Listening to Resumptives: An Auditory Experiment

Lauren Eby Clemens (Harvard), Adam Morgan (UC Santa Cruz), Maria Polinsky (Harvard), Ming Xiang (U Chicago)

Abstract

The claim that resumptive pronouns (RPs) ameliorate island violations in English is widespread in the theoretical literature, yet this intuition has not been substantiated by experimental work. We present a large-scale experiment on the acceptability of object RPs in English under several island conditions using auditory stimuli. In line with previous findings, we find no significant difference between participants' ratings of island violations with gaps compared to those with resumptive pronouns (all $p > 0.05$). Furthermore, we find no evidence to suggest that English RPs facilitate sentence comprehension, as participants were as accurate with comprehension questions pertaining to sentences with RPs as they were with gaps and controls (all $p > 0.05$). We propose that resumptive pronouns do not fix derivational problems in English, but are used as a coreference tracking device by the speaker, for the speaker.

Questions

1) Does the acceptability of RPs in English vary according to the modality of the presentation (i.e. auditory vs. visual)?

2) Do RPs in English facilitate the parsing of island violations? Do they help speakers access a theta-role stranded in an island?

Background

Theoretical Background

• Since Ross (1967), we assume resumptive pronouns (RPs) repair island violations.
• In Lebanese Arabic, a.o., DPs are uniquely able to access a theta role in a syntactic island by co-indexing with an RP (Aoun et al. 2001).
• In English, RPs also found in islands:

1) Antigua is one of those places that we don't have an extradition treaty with *them* (NPR).
2) [She] just received an email containing the relative clause that she will have no idea what *it* is (Facebook).

• RPs found in languages like Lebanese Arabic differ from those found in languages like English (McCloskey 2007)

Two Types of RP-Languages?

	Arabic, a.o.	English, a.o.
Degraded	×	✓
Limited in register	×	✓
Obligatory	✓	×
Banned from top subject position in a relative clause	✓	×
Optionally bound by a quantificational antecedent	✓	×
Diagnostic of A'-movement	✓	×

• Should we say that RPs in a language like Arabic are only superficially similar to RPs in a language like English (cf. McCloskey 2007)? **First, can we find any island 'rescuing effects' in a language like English?**

Experimental Precedent

• Zukowski & Larsen (2004) and Ferreira and Swets (2005) RPs in object position rated significantly lower than grammatical controls, but no comparison to gaps.
• Alexopoulou & Keller (2007) extract objects from different levels of embeddings and different types of islands questions (weak) and relative clauses (strong). RPs are as good or worse than gaps, but the RPs improved with deeper embedding.
• Heestand et al. (2011) expanded the types of structures under consideration and added a time constraint. Still, RPs in object position did not ameliorate island violations. Response time for RPs was quicker than gaps, suggesting that participants parsed the RP examples faster. **Can we find any island 'rescuing effects' if we imitate the way speakers *use* RPs?**

Experiment

Materials

• 540 experimental items: 18 conditions with 30 examples per factorial permutation (50 filler stimuli of different complexity)
• 3x3x2 factorial design
 └ Clause-type: declarative vs. question
 └ Island-type: adjunct vs. CNP vs. factive
 └ Gap-type: grammatical (i.e. a control) vs. RP vs. Ø (i.e. a gap)
• Different gap-types in declarative CNP islands:
 This is the rope$_i$ that…
  Control …the man who escaped the prison braided t_i.
  RP …the man who braided it$_i$ escaped the prison.
  Gap …the man who braided Ø$_i$ escaped the prison.
• Comprehension questions tested whether the participants were co-indexing the relevant DP with the relevant RP or gap:
  Did the man braid his hair? **No**
  Did the man braid the rope? **Yes**

Methods

• Items were recorded by a non-linguist male native speaker of American English naive to the purpose of the experiment.
• A handful of items contained substantial pauses that were shortened in Praat (Boersma & Weenink 2011).
• The experiment was run in Experigen (Becker & Levine 2010).
• The web server executed a multistage random sample of materials for each participant choosing a total of 28 items: 18 target items and 10 fillers.
• Each participant heard only one stimulus from any given contextual theme, (e.g. a man escaping prison with a rope…).
• Acceptability judgments were collected with a 5-point Likert scale.
• Participants practiced rating a filler item and answering a comprehension question about it.
• 188 native speakers of American English completed the survey with comprehension question accuracy ≥80%.

Results

Mean Ratings Across Conditions

Condition	Declaratives	Questions
Adjunct Control	3.41	2.64
Adjunct Gap	3.12	2.42
Adjunct RP	3.00	2.71
CNP Control	4.22	3.24
CNP Gap	2.28	2.18
CNP RP	2.33	2.29
Factive Control	3.88	3.89
Factive Gap	2.19	2.19
Factive RP	2.24	2.06

Planned Comparisons

• Control sentences (mean=3.53) significantly better than island violations with gaps (mean=2.41) and RPs (mean=2.43) (both $p<0.001$)
• No significant difference between the way participants rate gaps as compared to RPs ($p>0.05$)
• Declaratives (mean=2.97) rated significantly higher than questions (mean=2.61) ($p<0.001$)
• Adjuncts (mean=2.88) rated significantly higher than CNPs (mean=2.75) and factives (mean=2.74) (both $p<0.001$)
• No significant difference between CNPs and factives ($p>0.05$)

Complete Regression Model

Mixed-effects regression model using the *lmer()* function from the *lme4* package in R. We report only those effects that reached significance; p-values calculated with the *pvals.fnc()* from the *LanguageR* package (Baayen 2011).

		β	SE(β)	t	p-value
Main Effects	(Intercept: Declarative, Adjunct, Control)	3.41	0.10	35.50	< 0.001
	Question	-0.81	0.12	-6.84	< 0.001
	CNP	0.81	0.12	6.81	< 0.001
	Factive	0.48	0.12	4.06	< 0.001
	Gap	-0.27	0.12	-2.33	< 0.05
	RP	-0.42	0.12	-3.60	< 0.005
Interactions	Question:Factive	0.83	0.12	4.94	< 0.001
	CNP:Gap	0.53	0.12	3.10	< 0.001
	Factive:Gap	-1.65	0.12	-9.87	< 0.001
	CNP:RP	-1.43	0.12	-8.61	< 0.001
	Factive:RP	-1.22	0.12	-8.85	< 0.001
Third Term Interactions	Question:CNP:Gap	0.78	0.24	3.30	< 0.001
	Question:CNP:RP	0.44	0.24	1.85	< 0.05
	Question:Factive:RP	-0.73	0.24	-3.09	< 0.01

Accuracy

• There is no interaction between gap type and accuracy with comprehension questions.
• Participants are as accurate with controls as they are with island violations (gaps and RPs) and are as accurate with gaps as they are with RPs (both $p>0.05$).

Comprehension Question Accuracy by Gap Type

	%Correct	%Incorrect	%Unclear
Control	84.71	5.43	9.85
Gap	82.50	5.74	11.76
RP	84.11	4.93	10.96

Conclusions

Two ways to think about "rescuing effects":
1) **Grammaticality** (measured by ratings) and
2) **Parsability** (measured by comprehension)

• Using novel methodology, this study confirms previous findings: RPs do not improve the grammaticality of island violations in English. **RPs are not more grammatical than gaps.**
• Participants answer comprehension questions about stimuli with gaps and stimuli with RPs as accurately as they do controls. **RPs are not easier to understand than gaps.**

Discussion

Interpretation of Results

• Contra popular belief, resumption in English does not ameliorate island violations.
• Therefore it is not a syntactic strategy for establishing A'-binding relationships.
• But speakers still use RPs!
English RPs do not fix derivational problems, but are used to track coreference by the speaker, for the speaker.
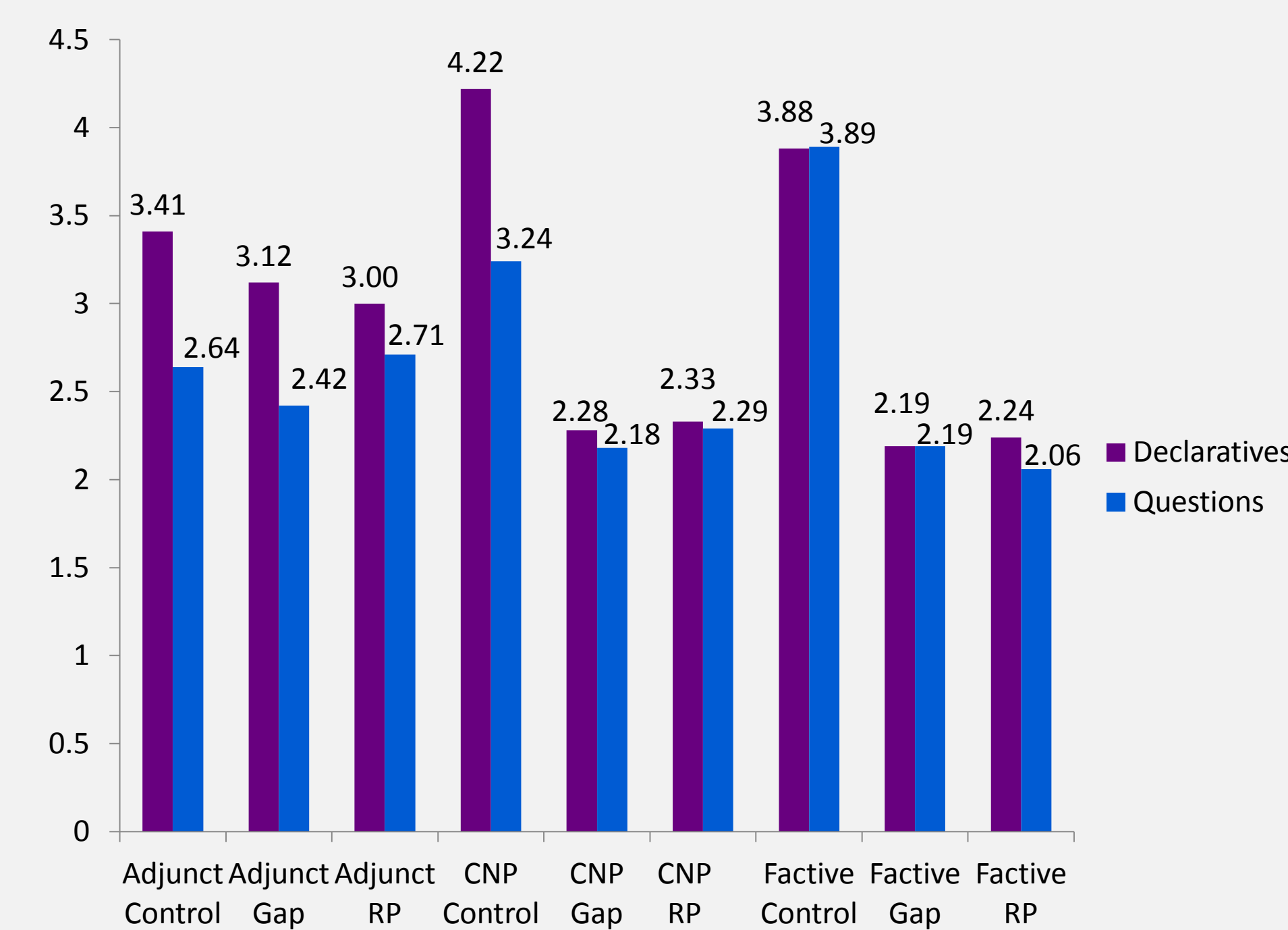
Future Research

We predict that English RPs should be better where establishing coreference is more likely:

1) **Subjects:** Subjects are "privileged" with respect to cross-clausal coreference (Keenan 1976 a.o.), confirmed by experimental results (Han et al. 2012).
2) **Distance:** The need to mark coreference overtly increases with distance (Fretheim et al. 1996). Deeper embedding increases RP acceptability is confirmation (Alexopoulou & Keller 2007, Heestand et al 2011).
3) **Causality:** Clausal adjuncts as opposed to adjuncts which describe concomitant, unrelated events, facilitate coreference (Kehler 2002).
4) **Pitch:** Pitch could be used to manipulate the likelihood of coreference between an RP and its antecedent (Kühnlein et al 2010).
Coming full circle: are all these coreference tracking properties also present in A-bar moved RPs as in Lebanese Arabic, or is that type of resumption completely different?

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