Is working memory sensitive to discourse status? Experimental evidence from responsive appositives

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RESEARCH QUESTION: Does the discourse status of appositives affect their contribution to sentence complexity?

1. Discourse Status of Appositives

- Appositives canonically contribute new, speaker-oriented, secondary information in a discourse (Potts 2005/2012, Simons et al. 2010, a.o.); I call this canonical use **supplemental appositives.**
- As supplemental material, appositives are argued to generally not contain answers to QUDs (Roberts 1996/2012, Ginzburg 1996, Potts 2005/2012, AnderBois et al. 2010, a.o.):

Q: What kind of dog did you see?
A: I'm not sure exactly,
Restrictive relative: but it was a dog that had long fur.
Appositive: #but it was a dog, which had long fur.

- However, Koev (2013) and Koev & Syrett (2014) observe that appositives have the ability to address a coordinated QUD:

Q: Who did you see at the potluck and what did they bring?
A: I saw Renee, who brought an artichoke dip.

I call appositives in this use **responsive appositives.**

2. Appositives and Restrictive Relatives Show Different Length Effects

- **Experiment 1 & Dillon et al. (2014):** Appositives contribute less to the perceived complexity of their containing sentence than a comparable restrictive relative clause does. Dillon et al. argue that appositives contribute a separate speech act and as such draw on separate working memory resources from their matrix clause.

Design:
Length (long or short) x *Clause* (parenthetical or restrictive)

Results:
▸ Main effects of *Length*, *Clause* (*ps* < .001)
▸ Interaction effect of *Length x Clause* (*p* < .001)

Experiment 1 Summary. Error bars indicate standard error of the mean. n = 24

REFERENCES:
AnderBois, S. et al. 2010. Crossing the appositive/at-issue meaning boundary. **Dillon, B. et al. 2014.** Pushed aside. **Fodor, J. D. 2002.** Psycholinguistics cannot escape prosody. **Ginzburg, J. 1996.** *Interrogatives*. **Harris, J. & C. Potts. 2011.** Perspective-shifting with appositives and expressives. **Hirotani, M., L. Frazier, & K. Rayner. 2006.** Punctuation and intonation effects. **Koev, T. 2013.** *Apposition and the structure of discourse*. **Koev, T. & K. Syrett. 2014.** Experimental evidence for the truth conditional contribution of appositives. **Potts, C. 2005.** *The logic of conventional implicatures*. **Potts, C. 2012.** Conventional implicatures and expressive content. **Roberts, C. 1996/2012.** Information structure in discourse. **Simons, M. et al. 2010.** What Projects and Why. **Tonhauser, J. 2012.** Diagnosing (not-)at-issue content.

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HYPOTHESIS: If the difference in perceived complexity between sentences containing appositives vs. restrictive relatives is due to the supplemental discourse status of appositives, then sentences containing responsive appositives, which express primary discourse information, will show greater complexity effects than sentences containing supplemental appositives.

3. Responsive Appositives Show an Equally Weak Length Penalty as Supplemental Appositives

Proposal: We can control the discourse status of appositives by varying whether the appositive content addresses an explicit experimental QUD (Simons et al. 2010, Tonhauser 2012).

Supplemental Appositive
Q: What is the bear wearing?
A: The bear (who is standing on the ball) is wearing a hat.

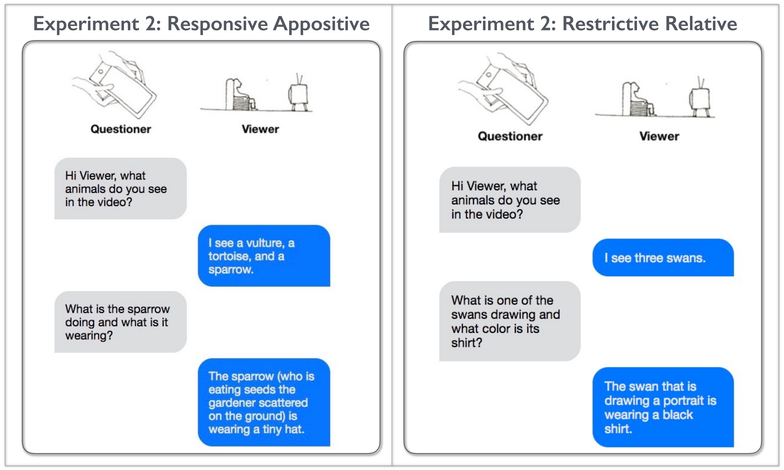
Responsive Appositive
Q: Where is the bear standing and what is it wearing?
A: The bear (who is standing on the ball) is wearing a hat.

- **Design and Methods for Experiments 2&3**

▸ **Design:** *Length* (long or short) x *Clause* (parenthetical or restrictive) x *Discourse Status* (responsive or supplemental)

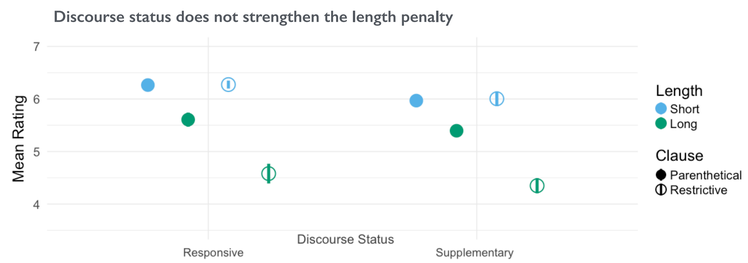
EXPERIMENT 2 *LENGTH* X *CLAUSE* CONDITIONS

CLAUSE	LENGTH	ITEM
Parenthetical	Short	The bear (who is standing on the ball) is wearing a hat.
	Long	The bear (who is standing on the ball the trainer rolled across the room) is wearing a hat.
Restrictive	Short	The bear that is standing on the ball is wearing a hat.
	Long	The bear that is standing on the ball the trainer rolled across the room is wearing a hat.



- **Experiment 2: Medial Appositives**

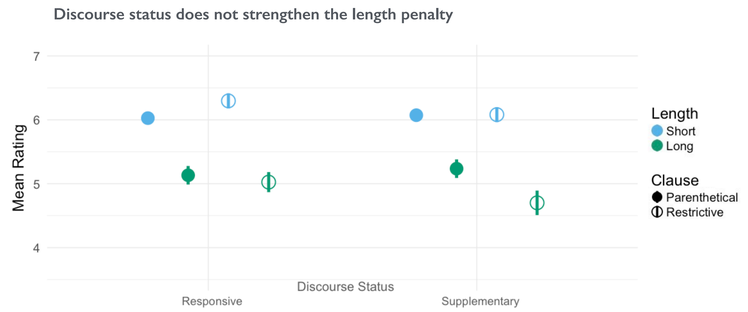
▸ **Results:** Main effects of *Length, Clause, & Discourse Status*; Interaction of *Length x Clause* (*ps* < .01)



Experiment 2 Summary. Error bars indicate standard error of the mean computed over items. n = 40

- **Experiment 3: Final Appositives**

▸ **Results:** Main effect of *Length*; Interaction of *Length x Clause* (*ps* < . 001)



Experiment 3 Summary. Error bars indicate standard error of the mean computed over items.

Main Findings

- **Interaction of *Length* x *Clause*:** appositives contribute less to the complexity of their containing sentence than restrictive relatives.
- **No Interaction of *Length* x *Clause* x *Discourse Status*:** responsive appositives show no greater length effects than supplemental appositives.

4. Prosody as a Driver of Length Effects

- Burdening of prosodic domains: Parenthetical prosody facilitates how input is chunked in short term memory independently of the discourse status of the material (Fodor 2002, Hirotani et al. 2006).
- Force identical prosodic boundaries across items:
  - ▸ The bear is wearing a beret (which, predictably, is a light blue color the French trainer picked out).
  - ▸ The bear is wearing a beret that, predictably, is a light blue color the French trainer picked out.

CONCLUSION: We found no evidence that length effects are sensitive to the discourse status of appositives and restrictive relatives. We propose that the observed length effect differences are due to prosodic-domain specific parsing operations.