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English Resumptive Pronouns are More Common where Gaps are Less Acceptable

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## 1. Introduction

A-bar dependencies occur when an argument appears clause-peripherally, dislocated from its canonical base position, as in relative clauses (1a). The displaced argument is a *filler* (italicized in (1) and throughout), and the base position is typically realized as a *gap*—that is, a syntactic category which is not pronounced (represented by an underscore throughout). A subset of languages that employ the filler-gap strategy, including Arabic (Aoun and Choueiri 1996), Irish (McCloskey 2006), Swedish (Engdahl 1986), and Vata (Koopman 1986), also use a second strategy to realize A-bar dependencies: *resumption*. Here, the base position is ‘filled’ by an ordinary-looking *resumptive pronoun* (RP, bold throughout).

- (1) a.    an     ghirseach    a     ghoid na     síogaí \_\_\_  
           the    girl            C     stole the     fairies *t*  
           ‘the girl who the fairies kidnapped’
- b.    an     ghirseach    a     ghoid na     síogaí **í**  
           the    girl            C     stole the     fairies **her**  
           ‘the girl who the fairies kidnapped’     (Irish; McCloskey 2006)

RPs also occur in English, as in (2):

- (2)    “...the sale of the uranium that nobody knows what **it** means”

-Donald Trump (Gore et al. 2016)

Bennett (2008) finds 66 instances of resumption in the Switchboard corpus (6138 tagged five-minute telephone conversations), and, Ferreira & Swets (2005)

successfully elicited RPs in a production task by encouraging their participants to produce A-bar dependencies spanning a Wh island boundary. Their finding, that English speakers produce RPs in islands, converges with an intuition dating back to Ross (1967) that islands encourage resumption. Broadly speaking, the literature contains three approaches to explaining this distribution. One approach, *amelioration*, holds that RPs are used in precisely those environments where they would constitute an improvement with respect to gaps—either in acceptability, e.g., subjects inside of strong islands (Keffala & Goodall 2011), or in comprehensibility (Hofmeister & Norcliffe 2013; Beltrama & Xiang 2016). The second approach, the *last-resort strategy*, holds that RPs circumvent constraints on movement, providing languages with a licit backup approach where gaps are prohibited (Kroch 1981, Shlonsky 1992). Finally, *production* approaches hold that RPs are an ungrammatical production phenomenon, the result of a production system that plans complex structures incrementally (Kroch 1981; Asudeh 2004, 2011a). According to Asudeh’s (2004, 2011a) model, the system produces a series of locally well-formed structures which may not always result in global well-formedness (Kroch 1981; Asudeh 2004, 2011a; and see Tyler & Warren 1987 and Asudeh 2004 for an analogous idea in comprehension).

Puzzlingly, recent experimental studies have demonstrated that English RPs are consistently rated as highly unacceptable, and nearly uniformly so across varying syntactic contexts (Dickey 1996; Alexopoulou & Keller 2007; Heestand et al. 2011; Keffala & Goodall 2011; Clemens, Morgan, & Polinsky 2012; Han et al. 2012;

Polinsky et al. 2013). On the most straightforward interpretation of unacceptability, this would imply that resumption is ungrammatical in English, even in domains where it is produced.

Authors such as Alexopoulou & Keller (2007) and Polinsky et al. (2013) have claimed that these facts constitute a paradox: If resumption is ungrammatical, then what might explain its prevalence in production? Conversely, if the systematic production of RPs reflects grammatical knowledge, then what might account for its reported unacceptability? Or is RP production not systematic after all? One approach to resolving this apparent paradox posits two distinct grammars: one used in production, under which RPs are licit, and another used for acceptability judgment, under which RPs are illicit (Alexopoulou & Keller 2007, Polinsky et al. 2013).

Part of the difficulty in reconciling comprehension and production data stems from the paucity of existing data: there are very few production studies, and they are limited in what syntactic structures are used (Zukowski & Larsen 2004, Ferreira & Swets 2005; cf. Chacón 2015). Therefore, the present study attempts to characterize the broad distribution of RPs in production in a controlled production task—the first attempt we are aware of to quantitatively characterize this distribution. The data reveal two patterns:

- (i) that RPs are produced more in domains where gaps are less acceptable;
- (ii) that island domains accrue more RPs than what would be expected on the basis of gap acceptability alone.

We interpret these findings, along with acceptability data, as evidence that resumption is ungrammatical in English. We present an outline of a production model similar to that of Asudeh (2004, 2011a), but which accounts for the distribution of RPs across syntactic contexts, along with several of the puzzling observations about English resumption.

## 2. Experiment 1: Elicited Production Task

We asked 47 participants at the University of California, Santa Cruz, to complete a typed, elicited production task. Participants were presented with a ‘base’ version (3a) of the target sentence, so-called because all arguments appear in their base (unextracted) syntactic position.

- (3) a. The news that the alien dissected the woman shocked Karl.      BASE  
       b. I know the woman who the news that \_\_\_\_\_.      PROMPT

Participants were then presented with a prompt (3b), which included the beginning of a relative clause, the head of which was one of the arguments from the base sentence. Participants were instructed to “rephrase the original sentence” by completing the prompt, trying “to convey all of the meaning from the old sentence in the new one.” The goal of this manipulation was to elicit continuations like:

- (4) *I know the woman who the news that ...*  
       a. the alien dissected \_\_ shocked Karl.      TARGET GAP RESPONSE  
       b. the alien dissected her shocked Karl.      TARGET RP RESPONSE

We created the materials in a 15-condition design. The first 12 conditions were organized by a 2×6 subdesign that crossed BASE POSITION with EMBEDDING DOMAIN. BASE POSITION refers to the syntactic position of the extraction site and there were two levels: either Embedded Subject or Embedded Object. EMBEDDING DOMAIN refers to the container of the extraction site and there were six levels: singly-embedded non-islands (Emb 1), doubly-embedded non-islands (Emb 2), Wh complements<sup>1</sup> (Wh), adjuncts, complex subject NPs (CNPC Subj), and complex object NPs (CNPC Obj). We added three baseline conditions by modifying the singly-embedded non-island, complex object NP, and adjunct conditions so that the target extraction site was the matrix subject. A total of 40 item sets were constructed; a sample set is given in Table 1.

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<sup>1</sup> An anonymous reviewer points out that complement clauses headed by Wh- words may have different syntactic properties than those headed by “if”. Since we included both types of clauses in our “Wh-” stimuli, this condition may comprise a syntactically heterogeneous group. We therefore caution against interpreting either the production or judgment data independently for Wh- conditions. However, any heterogeneity within this condition would not impact the interpretability of the relationship between judgment and production.

| DOMAIN               | POSITION              |   |
|----------------------|-----------------------|---|
| <b>1 Emb</b>         |                       | <i>There's a prince that (the ogre claims)...</i> <span style="float: right;"><b>PROMPT</b></span>      |
|                      | <b>[Ext. Subject]</b> | <b>A prince</b> claims <u>the ogre slayed the troll.</u> <span style="float: right;"><b>BASE</b></span> |
|                      | <b>Emb. Subject</b>   | The ogre claims <b>a prince</b> slayed the troll.   |
|                      | <b>Emb. Object</b>    | The ogre claims the troll slayed <b>a prince.</b>   |
| <b>2 Emb</b>         |                       | <i>There's a prince that the ogre claims the spy discovered...</i>                                      |
|                      | <b>Emb. S.</b>        | The ogre claims <u>the spy discovered a prince</u> slayed the troll.                                    |
|                      | <b>Emb. O.</b>        | The ogre claims <u>the spy discovered the troll</u> slayed <b>a prince.</b>                             |
| <b>Wh</b>            |                       | <i>There's a prince that the ogre doesn't care if...</i>  |
|                      | <b>Emb. S.</b>        | The ogre doesn't care <u>if a prince</u> slayed the troll.  |
|                      | <b>Emb. O.</b>        | The ogre doesn't care <u>if the troll</u> slayed a prince.  |
| <b>CNPC<br/>Obj</b>  |                       | <i>There's a prince that (the ogre had the suspicion that)...</i>                                       |
|                      | <b>[Ext. S]</b>       | <b>A prince</b> had <u>the suspicion that the ogre slayed the troll.</u>                                |
|                      | <b>Emb. S.</b>        | The ogre had <u>the suspicion that a prince</u> slayed the troll.                                       |
|                      | <b>Emb. O.</b>        | The ogre had <u>the suspicion that the troll</u> slayed <b>a prince.</b>                                |
| <b>CNPC<br/>Subj</b> |                       | <i>There's a prince that the suspicion that...</i>  |
|                      | <b>Emb. S.</b>        | <u>The suspicion that a prince</u> slayed the troll shocked the ogre.                                   |
|                      | <b>Emb. O.</b>        | <u>The suspicion that the troll</u> slayed <b>a prince</b> shocked the ogre.                            |
| <b>Adjunct</b>       |                       | <i>There's a prince that (the ogre would jump for joy if)...</i>  |
|                      | <b>[Ext. S]</b>       | <b>A prince</b> would jump for joy <u>if the ogre slayed the troll.</u>                                 |
|                      | <b>Emb. S.</b>        | The ogre would jump for joy <u>if a prince</u> slayed the troll.  |
|                      | <b>Emb. O.</b>        | The ogre would jump for joy <u>if the troll</u> slayed <b>a prince.</b>                                 |

**Table 1** **Sample stimulus item set from elicited production task**  
 Participants were given the BASE item and the beginning of the target item (PROMPT, in italics). Parenthetical material was only presented for embedded base position conditions. Participants were asked to complete the new sentence by filling in a blank text box. Target responses are the same as the stimuli for the judgment task (see Table 2).



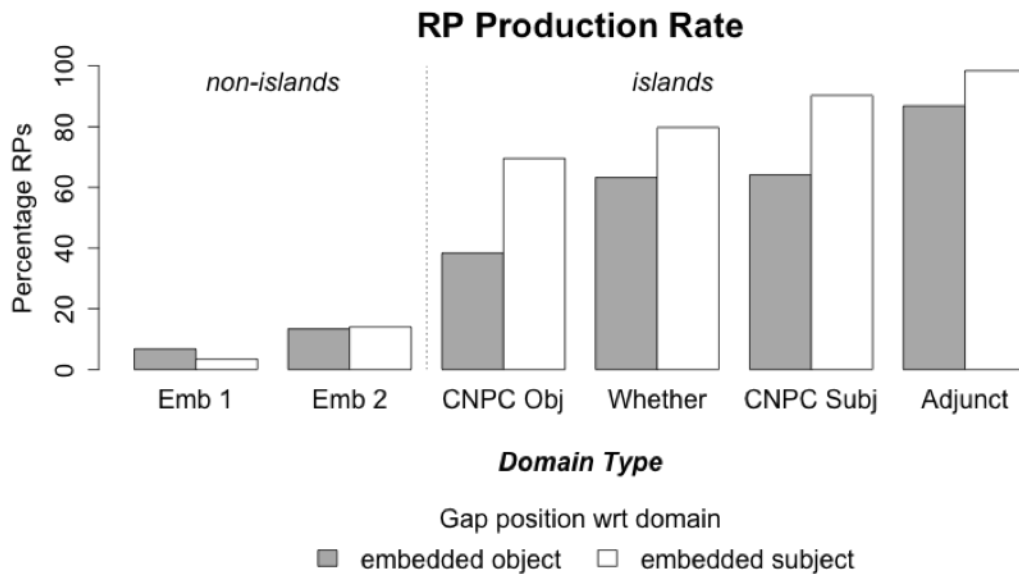
Participant responses contained a range of structures, but 69% of them contained an extraction dependency with either a gap or a RP where the relative clause head appeared in the base sentence.<sup>2</sup> Responses that did not conform to one of these two response types were not included in the analysis: 14% were ungrammatical (for reasons not related to resumption), 11% did not preserve the syntactic (8%) or thematic (3%) roles of the base, and 6% reformulated the base sentence in some other way (e.g., passivization). For full discussion of materials, procedures, coding, etc., refer to Morgan (2013). A total of 1155 responses from 42 participants were included in the analysis.

Figure 1 plots the rate of RP production in each of the grammatical structures we tested. For matrix subject conditions (not plotted), only two RPs (<1%) were observed (e.g., *There's a prince that he claims the ogre slayed the troll*). Restricting our attention only to Embedded Subject or Embedded Object conditions, we first found that there was more resumption for embedded subjects than for embedded objects (overall, 55% v. 41%,  $p < .001$ ). Resumption varied with embedding domain, with singly-embedded non-islands giving rise to the least resumption (5%), and adjunct clauses giving rise to the most (92%). To characterize this relationship, we conducted a logistic regression. Our experimental conditions were coded as Helmert contrasts to reflect a series of nested binary comparisons following the rank order

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<sup>2</sup> This proportion of target responses appears to be reasonable given the complexity of the structures we elicited, which had either three or four clauses. By comparison, in the seminal article on syntactic priming, Bock (1986) reports observed rates of target production as low as 78% for simpler monoclausal structures.

of bars in Figure 1: first, between singly-embedded non-islands and all other conditions; then, between doubly-embedded non-islands and all islands; between complex object NPs and the remaining islands; between Wh complements and remaining islands; and finally between complex subject NPs and adjuncts. All these comparisons were significant at the  $\alpha = .05$  level, reflecting a steady increase in RP production across these nested comparisons. There were two interactions with base position for the first two comparisons, reflecting the fact that the subject vs. object difference was only present for Island conditions. In sum, these results show (a) that production of resumptive pronouns is not categorical in any domain—i.e., there are no syntactic contexts which are produced exclusively with gaps or RPs (except perhaps matrix subject position)—, and (b) that the frequency with which RPs are produced depends on their syntactic context, ranging from 1% in high subject extractions to 98% in subject extractions from subject islands.



**Figure 1 RP elicitation rates**

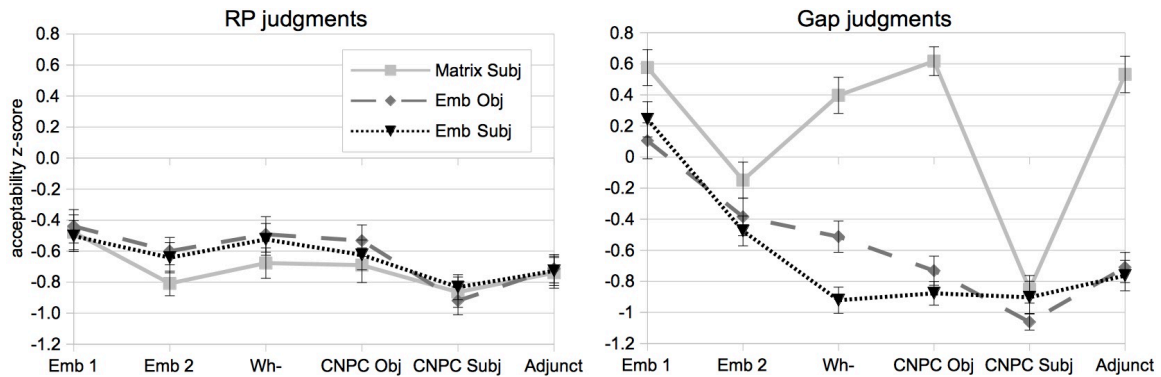
Bar groupings are organized by structural domains and, within bar groupings, by extraction site. Bars are ordered by average RP rate for each domain.

### 3. Experiment 2: Acceptability Judgment Task

On the hypothesis that the tendency to produce an RP in a given structure might depend on that structure's acceptability, we asked 63 participants to judge the target sentences from Experiment 1 (see example (4) and supplementary material on the first author's website). Sentences were created according to a fully crossed 3 (BASE POSITION: matrix subject, embedded subject, embedded object) x 6 (EMBEDDING DOMAIN: see production task) x 2 (STRATEGY: gap or RP) design, yielding 36 conditions. 36 item sets were constructed from 36 items from the production study,

and combined with 78 fillers designed to span the full range of acceptability.

Judgments were made on 1-to-7 scale.



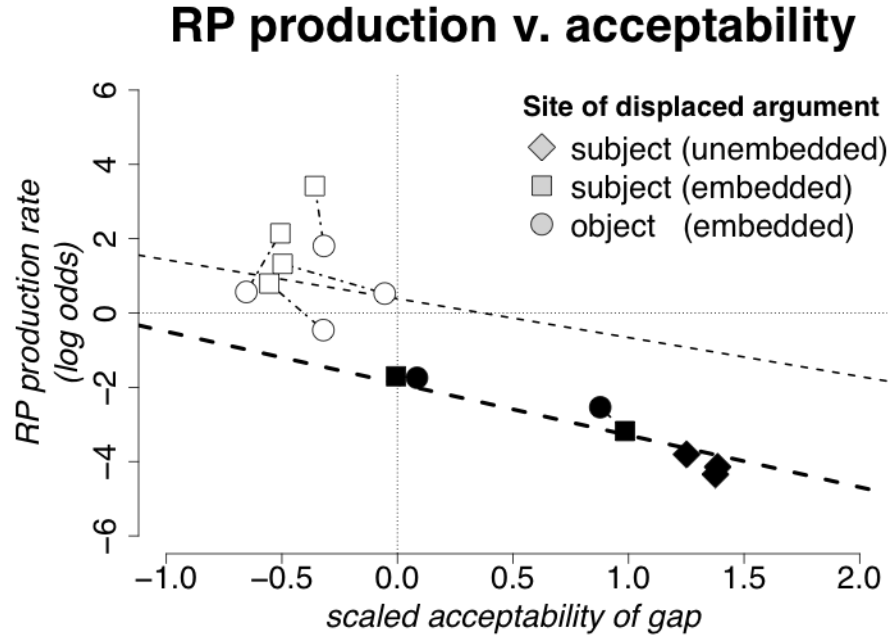
**Figure 2** Mean ratings for gaps and RPs by clause type and base position

Each participant's acceptability ratings were z-scored; means per condition are plotted. As expected from previous literature, RPs received a low, uniform rating across conditions, whereas gaps interacted with clause type and base position, resulting in the lowest ratings for island violations.

The results, which are shown in Figure 2, are generally consistent with those reported in previous experimental studies: sentences with gaps were rated highest for matrix (non-island) argument extractions, and sentences with RPs displayed the characteristic uniform, low ratings across conditions. We did not replicate Keffala & Goodall (2012) and Han et al.'s (2012) finding that gaps are significantly less acceptable than RPs in subject extractions from strong islands: for example, there was no difference between object and subject extractions for adjunct conditions. It is possible this reflects a floor effect stemming from our materials or scale.

#### 4. Analysis: The Relationship between Comprehension and Production

Because we observed that the rate of production of RPs increased as syntactic ill-formedness did, we tested the hypothesis that some measure of acceptability might predict RP production rate. Figure 3 plots the RP production rate against the gap acceptability rating. It shows a close, inverse relationship between the log-odds of producing a RP and how good the corresponding sentence with a gap is. It also suggests that RP rate is relatively inflated for dependencies that cross island boundaries (open symbols).



**Figure 3** RP production rate is inversely proportional to gap acceptability

The scaled gap acceptability is along the x-axis and the RP production rate, expressed in logits, is along the y-axis. For positive values, RPs are produced more often than gaps. Open symbols are island conditions; and symbol shape corresponds to extraction site. The dashed lines corresponds to the linear model fitting RP rate to acceptability rating and island status, as described in the text. Line segments link subject/object extraction conditions from the same embedding domain.

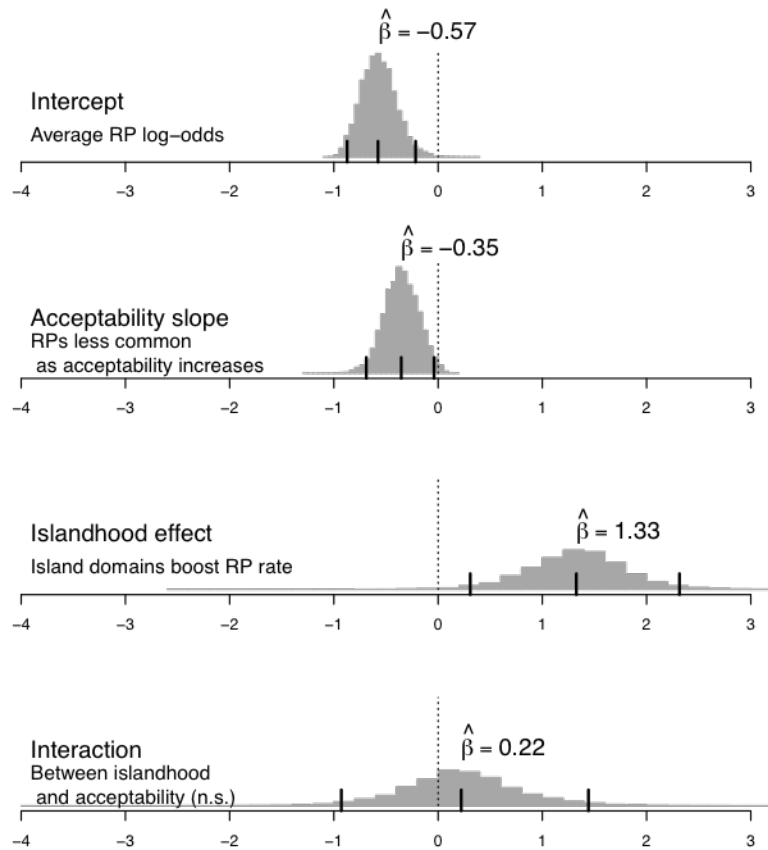
To find the best description of this relationship, we constructed a series of linear regressions relating the production rate for a given construction (in logits) as a function of the mean z-scored acceptability of that construction with a gap in it ('gap acceptability'), with a RP in it ('RP acceptability'), and the difference in acceptability between the RP and gap forms ('relative acceptability'). Because our observations come from two experiments with different samples of individuals, we used a bootstrap analysis to estimate the sampling distribution for our parameters.

We created 10,000 resampled data sets for both the production and comprehension experiments. In each instance, we sampled with replacement the items and participants to create a data set of the same size as the original (case resampling; Fox & Weisberg 2011). We recorded the coefficients for the regression models described in the text and their adjusted  $R^2$  value.

Among the three models, *gap acceptability* was the best predictor (median  $R^2_{\text{adj}}$ : 0.70). This was a 16% improvement, on average, from *relative acceptability* (median  $R^2_{\text{adj}}$ : 0.61) - an advantage observed in 92% of our simulation runs. *RP acceptability* alone was never a good predictor (median  $R^2_{\text{adj}}$ : -0.03). We then considered whether incorporating islandhood as a categorical variable would lead to a better model. For both *gap acceptability* and *relative acceptability*, including islandhood as a fixed effect considerably improved the model (median  $R^2_{\text{adj}}$ : 0.82 for *gap acceptability* and 0.83 for *relative acceptability*). Without considering islandhood, the RP rate of non-islands was always over-estimated, and the RP rate of islands was always under-estimated. Thus, it seems that crossing an island boundary boosts RP production above and beyond what is predicted on the basis of acceptability rating alone.<sup>3</sup> Figure 4 illustrates the four coefficients of the *gap acceptability* model, along with their sampling distributions.

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<sup>3</sup> One issue to be addressed by future research concerns whether or not the way our participants used the rating scale distorted our characterization of the relationship between acceptability and RP production in the island conditions. For example, suppose the 'true' acceptability of the island-violating conditions was lower than we could measure in our 1-7 Likert-like task, i.e., that the data were confounded by a floor effect. Then it may be artefactual that there is an island 'boost', or that there is



**Figure 4** Acceptability model of RP production: coefficient estimates

We estimated the sampling distributions of each of the four regression coefficients, by a bootstrap resampling procedure over subject and items (Fox & Weisberg 2011). Each panel corresponds to one of four coefficients in the gap acceptability  $\times$  islandhood regression. Sampling distributions were estimated by a bootstrap resampling procedure over subject and items. Inset tick-marks indicate 2.5 percentile, mean, and 97.5 percentile respectively. First 3 coefficients are significant at  $\alpha = 0.05$ . Mean (s.d.)  $R^2_{adj}$ : 0.82 (0.05).

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no correlation with acceptability for island conditions. However, even were the overall 'boost' artefactual, our data still suggest that something specific to island domains affects RP production, because only in island conditions did we observe a consistent subject/object asymmetry. Nonetheless, a more sensitive method - for example, the forced-choice design presented by Ackerman, Frazier & Yoshida (2014) - may help resolve some of these questions.



## 5. Discussion

Two clear patterns emerge from our data: (i) as the acceptability of a given structure with a gap decreases, the frequency with which RPs are produced in that same structure increases; (ii) extraction from an island domain further increases the tendency to use an RP, over and above the rate predicted by acceptability alone.

Our first finding presents a strong challenge to the idea that there is an extreme asymmetry between comprehension and production such that resumption is under different constraints depending on the task – e.g., if there were non-identical grammars for production and comprehension (Alexopoulou & Keller 2007). A conservative interpretation would be that whatever factors join to determine the acceptability of a gap, those same factors also influence the likelihood of producing an RP. In a stronger interpretation, a speaker's choice to abandon an A-bar dependency (i.e., produce an RP) would depend directly on gap acceptability.

Notably, none of the existing accounts of English resumption fit straightforwardly with the joint pattern of acceptability and production we have observed. If RPs are a last-resort strategy (Kroch 1981, Shlonsky 1992), then their very low acceptability is at odds with the fact that they are grammatical (albeit a last resort, cf. Chomsky 1991). If they serve to ameliorate, then it should be the relative acceptability of gaps and RPs that predicts the RP distribution across clauses, not absolute gap acceptability. We agree with Asudeh (2004, 2011a) that RPs are likely epiphenomena of production processes, but our data reveal the need for a more

specific hypothesis in order to predict the observed distribution, and to explain the close relationship between production, acceptability, and grammaticality.

We propose a mechanism that builds on two core components of production models: syntactic encoding and acceptability monitoring (Levelt 1989). According to this explanation, RPs are symptomatic of a breakdown in the production of a filler-gap dependency, and the likelihood of such a breakdown is increased by low gap acceptability and by islandhood. Specifically, at some point prior to the production of the gap, the speaker assesses the acceptability of the planned structure – consistent with Ferreira & Swets' (2005) claim that production of these complex structures involves considerable advanced planning.<sup>4</sup> The probability that the system continues to form the filler-gap dependency is proportional to the gap structure's degree of acceptability, i.e., the higher the gap acceptability, the more likely the dependency is to be completed with a gap. In cases where the system does not continue the dependency, production nevertheless continues, but a gap is no

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<sup>4</sup> Ferreira & Swets (2005) found that speakers' onset latencies—the time between stimulus presentation and the beginning speech—were longer for productions with RPs (e.g., “This is a donkey that I don't know where it lives”) than for licit alternatives (e.g., conjoined clauses: “This is a donkey and I don't know where it lives”). It is worth considering why speakers might continue with production of gaps or RPs as opposed to licit alternatives given their apparent early awareness of the impending unacceptability and early access to alternatives. We speculate that this is in part due to the fact that, when they do exist, alternatives often differ in semantic and pragmatic content from the intended utterance. For instance, in a conjoined alternative like “This is a donkey and I don't know where it lives”, the first proposition may be an odd thing to assert to anyone who already knows what a donkey is.

longer licensed. The terminus of the abandoned filler-gap dependency is instead realized as a pronoun in order to satisfy local subcategorization constraints.

On the surface, English RPs look like the outcome of a grammatical A-bar dependency strategy with RPs, as in Irish. Indeed, these utterances may be a precursor to grammaticized resumption (cf. Asudeh 2004, 2012). But at least in the current form of Standard American English, RPs appear to be epiphenomenal to the production system abandoning the production of an A-bar dependency. Consistent with many previous claims (Sells 1984; Prince 1990; Erteschik-Shir 1992; Asudeh 2004, 2011a, 2011b, 2012; Polinsky et al. 2013; Chacón 2015), RPs function as ordinary pronouns from the perspective of the producer.<sup>5</sup>

In our account, the production system's asymmetric reliance on gap acceptability, but not RP acceptability, derives from the differential status of gaps and RPs in the grammar. In accordance with Levelt (1989), we assume that planning is mechanistically guided by grammatical knowledge. If, as we contend, RPs are ungrammatical, then the production system should be unable to plan—and consequently to monitor the acceptability of—a sentence with an RP. It follows that the probability of producing a RP cannot depend on the acceptability of that RP.

This proposal also accounts for several other salient facts about resumption. The decision to continue gap production is inherently stochastic. Even in non-

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<sup>5</sup> The parsing of such dependencies is outside the purview of this squib, but see Chacón (2015), and Asudeh (2004) for a proposal which treats RP resolution as anaphor resolution without requiring there to be a grammatical representation of RPs in the comprehension grammar.

islands such as our singly-embedded (Emb 1) condition, where gaps are highly acceptable, it is predicted that there would be a non-zero rate of resumption – which we found, albeit a very low rate indeed. When there was an additional level of embedding in non-islands (Emb 2), the rate of resumption increased. This is consistent with the prediction that the reduced acceptability associated with the extra level of embedding (cf. Dickey 1996) should encourage the filler-gap dependency to be abandoned more often. In islands, the fact that subject RPs are more common than object RPs may be similarly explained by virtue of the well-attested interaction between islandhood and syntactic position: within islands, subject gaps are less acceptable than object gaps (Kayne 1981, 1984; Keffala & Goodall 2012; a.o.). Finally, the low, nearly uniform ratings of RPs are also predicted. From the perspective of the comprehender, resumptive constructions are the combination of two environments: a matrix clause that introduces a filler (*There's a prince*); and an embedded clause that is licit within the embedded domain—i.e., when shielded from the filler (*that the ogre would jump for joy if he slayed the troll*)— but is globally infelicitous because of the missing gap. Across various island and non-island contexts, all resumptive constructions should incur one substantial cost to acceptability: that which stems from an incomplete filler-gap dependency.

Our second finding—that islands boost rates of RP production above and beyond what would be expected just on the basis of their low gap acceptability — means that the noticeably increased tendency to use RPs in island contexts cannot be reducible to acceptability alone. Island-violating sentences would accurately be

predicted to have a high baseline rate of resumption merely by virtue of their unacceptability. But islands also appear to encourage resumption in an island-particular way. The positive residuals for all island conditions in the acceptability-only model point to this conclusion, but we believe the most telling aspect of our data in this regard is the sensitivity of RP rates to whether or not the extraction is from subject or object position within the island domain. Embedded subject extractions consistently lead to more resumptive pronouns than object extractions in each island condition. However, in non-island conditions, there is no consistent relationship between extraction site and RP rate. For this reason, acceptability monitoring is not sufficient. We posit an early problem during the grammatical encoding stage of production must also be able to trigger the severing of the filler-gap dependency. Because this mechanism is directly sensitive to grammaticality, the subject/object contrast in RP rates within islands may alternatively arise due to differences in grammaticality, narrowly construed (Kayne 1981; 1984).

Our proposal agrees in many respects with that of Asudeh (2004, 2011a). Asudeh describes English RPs as the result of an incremental production system which occasionally opts for local over global well-formedness. He argues that in non-islands, the production system has a choice of how to realize the would-be gap position: either it can leave the position empty, to be linked with the filler; or a noun or pronoun may be inserted into the position. In the latter case, the result is a clause that is locally well-formed, but a global structure that is ungrammatical because it contains a filler but no gap. In island domains, “the option of positing a gap... is not

possible,” and as a result “the only way to construct a locally well-formed f-structure is to [insert] some lexical material,” e.g., an RP (Asudeh 2011a, p. 71).

While our data generally support Asudeh’s proposal that RPs are part of productions that have become decoupled from global well-formedness, the fact that rates of RP production are very orderly indicate the need for a more specific linking hypothesis to account for when the production system shifts from global well-formedness to local well-formedness. Previous accounts generally predict a coarser, if not categorical distribution for RPs in production. According to amelioration hypotheses, RPs are licensed in just those domains where they comprise an improvement relative to gaps. In their reliance on islandhood as a justification for resumption, last-resort accounts suggest that RPs should appear only in islands. Similarly, the Asudeh (2004, 2011a) production model predicts that RPs should be categorically present in islands, and optional in non-islands. If, as we’ve argued, the process of forming filler-gap dependencies is probabilistically dependent not only on well-formedness, but also on the (gradient) acceptability of the planned structure, then RPs should not be categorical in any domain. Instead, consistent with our production data, they should appear at low frequencies in non-islands and much higher frequencies in islands. And, in both domains, the rate of resumption should be graded by the factors that control acceptability beyond grammaticality.

A final benefit of production models like Asudeh’s (2004, 2011a) and our own is that the apparent paradox between judgment and production data is explained without having to adopt the position that there are distinct grammars for

comprehension and production. The low acceptability of RPs reported here and elsewhere (Alexopoulou & Keller 2007, Keffala & Goodall 2011, Polinsky et al. 2013, a.o.) would straightforwardly reflect their ungrammaticality. As we outline above, RPs' prevalence in production, which at first glance might seem to implicate their grammaticality, can in fact be derived from knowledge of gaps in a production model that can abandon A-bar dependencies after they have been started.

Ultimately, a larger question still stands: If resumptive pronouns are present in the input both to children learning Standard American English and to children learning Irish, why does only the latter group grammaticize them? Does the distribution or frequency of resumptive pronouns provide children with a cue? Or does some property of English grammar preclude the grammaticization of resumptive pronouns? The answers to these questions are not immediately apparent. We suspect that significant insights may be provided by experimental studies of production and comprehension in languages in which RPs are hypothesized to be grammatical.

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