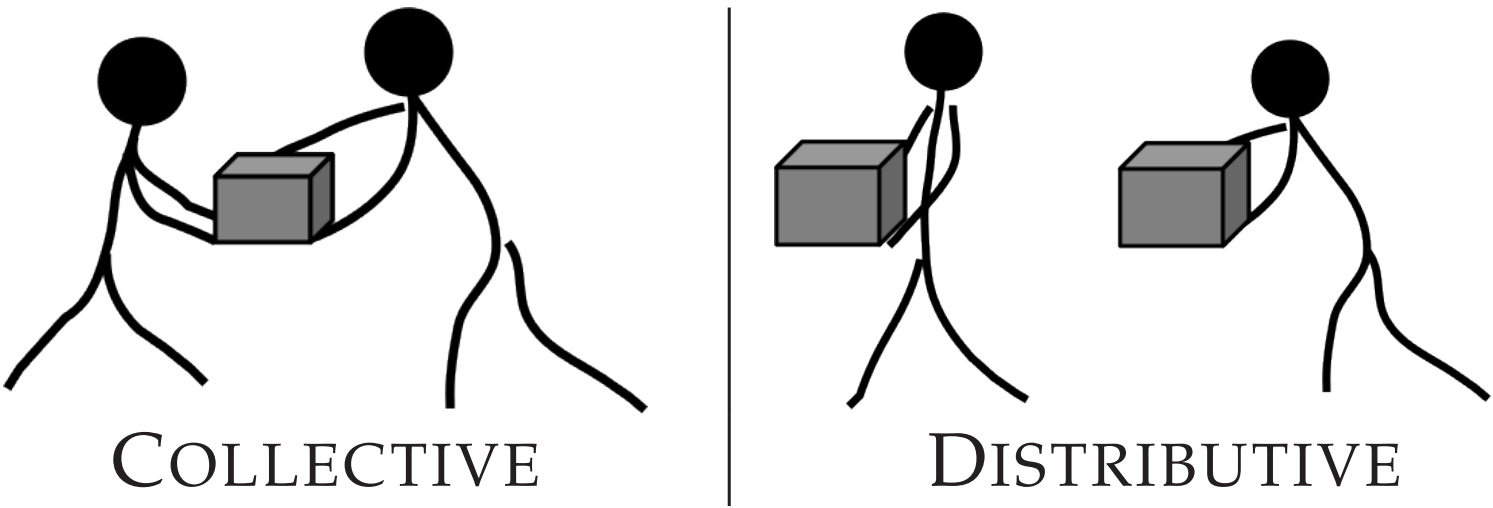
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1. INTRODUCTION

Plural expressions are often ambiguous between (at least) two readings: a COLLECTIVE and a DISTRIBUTIVE reading.

(1) The kids carried a box.



Experimental studies have shown that the processor prefers the collective interpretation of plural expressions. Why is that?

Highlights:

- Only one type of collective interpretations preferred
- Parser’s choice syntactically driven

2. PREVIOUS WORK

Frazier et al. (1999):
Eye-tracking study on the effect of **early** /**late** disambiguation towards **distributivity** or **collectivity**

- Early disambiguation:
 1. Distributive: Lynne and Patrick **each** saved \$1000 to pay for their honeymoon.
 2. Collective: Lynne and Patrick **together** saved \$1000 to pay for their honeymoon.
- Late disambiguation:
 3. Distributive: Lynne and Patrick saved \$1000 **each** to pay for their honeymoon.
 4. Collective: Lynne and Patrick saved \$1000 **together** to pay for their honeymoon.

Late distributive disambiguation, (3), increases reading measures (first pass, total times, regressions) compared to late collective disambiguation, (4). Early distributive disambiguation, (1), does not significantly increase reading measures compared to early collective disambiguation, (2).

Interpretation: Potentially ambiguous predicates are interpreted collectively by the processor \Rightarrow garden-path like effect in late distributive disambiguation (cf. also Kaup et al., 2002, Boylan et al., 2011, Patson, 2014)

3. EXPERIMENT I (SELF-PACED READING)

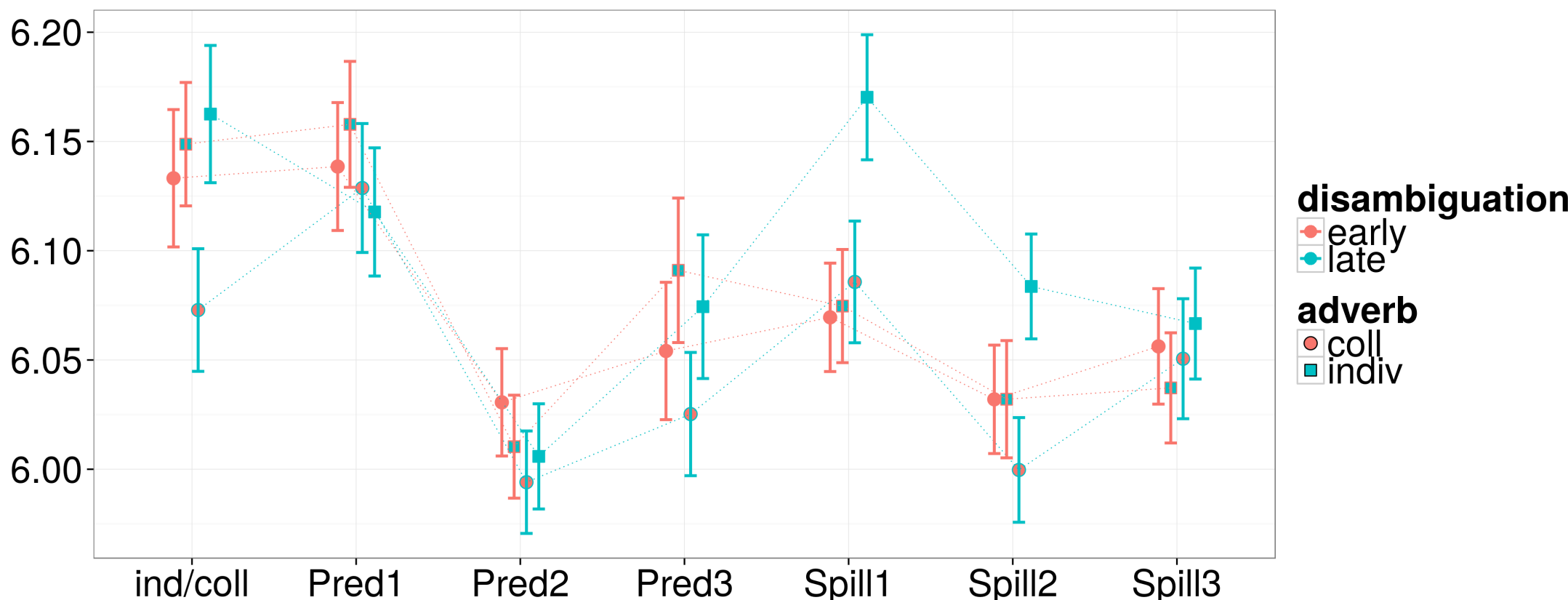
- Early disambiguation:
 1. The ambitious girls **individually** /**together** won an award during the science fair.

Why *individually*?: *Each* in its early position is often treated as a different semantic entity than the late *each* (Zimmermann, 2002). **Are the findings of Frazier et al. solely due to the difference between the early *each* and late *each*?** (Conclusion from Experiment I: No.)

Main findings:

- Distributivity \times Late disambiguation \Rightarrow slowdown (Spillover (*during the science*) $\beta = 0.06, t = 2.2$); supports Frazier et al.

- Late disambiguation:
 2. The ambitious girls won an award **individually** /**together** during the science fair.



Procedure: self-paced reading; 28 items, 40 fillers; 43 students from UCSC
Pre-analysis of RTs: Comprehension questions: 94% correct; 1 subject 79% correct, excluded; residualized log-RTs used for analysis

4. EXPERIMENT II (SELF-PACED READING)

- Object present:
 1. Early: The girls **individually/collectively** won an award during the science fair.
 2. Late: The girls won an award **individually/collectively** during the science fair.
- No object:
 3. Early: The girls **individually/collectively** won during the science fair.
 4. Late: The girls won **individually/collectively** during the science fair.

Main findings:

- Late disambiguation \Rightarrow slowdown (Spillover (*during*): $\beta = 0.09, t = 2.5$)
- Object \Rightarrow speedup (Spillover (*the*): $\beta = -0.07, t = -2.6$)
- Distributivity \times Late disambiguation \Rightarrow speedup (Spillover (*science*): $\beta = -0.11, t = -2.9$)
- Phrasal distributivity \times Late disambiguation \Rightarrow slowdown (Spillover (*science*): $\beta = 0.18, t = 3.1$)

Interpretation: The findings (wrt distributivity) compatible with the position that the processor prefers **phrasal** collectivity of ambiguous predicates.

- support for two types of distributivity
- \Leftarrow parser’s preference for collectivity syntactically driven

Why to test: There is a distinction between phrasal and lexical distributivity / collectivity (Roberts, 1989, Winter, 2001, Kratzer, 2013, a.o.):

1. The students won.
2. The students won an award.

- (1) – distributivity potentially due to lexical vagueness (cf. Scha, 1982)
(2) – a syntactically composed predicate; distributive interpretation triggered by an extra syntactic mechanism (an operator, Dist).

Are both types of distributivity dispreferred? (Conclusion from Experiment II: no, only phrasal distributivity is.)

Procedure: self-paced reading + acceptability study (5-point scale); 32 items, 96 fillers; 55 students from UCSC • Acceptability: No effect of presence/absence of object or type of disambiguating adverb; only effect = late adverbs in object condition dispreferred ($\beta = -.4, z = -2.4, p = .01$)
Comprehension: 90% correct; 2 subjects \approx 70% correct, excluded; RTs of 2 subjects 2 s.d. away from grand mean, excluded; residualized log-RTs used

