Experimental Evidence for the

Truth Conditional Contribution and Shifting Information Status of Appositives
Abstract

Appositive constructions (My friend Sophie, (who is) a classical violinist, performed a piece by Mozart.) have stood at the center of debates concerning the range of possible meanings, and more specifically the status of not-at-issue entailments. However, it remains an open question what precisely their semantic contribution is to the sentence in which they appear. Here, we address this question head-on experimentally. We first investigate the information status of appositives and find that while nominal appositives (e.g., a classical violinist) and sentence-medial appositive relative clauses (e.g., who is a classical violinist) are largely not at issue, sentence-final appositive relative clauses can become at issue, as witnessed in their becoming the target of a direct rejection and being associated with subsequent questions. We then investigate the truth conditional contribution of sentences with appositives and find that whenever an appositive is false, participants render the entire sentence False. Reaction times complement truth value ratings to demonstrate that this decision is largely automatic. We discuss possible reasons for the difference among appositive types and sentential positions, and propose that the pattern of results we observe and the strong similarity with conjunction can best be accounted for in a unidimensional semantics which treats appositives as dynamic conjuncts but which also relates linguistic form to the timing of making assertions in discourse.
1. Introduction

The goal of this experimental study is to investigate the semantics of appositive constructions, such as the underlined part of (1).

(1) My friend Sophie, (who is) a classical violinist, performed a piece by Mozart.

Discussion of the semantic properties of appositives goes back at least as far as Frege (1892) and has recently gained considerable attention, thanks in large part to the work of Potts (2005). (See also AnderBois et al., 2010; Bach, 1999; Böer & Lycan, 1976; Chierchia & McConnell-Ginet, 2000; Schlenker 2009a, b; Tonhauser, 2012; a.o.) The main focus in this discussion has been on the layer of meaning to which appositive content pertains, and the way in which the appositive is related to the meaning of the entire sentence. Researchers have observed that while appositives express commitments that trigger entailments (and thus resemble regular assertions), appositive content is typically not at issue (i.e., is secondary to the main point of the utterance, and typically projects). This latter property makes them bear some resemblance to presuppositions, which are also not at issue, but which – unlike appositives – are not typically used to present new information (but see von Fintel, 2000; Gauker 1998; and Simons, 2003 for discussion of ‘informative presuppositions’ as notable exceptions). Given this distinction among possible meanings, Potts (2005) presents rather compelling reasons to treat appositives as conventional implicatures. (See, for example, his ‘meaning graph’ in Figure 2.1, 2005.) However, even with more or less general agreement that appositives differ from presuppositions and assertions, there are still extensive discussions of precisely how they differ, and how to account for their status formally.

What has been conspicuously missing in the literature on appositives is experimental evidence that could serve to pin down and describe in more fine-grained detail the semantic status and truth conditional contribution of appositives, and therefore adjudicate between the
various approaches to the semantics and pragmatics of appositives.¹ A review of the appositive literature reveals that most approaches treat appositives in English on par and as a uniform class, abstracting away from their syntactic form or position in the sentence, or only restricting attention to one particular type of appositive.² As a result, there has been no systematic manipulation of variables that could affect appositive status. The current work aims to fill this gap by experimentally investigating two core and intimately related semantic properties of appositives – their information status (i.e., whether they are “at issue” or “not at issue”) and their truth conditional contribution.

Here, we present a set of five experiments on appositives that manipulate certain variables: the form of the appositive (nominal appositives (NAs) v. appositive relative clauses (ARCs)) and the sentential position of the appositive (sentence medial v. final). Previewing our results, we show the following. First, we provide baseline evidence supporting previous intuitions that appositives generally represent not-at-issue content and are best targeted by an indirect rejection. However, sentence-final ARCs in particular can be the target of a direct rejection – and therefore seem to be at issue – nearly a third of the time. Our findings therefore demonstrate that whether or not appositives are treated as at-issue may depend on key structural properties. Moreover, sentence-final ARCs are perceived as a possible antecedent (a salient assertion) for ellipsis across sentences. Finally, we turn to an investigation of the truth-conditional properties of appositives and present robust evidence that sentences with appositives behave much like conjuncts with respect to the calculation of truth values: false appositive content is reason enough for participants to judge the entire

¹ To our knowledge, the only previous experimental work on the semantics and pragmatics of appositives is Harris & Potts (2009), which is concerned with the perspectival (i.e., subject or speaker) orientation of both appositives and expressives.

² Discussions included in Nouwen (2007) and Potts (2008) are recent exceptions.
sentence False, and not True or without a clear truth value. Together, these experimental results together present novel evidence regarding the role of appositive form and position, and their effect on truth conditions, which any semantic and pragmatic approach to appositives must take into account.

The paper is structured as follows. §2 lays out the theoretical background on semantic approaches to appositives, motivating our interest in experimental work on this construction. In §3, we present Experiment 1 as a baseline to establish the difference between main clauses and appositives. We demonstrate, in line with previous intuitions, that an indirect rejection in the form of “Hey, wait a minute” is a more likely choice to target appositive content than a direct “That’s not true” response, and is more likely to be associated with an appositive than main clause content. In §4, we present Experiment 2, which builds upon the results of Experiment 1 to show that while an indirect rejection is the preferred choice to target an appositive, appositives can, in fact, compete with the main clause to be the target of a direct rejection. Using another diagnostic for at-issueness, in §5, we present the results of Experiment 3, showing that sentence-final appositive relative clauses can compete with the main clause to supply an assertion that serves as the antecedent for ellipsis across sentences. In §6 and 7, we present Experiments 4 and 5, which are complementary experiments aimed at evaluating the truth conditional import of appositives, demonstrating what happens when a false appositive combines with a true main clause: the entire sentence is judged False. Finally, in §7, we summarize the combined set of experimental results, and outline a proposal based on a unidimensional semantics, which accounts for these results and allows us to work towards a more fine-grained understanding of the semantics and pragmatics of appositives.

2. Theoretical background

2.1. Surface-level characteristics of appositives

Two main types of English appositives have been discussed in the semantics literature:
nominal appositives (NAs), as in the underlined part of (2), and appositive relative clauses (ARCs), as in the underlined part of (3), which are also known as ‘nonrestrictive relative clauses’.

(2) My friend Sophie, a classical violinist, performed a piece by Mozart. (NA)

(3) My friend Sophie, who is a classical violinist, performed a piece by Mozart. (ARC)

NAs differ from ARCs in that the former have the syntactic form of a Determiner Phrase, whereas the latter have the form of a relative clause headed by a *wh*-word. However, the two constructions share certain key features.

Both types of appositives provide further information about their anchor, the DP to their left. This anchor must be referential (Stockwell *et al.*, 1973), or unique and identifiable, in Rodman (1976)’s terms. Both also require a parenthetical, or comma, intonation, resulting in their status as an “intonationally isolated phrase” (cf. Dehé, 2009; Potts, 2005). This parenthetical nature may be realized with prosodic breaks before and after the appositive, with the boundary tone aligned to the right edge, and possibly an upward pitch reset at the left edge of the phrase (Nespor & Vogel, 1986; Selkirk, 2005). Finally, appositives can appear somewhere in the middle of a sentence, as in the examples above, where the appositive modifies the subject anchor, or at the end of the sentence, as in (4).

(4) I introduced him to my friend Sophie, (who is) a classical violinist.

This medial/final distinction will prove crucial for ARCs in our subsequent experimental work.

2.2. Semantic properties of appositives

All appositives, no matter their form, are generally seen as representing content that is ancillary to the main point of the utterance (which is typically expressed by the main clause). For example, Chierchia & McConnell-Ginet (2000) say of the sentence in (5) that the assertion is articulated in two parts: the main assertion in the foreground and the secondary
one (the appositive) in the background.

(5) Jill, who lost something on the flight from Ithaca to New York, likes to travel by train. (See also AnderBois et al., 2010; Murray, 2010; Potts, 2005; Simons et al., 2010.) Following up on this intuition, we will begin by treating the content presented by the appositive as not at issue, although we will ultimately provide evidence that this blanket treatment of appositives falls short. One of the now-standard tests for diagnosing at-issueness is attempting to target semantic content by a direct rejection. This rejection may take a variety of forms. (See Tonhauser (2012) and references therein). For example, in (6), any of B’s rejections to A’s utterance are claimed to be understood to apply to the main clause and not the appositive content.

(6) A: My friend Sophie, a classical violinist, performed a piece by Mozart.

B: That’s not true. / I doubt that. / No way!

It has also been said that since a direct rejection should only target at-issue content, a speaker’s only choice for targeting appositives and other supplements (as conventional implicatures) is to use “some sort of metalinguistic comment or interruption to the flow of conversation” (Amaral et al., 2007, pg. 731; see also Karttunen & Peters, 1979; Potts, 2005). See, for example, (7), which is a combination of (20) and (21) from Amaral et al. (2007).

(7) A: Edna, a fearless leader, started the descent.

B: # No, that’s not true – Edna is not a fearless leader.

B': Hey, wait a minute – Edna is not a fearless leader. She’s a coward!

Schlenker (2009a) also argues that appositive content should be relatively uncontroversial (either in general or relative to the rest of the utterance). Sarkozy’s status as

3 Not-at-issue content is also introduced by presupposition triggers (Karttunen & Peters, 1979; Simons, et al. 2010), expressives (Potts, 2005; Potts, 2007), evidentials (Koev, 2012; Murray, 2010), illustrating that not-at-issue content cuts across various kinds of meanings.
Commander in Chief followed from his being the President of France, so the appositive content in (8a) (with our gloss) is uncontroversial. The news that he just murdered his wife, however, would be controversial, hence the potential infelicity.

(8) a. Sarkozy, qui est le chef des armées, vient d’assassiner sa femme.

Sarkozy who is the chief of the armies, has just murdered his wife.

‘Sarkozy, who is the commander in chief, has just murdered his wife.’

b. (#) Sarkozy, qui vient d’assassiner sa femme, est le chef des armées.

Sarkozy who has just murdered his wife is the chief of the armies,

‘Sarkozy, who has just murdered his wife, is the commander in chief.’

Schlenker notes that (8b) becomes better if one is already aware of the appositive content.4 Even while expressing not-at-issue content, appositives are also assumed to contribute asserted (or entailed) content (see Bach, 1999; Chierchia & McConnell-Ginet, 2000), and are therefore often referred to as conventional implicatures, in the sense of Potts (2005), following Grice (1975).

The fact that appositives are secondary assertions, and can present new material, is highlighted in the following obituary notices, in (9)-(10). Here, the appositive content is certainly not inconsequential and may not already be part of the common ground. However, the purpose of the obituary is to honor the person for their accomplishments and summarize key facts about his/her life, so it is the main clause that reflects this focus and connects the

4 As a reviewer points out, this observation may appear to stand in direct conflict with Potts’s anti-backgrounding requirement, which states that appositive content is discourse-new. If the news that Sarkozy murdered his wife is already shared knowledge, should it not be infelicitous to mention it here? It seems that there are cases where shared knowledge can be presented in the form of an appositive in order to make that information salient in the discourse, and perhaps pertinent to the content presented in the main clause.
sentence to the information that follows.

(9) Nora Ephron, who has died aged 71, was the Oscar-nominated screenwriter, novelist, essayist, columnist, reporter and celebrity blogger behind *When Harry Met Sally*…

(10) Natasha Richardson, who died on March 18 aged 45 after being injured in a skiing accident in Canada, was born into one of Britain’s most powerful thespian dynasties and, although she became a star in her own right, often felt haunted by her pedigree.

Potts (2012) further argues that while appositives are not at issue, they (and other elements, such as expressives) can play a crucial role of contextualizing the at-issue content and providing relevance for the utterance. For example, the appositive in the following utterances in (11) (Potts (2012)’s (39)) will have very different import, potentially resulting in a very different reaction from the hearer (and spatial relationship with the door).

(11) a. Charlie, a pizza delivery person, is at the door!

b. Charlie, an infamous axe murderer, is at the door!

Thus, the picture that emerges about appositives based on previous theoretical discussions is that they are generally not at issue and are not controversial, but most likely contribute new and informative content that may interact with the at-issue content contributed by the main clause in interesting ways.

2.3. The shifting at-issue / not-at-issue status of appositives

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5 Source: *The Telegraph* online, June 27, 2012


6 Source: *The Telegraph* online, March 19, 2009

http://www.telegraph.co.uk/news/obituaries/5017759/Natasha-Richardson.html

7 See also Frege (1892), for further discussion of the relationship between the appositive and main clause content related to causality.
Interestingly, it may be the case that *some* appositives can be at issue. Recently, some researchers have argued that the sentential position of the appositive – and of ARCs in particular – may have an effect on the availability of certain quantificational readings (cf. Del Gobbo, 2003; Nouwen, 2007) and on the information status of appositives (AnderBois et al., 2010). AnderBois et al. (2010) observe that while ARCs are typically not open to direct rejection, they may be in some circumstances, as in (12)-(13). They note that it is certainly possible to reject the main clause content, as in the (b) examples, but they point out that it also seems possible to reject the appositive content, as in the (c) examples.

(12) a. He took care of his husband, who had prostate cancer.

     b. No, he took care of his brother.

     c. No, he had lung cancer.

(13) a. He told her about Luke, who loved to have his picture taken.

     b. No, he told her about Noah.

     c. No, he didn’t like that at all.

Crucially, AnderBois et al. (2010) note that this only seems possible when the appositive is clause-final, pointing out that similar examples where the appositive is in sentence-medial position seem degraded (cf. (14)-(15)).

(14) a. His husband, who had prostate cancer, was being treated at the Dominican Hospital.

     b. ??No, he had lung cancer.

(15) a. Luke, who loved to have his picture taken, was his son.

     b. ??No, he didn’t like that at all.

Supporting their claim through a variety of examples, some culled from corpora, they argue that “there is a persistent asymmetry between clause-final and clause-medial appositives” with final appositives enjoying a “broader range of possible interpretations, behaving in many
respects as though they were conjunctions rather than true appositives.” Though it is not clear from this story what drives this sentence-medial/sentence-final difference or what predicts whether any given final appositive will have this status, they suggest that sentence-final appositives behave similarly to sentential conjuncts.

Based on these observations, we might hypothesize, then, that manipulating the sentential position of the appositive will give rise to differences in its ability to be targeted by rejection. In fact, we might further hypothesize that there might be an NA/ARC difference: given that ARCs have a more clausal or sentence-like form on the surface, they may more clearly than NAs present a proposition that can be the target of a direct rejection. Providing evidence of such a difference within appositives would help us to identify aspects of structure and surface form that contribute to perceived at-issue status, thereby offering a more fine-grained picture of the range of meanings, and adjudicate between semantic accounts, to which we now turn.

2.4. Semantic approaches to appositives

There are, in broad terms, two main approaches to the semantics of appositives. The first approach views appositives as conjoined with the rest of the sentence (cf. Böer & Lycan, 1976; Frege, 1892; Rodman, 1976; Sells, 1985). In its most basic form, the conjunction approach predicts that appositives are part of the at-issue proposition contributed by the entire sentence and thus play a crucial role in determining the sentence’s (single) truth value. Exemplifying this position, Böer & Lycan (1976) say of the following pair of sentences in (16) that if (16b) is false, then accordingly (16a) is false, too. Thus, (16a) should be truth conditionally equivalent to (17).

(16)  a. Dick, who is an expert on Austin, loves the Bonzo Dog Band.
      b. Dick is an expert on Austin.

(17) Dick is an expert on Austin and loves the Bonzo Dog Band.
AnderBois et al. (2010), Murray (2010), and Schlenker (2009a, b) offer updated versions of the conjunction approach. While these accounts preserve the truth-conditional nature of appositives, they also make room for the observation (discussed in the previous section) that appositive content is typically not at issue. AnderBois et al. (2010) and Murray (2010) achieve a contrast in information status by making different assumptions about the way main clauses and appositives are interpreted: while main clauses introduce a proposal to update the context which can be rejected and thus are at issue, appositives are “imposed” on the context with little or no room for negotiation, i.e. are not at issue. We will show that while the core predictions of those more elaborate versions of the conjunction approach are confirmed by our experimental findings, the fact that these accounts treat appositives as lexically specified for not-at-issue status runs counter the possibility that appositives are at issue.

Another view is that appositives contribute secondary propositions, which are independent of the at-issue proposition expressed by the main clause (cf. Bach, 1999; Berckmans, 1994; Chierchia & McConnell-Ginet, 2000; Dever, 2001; Potts, 2005). According to this multidimensional approach, a sentence with an appositive has two truth values: one contributed by the main clause and one contributed by the appositive. This view places appositives into a separate meaning dimension, thereby predicting that appositives are invariably not at issue and also not part of the truth conditions of the sentence in which they appear. However, multidimensional approaches may leave open the possibility that a truth value is assigned later, at the discourse level. Arguing for a multi-rooted syntactic tree for sentences with appositives, Dever (2001) says of sentences with false appositives that “there is something right and something wrong” about them, and that we should try to avoid a “univocal evaluation” – that is, a conjunction analysis. Multidimensional approaches are largely silent on any possible structural or positional influences on the at-issue status of
appositives, such as those discussed in the previous section, precisely because appositives are in a separate dimension and are invariably not at issue.

Bach (1999) also argues vehemently against a conjunction analysis. However, his conclusion about the ultimate truth value of the sentence is different. Bach claims unambiguously that when evaluating sentences containing an appositive, although speakers assign the appositive a truth value, they do not allow that truth value to figure into the calculation of the truth value of the entire sentence. Of his examples in (18) (his (27) and (28)), he says that speakers would “tend to ignore” the truth value of the secondary proposition expressed by the appositive, and that these truth values are “ignored because they are not prominent to count…the proposition expressed by the main clause is the one whose truth value is intuitively judged to bear on that of the whole utterance” (pp. 345-346).

(18)  
  a. Ann’s computer, which she bought in 1992, crashes frequently.
  b. Beth’s husband, a plumber, never washes the dishes.

Bach thus makes two main claims about how speakers treat appositives. First, these secondary propositions are overlooked, and the truth value is simply calculated based on the truth value of the main clause. Second, when evaluating a sentence containing a false appositive and a true main clause, speakers are forced into a True/False judgment and are reluctant to do so (see in particular pg. 347) (a point echoed in Dever (2001)). Clear predictions derive from these claims, which are not only testable, but which we will show in our experimental work, are falsified.8

8 A third claim from Bach (which we do not address in our experimental work) surfaces in a footnote on pg. 346: “the longer or more important the material between the commas, the more one is inclined to regard it as relevant to the truth or falsity of the entire utterance…here the material between the commas is important enough to count toward intuitive assessments of truth or falsity. When it is that important, its failure to hold true seems sufficient for the
3. **Experiment 1**

The purpose of Experiment 1 is to confirm previous intuitions voiced in the theoretical literature about the default not-at-issue status of appositives and provide a baseline for participants’ relative preference of rejecting appositive content with an indirect rejection, rather than a direct rejection targeting its truth conditional content. As a further baseline, we also investigate participants’ rejections of main clauses in order to evaluate their willingness to choose direct rejections when responding to content that is uncontroversially allowed to take on at-issue status. While this experiment is not intended to tease apart the theoretical approaches we outlined in the introduction, it provides systematic experimental data in support of intuitions and corpus data that has been collected concerning the difference between appositive and main clause content, thereby providing an important baseline for the experiments to follow.

3.1. **Method**

3.1.1. **Participants**

42 university undergraduates (range: 18 to 21 years), all native speakers of English, participated. Data from three additional participants were excluded, because the participants indicated that they were not native speakers of English.

3.1.2. **Stimuli and procedure**

Items for all experiments reported in this paper were presented on an iMac using SuperLab falsity of the entire utterance.” We find this claim a bit odd, since what counts as long and important is relative and will therefore vary from context to context and speaker to speaker. What, then, allows us to predict which appositives will be long or important enough to render the entire utterance false? We leave this particular point aside, but note that it could be an interesting avenue for future research on appositives.
stimulus presentation software and a response pad in a quiet laboratory setting. Participants wore noise-cancelling headphones and were run one or two at a time at separate, individual response stations. Each experiment lasted approximately 15-20 minutes. All participants were undergraduate students in Linguistics recruited from a participant pool.

Experiment 1 and 2 had a similar design. Stimuli consisted of sets of sentences representing a brief dialogue between two speakers (A and B). Each item had the same structure: speaker A delivered an utterance, then B responded with a rejection, as in (19). In Experiment 1, for any given item, B rejected either the appositive content (a) or the main clause content (b). In each case, participants were given a forced choice between two forms of a rejection: either a direct rejection (B1) or an indirect rejection (B2).

(19)  A: My friend Sophie, a classical violinist, performed a piece by Mozart.

   a. rejection of appositive content
      B1: That’s not true. Sophie isn’t a classical violinist.  (direct)
      B2: Hey, wait a minute. Sophie isn’t a classical violinist.  (indirect)

   b. rejection of main clause content
      B1: That’s not true. She didn’t perform a piece by Mozart.  (direct)
      B2: Hey, wait a minute. She didn’t perform a piece by Mozart.  (indirect)

Based on previous claims in the literature (cf. Amaral et al., 2007; Beaver et al., 2009; Chierchia & McConnell-Ginet, 2000; Potts, 2005), we predicted that participants would largely prefer an indirect rejection of appositive content over a direct rejection (i.e., B2 v. B1 in (19) for (a)), and that the percentage of “That’s not true” rejections would be higher for main clause content than for appositive content.

Because NAs and ARCs are often referred to interchangeably in the literature on appositives, we sought to determine whether or not the form of the appositive mattered. We hypothesized that ARCs, which contain whole clauses and thus are more likely to make
independent claims than NAs, may be an easier target for a direct rejection. Second, we teased apart ARC aspect, and compared ‘eventive’ to ‘stative’ ARCs. Attention to this variable was motivated by observations along the lines of Potts (2005), who refers to NAs as being “reminiscent of predicative copular clauses with individual-denoting subjects” (pg. 131). ARCs can also predicate of the anchor in similar ways (e.g., Lance, (who is) a cyclist,…), allowing NAs and ARCs to be ‘stative’. However, ARCs can also be eventive (e.g., Lance, who won the Tour de France,…), whereas NAs cannot be. We sought to determine whether ARC aspect could play a role in the ability of the appositive to be targeted for rejection.

Finally, given the ongoing discussion in the literature about the possibility of the sentence-medial v. sentence-final distinction playing a role in an appositive’s at-issue status (cf. AnderBois et al., 2010; Cornilescu, 1981; Del Gobbo, 2003a, b; Nouwen, 2007), we also manipulated the sentential position of both NAs and ARCs. It has been claimed that sentence-final appositives can become at issue. If this is the case, then sentence-final appositives might be more likely to receive a “That’s not true” rejection – even if the majority of the time, the rejection of choice is “Hey, wait a minute”. The flip side of this prediction is that we predict that sentence-medial NAs will exhibit the lowest percentage of “That’s not true” rejections.

Each test sentence underwent six permutations, for the purpose of manipulating three main target variables: appositive type (NA v. ARC), sentential position of the appositive (medial v. final), and ARC aspect (stative v. eventive). An example set is presented in Table 1.
Table 1: Example of six permutations of one test sentence from Experiments 1 and 2, generated by manipulating three variables (appositive type, sentential position of appositive, and ARC aspect)

<table>
<thead>
<tr>
<th>type</th>
<th>position</th>
<th>ARC aspect</th>
<th>sentence (appositive underlined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>medial</td>
<td>n/a</td>
<td>My friend Sophie, a classical violinist, performed a piece by Mozart.</td>
</tr>
<tr>
<td>ARC</td>
<td>medial</td>
<td>stative</td>
<td>My friend Sophie, who is a classical violinist, performed a piece by Mozart.</td>
</tr>
<tr>
<td>ARC</td>
<td>medial</td>
<td>eventive</td>
<td>My friend Sophie, who performed a piece by Mozart, is a classical violinist.</td>
</tr>
<tr>
<td>NA</td>
<td>final</td>
<td>n/a</td>
<td>The symphony hired my friend Sophie, a classical violinist.</td>
</tr>
<tr>
<td>ARC</td>
<td>final</td>
<td>stative</td>
<td>The symphony hired my friend Sophie, who is a classical violinist.</td>
</tr>
<tr>
<td>ARC</td>
<td>final</td>
<td>eventive</td>
<td>The symphony hired my friend Sophie, who performed a piece by Mozart.</td>
</tr>
</tbody>
</table>

12 such sets of test items were generated and distributed among six lists in a Latin square fashion, yielding a total of 72 test items, each of which then had the appositive and main clause targeted for rejection (with only one version shown to each participant). Each participant was assigned to one of the six lists and shown 12 test items (12 different sentence exemplars, including two of each sentence type) and 30 control items, in pseudorandomized order, for a total of 42 items per participant. Of the 12 test items, participants were presented with six in which the appositive was targeted, and six in which the main clause was targeted, each of the six being a different sentence type.

Control items were constructed to vary the most natural choice of B’s rejection within the experiment (B1 or B2), and to ensure that participants were sensitive to semantic and pragmatic factors relevant to the issue. There were five types of control items: matrix sentences with a factive verb and a false complement clause (three discover, three learn); sentences with a singular definite DP subject with failure of presupposition of existence; sentences with a scalar implicature arising from the assertion of a weaker term on the scale (gradable adjective, adverbial modifier of certainty or probability, begin, number word);
conjunction with one conjunct targeted for rejection; and a simple clause. A complete set of test and control items is presented in Appendix A. Correct responses were counterbalanced between B1 and B2 responses throughout the experiment.

The experimental session began with a brief training session in which participants were introduced to the experimental task, using practice items that did not contain appositives. Participants were told that “Person A will deliver a statement, and then Person B will attempt to reject it,” and given practice with non-target items. These items were recorded by two speakers with natural intonation, to reinforce the idea that speakers A and B were having a dialogue, and that B was rejecting something about A’s utterance. However, there was no sound in the actual test session, and participants were made aware of this at the end of the training session.

3.1.3. Results

Our dependent measure was the percentage of “Hey, wait a minute” (versus “That’s not true”) responses chosen for each clause type (appositive and main clause). Given the binary nature of the responses and the within-subject design, a series of pairwise two-tailed comparisons were conducted (Wilcoxon signed-rank for correlated samples and Mann-Whitney for non-matched samples). Our results revealed the following. Participants were (a) more willing to choose a “Hey, wait a minute” response for appositives than a “That’s not true” response (77% v. 23%) (significance from chance level of \( p = .5: t(41) = 6.94, p < .0001 \)), and (b) less willing to choose a “That’s not true” for appositives than for main clauses (\( W = 5056, z = 6.08, p < .0001 \)). As a point of comparison, we note that for one group of control sentences – those with a factive verb with a false embedded complement clause to which participants were also asked to choose between “Hey, wait a minute” and “That’s not true,” participants chose “Hey, wait a minute” 70% of the time.

We then further analyzed the effect of the variables that we manipulated on the
responses to the appositives to determine whether any of these variables had an effect on the responses directed at the appositive content. There was no overall effect of appositive type (i.e., NA v. ARC) \((U_A=6510, z=1, p=.32)\), position \((W=0, z=0, p=1.0)\), or aspect (i.e., stative v. eventive) \((W=98, z=1.17, p=.24)\). All other comparisons within these categories were also not significant. Thus, when asked to choose between a “Hey, wait a minute” and a “That’s not true” rejection, participants were pulled strongly toward the former for appositives. However, they also allowed a “Hey, wait a minute” response to target the main clause approximately half of the time (54.4%), a point we return to in the discussion section that follows. This pattern is captured in Figure 1.

**Figure 1:** Percentage of “Hey, wait a minute” responses in Experiment 1 targeting appositive or main clause content, collapsing over all appositive types

![Figure 1](image)

3.1.4. Discussion

The results of this experiment demonstrate that participants differentiate between appositive and main clause content: given the choice between a “Hey, wait a minute” and a “That’s not true” rejection, they overwhelmingly choose “Hey, wait a minute” to reject appositive content. If we take the two responses as differing in the kind of information they tap into, and specifically if we treat a “That’s not true” response as picking up on at issue content, then these findings may reflect the fact that participants did not see the appositive as what was at
issue in the utterance. These results, predicted by most – if not all – of the previous theoretical approaches, allow us to situate the results of our subsequent experiments against this uncontroversial backdrop.

It may seem noteworthy that participants chose the “Hey, wait a minute” response so often to reject main clause content. If this response should be interpreted as testing for presupposed or, more generally, not-at-issue content (cf. von Fintel, 2004; Shanon, 1976), then why did we observe such a high percentage for main clauses? As others have pointed out, however, it is not safe to assume that the “Hey, wait a minute” test is a diagnostic for (pragmatically) presupposed content. In fact, this response can target content that is presumably at issue for a variety of reasons (cf. Pearson, 2010; Potts, 2008; Roberts, Ms.; Smith & Currie Hall, 2011; Tonhauser et al., 2013). For example, this type of response may be seen as a softened way of voicing a rejection to a conversational partner and indicating speaker’s surprise. Moreover, Potts (2008), points out there are various implementations of the “Hey, wait a minute” test which could deliver different results (see footnote 1 in Potts (2008) for references). Thus, in this experiment, it is quite possible that participants chose “Hey, wait a minute” over “That’s not true” to reject the main clause content for reasons that have nothing to do with the distinction between at-issue and not-at-issue content. Thus, while the findings from this experiment confirm a well-attested difference between appositive and main clause content, the high percentage of “Hey, wait a minute” responses to the main clause content does not allow us to tease apart at-issue from not-at-issue content. To do this, we conducted Experiment 2.

4. Experiment 2

In Experiment 2, we restricted our attention to direct rejections of the form “No…”, asking participants to choose between the appositive and the main clause when B offered a direct rejection to A’s utterance. This experiment therefore allowed us to probe participants’
willingness to directly reject the content of the appositive, guided by a common assumption that direct rejections target at-issue content (Amaral et al., 2007, AnderBois et al., 2010, Beaver et al., 2009; Koev, 2013; Tonhauser, 2012; Xue & Onea, 2011; see also Cummins, Amaral, & Katsos, 2012). Thus, we predicted that if direct rejections target at-issue content, and if appositives invariably provide not-at-issue content, then the percentage of direct rejections directed at appositives should be extremely low. Here, too, we wished to determine whether manipulations of appositive form and content could alter participants’ willingness to target appositive content with a direct rejection.

4.1. Method

4.1.1. Participants

38 undergraduates (range: 18-25 years) participated. One additional participant participated, but was excluded from analysis because of native language status.

4.1.2. Stimuli and procedure

Experiment 2 had a structure similar to that of Experiment 1, included the same number and distribution of items. However, there were three notable differences between Experiments 1 and 2. First, in Experiment 2, we sought to reinforce the difference between the appositive and main clause as distinct parts of A’s utterance. We therefore prerecorded A’s utterances so that they had the typical ‘parenthetical’ feel of an appositive, accomplished with ‘comma’ intonation (cf. Dehé, 2009; Nespor & Vogel, 1986; Potts, 2005; Selkirk, 1984, 2005). These sound files were paired with sentences presented on the screen.

Second, in this experiment, B’s response always took the form of a direct rejection (“No…”), and participants chose whether this direct rejection targeted the appositive or main clause content. Recall that in Experiment 1, participants were asked to choose the best form

9 Sound files were recorded, sliced, and edited for intensity by a native speaker of English (the first author).
of B’s rejection, given that it targeted either the appositive or the main clause. In Experiment 2, participants were asked to associate the direct “No” rejection with either the appositive or the main clause. Thus, given that in this task, participants were asked to choose between the appositive and the main clause as targets of a direct rejection, their willingness to choose the appositive as the target (as opposed to the main clause competitor) should be taken as strong evidence that an appositive can be the target of a direct rejection, and therefore may assert at-issue content.

Third, in order to make it clear which part of A’s utterance B’s rejection was targeting, we made minimal changes to A’s utterances from Experiment 1. Specifically, we ensured that two clauses in A’s utterance differed with respect to auxiliary verb (in the case of medial appositives, where the subject of the main clause was also the nominal anchor for the appositive) (cf. (20)-(21)) and/or number marking on the subject (in the case of final appositives, where the nominal anchor of the appositive was the object of the sentence, and therefore different from the main clause subject) (cf. (22)-(23)).

(20)  A:  My friend Sophie, a classical violinist, performed a piece by Mozart.
       B1: No, she’s not.  (target: appositive)
       B2: No, she didn’t. (target: main clause)

(21)  A:  My friend Sophie, who performed a piece by Mozart, is a classical violinist.
       B1: No, she’s not.  (target: main clause)
       B2: No, she didn’t. (target: appositive)

(22)  A: The symphony hired my friend Sophie, a classical violinist.
       B1: No, she didn’t. (target: appositive)
       B2: No, they didn’t. (target: main clause)

(23)  A: The symphony hired my friend Sophie, who performed a piece by Mozart.
       B1: No, she didn’t. (target: appositive)
B2: No, they didn’t. (target: main clause)

The ordering of the rejection targeting the appositive in B1 and B2 was counterbalanced throughout the experiment.

4.1.3. Results

The dependent measure for this experiment was the percentage of “No” responses targeting the appositive or main clause. We began by comparing the percentage of time a “No” response was chosen to target the appositive, as opposed to the main clause. If both the appositive and main clause were on par with asserting at-issue content, participants would have been at chance when choosing the target of the direct rejection. However, as expected, participants strongly preferred for the direct “No” rejection to target the main clause, rather than the appositive (73.9% v. 26.1%, respectively) and the percentage of direct rejections targeting the appositive were well below chance (binomial probability difference from chance, where chance=.5: z-ratio=10.16, p<.0001). These results complement those of Experiment 1 by demonstrating that participants recognized the two parts of the utterance as presenting different content. If we take a direct “No” rejection as addressing at-issue content, we can conclude from these findings that participants displaying an overwhelming preference for the main clause, and not the appositive, to present the content that was at issue in the utterance.

That said, in spite of the fact that participants generally perceived the appositive content as not at issue, there was an effect of appositive form and position. As in the previous experiment, we conducted a series of planned pairwise comparisons comparing the variables manipulated within the appositive clause to determine if these variables had an effect on whether the appositive was seen as at issue or not by participants. The percentage of “No” responses for the four main appositive types and main clauses presented in Figure.
Figure 2: Percentage of “No” responses in Experiment 2 to either the appositive (light bars) or the main clause (dark bars), depending on the four main classifications (NA v. ARC, medial vs. final)

While there was no overall difference between the two appositive types (NA v. ARC) ($U_A=24776$, $z=-1.26$, $p=.21$), there was a significant effect of medial v. final appositive position ($W=862$, $z=2.37$, $p<.05$). Within this distinction, there was a significant difference between medial and final ARCs ($W=471$, $z=2.21$, $p<.05$), with final ARCs more likely to be directly rejected, but there was no difference between medial and final NAs ($W=55$, $z=.88$, $p=.38$). Moreover, there was a significant difference between medial NAs and both types of final ARCs (stative: $W=106$, $z=2.73$, $p<.01$; eventive: $W=96$, $z=2.08$, $p<.05$), and between medial stative ARCs and both types of final ARCs (stative: $W=168$, $z=2.25$, $p<.05$; eventive: $W=101$, $z=2.02$, $p<.05$). Thus, sentence-final ARCs were significantly more likely than any other appositive to be the target of a direct “No” rejection, approximately a third of the time, regardless of their aspect.\(^{10}\)

\(^{10}\) A reviewer asks if we should not predict a bigger difference between the sentence-final ARCs and NAs. We suspect there is not more of a difference because the ARC was
4.1.4. Discussion

The results of Experiment 2 revealed that while participants largely resisted a “No” rejection targeting the appositive, there was a striking effect of appositive type and position, with the highest percentage of “No” rejections to appositives surfacing for final ARCs. While these percentages were still below those for “No” rejections targeting the main clause (which averaged 73.9%), they were still higher than what might have been expected if appositives could never be the target of a direct rejection and could never be at issue.

Moreover, it is rather striking that when participants did choose the appositive as the target of the direct rejection, they did so precisely when they could have chosen the main clause instead. Thus, the 30+% of “No” rejections aimed at appositives reflect participants opting to directly reject the appositive, and not the main clause. Because previous researchers did not tease apart or systematically manipulate the variables that we manipulated, they were not in a position to uncover the effects of appositive type or position that we uncovered. This experiment thus allowed us to reveal that although appositives are largely not at issue, they can, in fact, contribute at-issue content – even when participants are given the choice between targeting the appositive or the main clause. Moreover, not all appositives are equal in this regard: final ARCs are the most likely candidates to adopt this status. Having shown that sentence-final ARCs can be the target of a direct rejection, we believe we have reason to think that these appositives may take on at-issue status, provided we assume that being the target of a direct rejection is one of the main diagnostics for being at issue (see, for example, Tonhauser (2012)).

Given this pattern of results, we considered the following idea: if a speaker delivers an utterance that makes multiple assertions – one of which is in the ARC and the other of

competing with the main clause as the target of the rejection, which suppresses the extent to which the sentence-final ARC was a viable candidate.
which is in the main clause, then whatever process underlies the effect of position seen with direct rejections should also be sensitive to the position of the ARC for other diagnostics of at-issueness. To pursue this idea, we turned to cases of ellipsis in which an antecedent occurs across sentence boundaries.

Frazier & Clifton (2006) presented the following hypothesis to account for how speakers process relations across sentence boundaries.

(24) **Main Assertion Hypothesis**

Other things equal, comprehenders prefer to relate material in a new sentence to the main assertion in the preceding sentence. Thus, while the syntactic processor favors more recent material within the sentence and low structural attachments, across sentence boundaries, it is the information structure that matters. The discourse processor – and not the syntactic processor – favors relations implicating the main assertion of the previous sentence. In Frazier & Clifton (2006)’s experimental studies, participants resolving VP ellipsis were likely to find a suitable VP antecedent in the matrix clause of sentences that had both a matrix and a subordinate clause. However, F&C did not investigate appositive sentences, but we hypothesized that the same process would be at work in these cases. Specifically, we hypothesized that if ARCs can be perceived competing with the main clause for at-issue status, and if sentential position matters, then participants will allow the assertion captured in sentence-final ARCs to serve as the antecedent subsequent ellipsis.\(^\text{11}\)

In fact, the Main Assertion Hypothesis is applicable to the results of Experiment 2, as the “No” response choices both involved ellipsis. In choosing between the two direct rejections, participants were presumably choosing the response whose antecedent expressed

\(^{11}\) We thank David Beaver for discussions that led us on the path to this research. A related observation is made in Potts (2012).
the main assertion. To the extent that participants were willing to allow a direct rejection to target an ARC, and were identifying the ARC content as the antecedent to resolve the VP ellipsis, it seems that they saw the ARC as expressing the main assertion, and therefore the at-issue content. In Experiment 3, we sought to provide further evidence for the ARC’s ability to take on at-issue status (and positional effects when doing so) in cases where the ARC is not being directly rejected, but is providing an antecedent for ellipsis.

5. Experiment 3

5.1. Method

5.1.1. Participants

48 undergraduates (range: 18-27 years) participated. Three additional participants were excluded because of non-native English status.

5.1.2. Stimuli and procedure

There were 10 test items and 10 control items, for a total of 20 items in the experimental session. Both test and control items had the same structure. Each began with a brief description of a scenario, ending with a target sentence. The target sentence always involved a main clause and another clause. For the test items, the target sentence had a main clause and an ARC. The target sentence of the control items involved a main clause and a subordinate complement clause (e.g., David found out that his dad got a speeding ticket) or an adverbial phrase (e.g., After washing the dishes, Marjorie made the cookie batter).

Two versions of each test item was created: one in which the appositive in the target sentence was sentence-medial (n=5), and one in which it was sentence-final (n=5). Participants saw only one version of each sentence, for a total of 10 test sentences. An example of one test item is included in (25).

(25) Target sentence following a sample test item scenario

a. Sentence-Final Appositive
The “All Stars” Dance Company has chosen to audition Chloe, who decided to
dress in a classical ballet style.

b. Sentence-Medial Appositive

Chloe, who decided to dress in a classical ballet style, has been chosen to
audition for the “All Stars” Dance Company.

The scenario and target sentence was then followed by a one-word question, and a choice
between two possible answers, as in (26). The question for the test items was always, Why?
The question for the control items was, How? (n=4), When? (n=4) or Where? (n=2).

(26) Choices for answer to Why? question

a. Main clause target

Because they think Chloe could be a good addition to their company

b. Appositive target

Because she wants to be taken seriously as a classical ballet dancer

Test and control items were pseudo-randomized, with the order of presentation
counterbalanced across participants. The full set of stimuli is included in the Appendix.

If the main clause always carries the main assertion of the target sentence, then
participants should overwhelmingly prefer the main clause as the source of the answer to the
elliptical question. However, with the test items, assuming that the “non-why portion” of the
test question is treated as a presupposition (following Lawler (1971) and Tomioka (2009)),
then both the ARC and the main clause should be candidates for antecedent status, if both
propositions have been accepted. We further predicted an ordering effect, such that answers
targeting the ARC should be more likely to be chosen when the ARC is sentence-final than
when the ARC is sentence-medial. Given the examples provided above, participants
presented with a sentence with a final appositive ((a) in (25)) should be more likely to choose
the (b) response in (26) than when presented with one with a medial appositive ((b) in (25))
5.1.3. Results

Not surprisingly, for the control items, participants overwhelmingly chose an answer targeting the main clause, regardless of the control item type (an average of 81.9% answers targeting the main clause vs. 18.1% answers targeting the subordinate clause). But their responses to the test sentences with ARCs differed dramatically. On average, 51.7% of the responses addressed the main clause content, while 48.3% addressed the appositive content. Thus, participants perceived both the main clause and the appositives as possible continuations of the salient *Why?* question, and approximately equally. However, their willingness to select the answer targeting the appositive content varied based on the ARC’s sentential position, as shown in Figure 3. The answer linked to the ARC was chosen 67.1% of the time when it was sentence final, and only 29.6% of the time when it was sentence medial ($U_A=1943, z=-5.79, p<.0001$).

**Figure 3**: Percentage of responses in Experiment 3 targeting appositive content in the target sentence, depending on ARC position in the sentence (final or medial)

5.1.4. Discussion

Our results demonstrate that an ARC can provide the main assertion of the sentence, and can compete with the main clause content for this status, *but* its position in the sentence matters.
ARCs in sentence-final position are significantly more likely to adopt this status. If we assume with Frazier & Clifton (2006) that the discourse processor resolves ellipsis in a sentence by looking back to the previous sentence for the main assertion (or, the at-issue material), then both the sentence-final ARC and the main clause are perceived as candidates for the antecedent.

In the first set of experiments, our goal was to address the information status of appositive content – and specifically to probe whether appositives can present at-issue content (as seen in their ability to be the target of a direct rejection or supply the assertion that is associated with a simple why-question). In the next set of experiments, we probe the contribution of appositives to the truth conditions of the sentences in which they appear.

6. Experiment 4

6.1. Method

6.1.1. Participants

60 undergraduates (range: 18-25 years) participated. Three additional participants were excluded because of non-native English status. One additional participant was also excluded, because his/her responses and post-experiment debriefing indicated that this participant did not take the study seriously.

6.1.2. Stimuli

Participants were presented with a series of sentences, and asked to render a judgment for each one. Each test sentence contained an appositive. The truth values of the appositive and main clause were manipulated, giving rise to all four possible truth value combinations for each sentence (True-True, True-False, False-True, False-False). As in the previous experiments, we also manipulated the medial/final position of the false appositive. Finally, we manipulated the type of false content in the appositive, given claims in the literature that appositive content should not be given but cannot be too controversial (cf. Chierchia &
We therefore had sentences in which the appositive was merely false, and others in which the false content might be seen as charged or inflammatory (e.g., claiming that a public figure harbors terrorists or is a convicted murderer).

An example of the permutations of one test sentence based on these variables is presented in Table.

**Table 1**: Example of six permutations of one test sentence from Experiment 4, generated by manipulating the truth value of the appositive and main clause (T/F), the position of the false appositive (MED/FIN), and the false status of the medial appositive (MED/MED-!).

<table>
<thead>
<tr>
<th>TV combination</th>
<th>position</th>
<th>sentence (appositive underlined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\langle T_{MC}, T_{APP} \rangle$</td>
<td>medial</td>
<td>Australia, which is a continent, is in the Southern hemisphere.</td>
</tr>
<tr>
<td>$\langle T_{MC}, F_{APP, MED} \rangle$</td>
<td>medial</td>
<td>Australia, which is a planet, is in the Southern hemisphere.</td>
</tr>
<tr>
<td>$\langle T_{MC}, F_{APP, MED-!} \rangle$</td>
<td>medial</td>
<td>Australia, which is part of the Axis of Evil, is in the Southern hemisphere.</td>
</tr>
<tr>
<td>$\langle T_{MC}, F_{APP, FIN} \rangle$</td>
<td>final</td>
<td>There is a continent named Australia, which is in the Northern hemisphere.</td>
</tr>
<tr>
<td>$\langle F_{MC}, T_{APP} \rangle$</td>
<td>medial</td>
<td>Australia, which is a continent, is in the Northern hemisphere.</td>
</tr>
<tr>
<td>$\langle F_{MC}, F_{APP} \rangle$</td>
<td>medial</td>
<td>Australia, which is a planet, is in the Northern hemisphere.</td>
</tr>
</tbody>
</table>

There were 10 such sets of test sentences, resulting in a total of 60 test sentences. Sentences were then distributed among 10 participant lists in a Latin square fashion such that each participant saw each type of sentence based on truth values and appositive position, but only one sentence from each set.

Before running the study proper, we ran a separate norming study to ensure that the content was common knowledge and undergraduates could readily assign the correct truth value to the propositions expressed by the appositives and main clauses. The individual sentences were pseudorandomized, and distributed into 10 separate lists. These lists were then distributed to a separate group of undergraduates (approximately 20 students per list). Where students indicated uncertainty or assigned the opposite truth value from what had been
anticipated, we adjusted the sentences accordingly in order to work with clear-cut cases.\footnote{For example, we settled on the proposition \textit{Gay marriage is not legalized by the federal government} in place of \textit{Gay marriage is not recognized by the federal government}, because some students appeared to interpret \textit{recognize} as meaning \textit{acknowledge the existence of}. Likewise, we used the proposition \textit{Harry Potter went to Hogwarts} instead of saying he was \textit{a student} at Hogwarts, because some Harry Potter fans objected to the latter, citing the events that unfolded later in the Harry Potter series, when Harry Potter had left the school.}

The experimental session included 10 test items and 29 control items, all pseudorandomized for sentence type and the expected truth value judgment. There were four types of control items: sentences that were easily judged True or False (cf. (27), n=6); sentences with obscure facts that were not easily judged True or False (cf. (28), n=6); T/F sentences with an adverbial clause and a comma (intended to resemble sentences with an appositive on the surface) (cf. (29), n=6); and 11 non-T/F sentences that asked participants to choose the correct response in order to fill in the blank with content (cf. (30)) (intended to help participants maintain their attention during the session and direct them to focus on the content of the sentences).

(27) Spiders have eight legs.

(28) Ratanakiri is a province in northeastern Cambodia.

(29) Twice a year, the U.S. President delivers speeches in Yiddish.

(30) Fish breathe with \underline{\quad}.

\hspace{1cm} a. gills

\hspace{1cm} b. lungs

A full list of items is presented in the Appendix.

6.1.3. Procedure

The experimental session was preceded by a brief training session, during which participants...
were acclimated to the experimental procedure. They were shown a series of practice sentences and asked to judge the truth of the sentences, and assess their confidence in their judgment. During the training session, they became accustomed to the following scale:

(31) Rating Scale

1: I am NOT AT ALL confident in my answer.
2: I am only A LITTLE BIT confident in my answer.
3: I am SOMEWHAT confident in my answer.
4: I am VERY confident in my answer.
5: I am EXTREMELY confident in my answer.

Participants were also trained on the use of the response pad, which had a row of seven clearly-labeled buttons. The first two buttons were used to report T or F, or A or B, respectively (the choice of which depended on the type of question), while the five buttons to the right were used for the confidence rating.

During the test session, participants were shown each sentence towards the top of the screen, with T and F towards the bottom, and were asked to judge the sentence as True or False (or select A or B, with fill-in-the-blank controls, which had the two choices listed below the target sentence). They then proceeded to the next screen, where they were asked to rate their confidence in their response on a scale of 1 to 5. The time it took to register a confidence rating was recorded. A schema for this procedure is presented in Figure.
Figure 4: Two sequential computer screens, corresponding to two parts of each trial in Experiment 4 (sentence and truth value judgment, followed by self-assessed confidence rating)

6.1.4. Predictions

When the truth values of the main clause and appositive are both the same (either both True \( \langle T_{MC}, T_{APP} \rangle \), or both False \( \langle F_{MC}, F_{APP} \rangle \)), it is not possible to determine whether the truth values are being combined (to render a true or a false judgment, respectively), or whether participants are disregarding the appositive and basing their decision solely on the main clause. The most interesting cases are therefore the ones in which the truth values of the appositive and main clause are at odds. When the main clause is false and the appositive true (\( \langle F_{MC}, T_{APP} \rangle \) sentences), we find it unlikely that a true appositive should be able to salvage the truth of the entire sentence, and predict that the entire sentence will be judged false, since the falsity of the main clause trumps all else. We therefore zero in on the cases where the main clause is true and the appositive is false (the three \( \langle T_{MC}, F_{APP} \rangle \) sentences).

Given the results from the previous experiments and the claims in the literature about the secondary status of appositives, three distinct possibilities arise. The first possibility is that sentences with appositives are simply treated similar to conjunctions with respect to truth
conditions, as illustrated in Table 2 (cf. Boër & Lycan, 1976; Frege, 1892; Kamp & Reyle, 1993; Rodman, 1976; Sells, 1985). If so, then any mismatch in truth values between the appositive and main clause will result in a judgment of False for the entire sentence. Thus, for both \( \langle F_{\text{MC}}, T_{\text{APP}} \rangle \) and \( \langle T_{\text{MC}}, F_{\text{APP}} \rangle \) sentences, participants should render judgments of False. Moreover, if they are performing calculations based on the logic of conjunction, they should exhibit high confidence ratings.

Table 2: Classical truth condition table for conjunction of two propositions

<table>
<thead>
<tr>
<th>( p_1 \land p_2 )</th>
<th>truth value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 \land 1</td>
<td>1</td>
</tr>
<tr>
<td>1 \land 0</td>
<td>0</td>
</tr>
<tr>
<td>0 \land 1</td>
<td>0</td>
</tr>
<tr>
<td>0 \land 0</td>
<td>0</td>
</tr>
</tbody>
</table>

The second possibility is that because appositives are largely seen as not at issue – and because they have been claimed to have a parenthetical status syntactically and semantically – participants may simply see them as *not* contributing to the truth conditions at all. In this case, participants may simply disregard the truth value of the appositive and focus solely on the truth value of the main clause in order to assign a truth value to the entire utterance (cf. Bach, 1999). However, building on discussion in Schlenker (2009b), we hypothesized that it may be harder to disregard the truth value of a charged/inflammatory appositive (the \( \langle T_{\text{MC}}, F_{\text{APP-MED-!}} \rangle \) sentences), since it may be more difficult to overlook the falsity of such content. For these sentences, it is possible that the appositive does become at issue by nature of the proposition it expresses, giving rise to a truth value clash that results in a conjunctive pattern, or that it has the opposite effect – namely, that the content is so clearly false that it is overlooked in favor of the at-issue main clause.

The third possibility is a variation of the second: in spite of a general tendency to disregard the truth value of the appositive, there may be an effect of appositive position, as
there was in Experiments 2 and 3 (cf. AnderBois et al., 2010; Schlenker, 2009b). Since the content of final ARCs are more likely than medial ARCs to be considered at-issue, these appositives may also be more likely than medial ARCs to interact with main clause content for the calculation of the truth value of the entire utterance.

6.1.5. Results

The results for the test items are presented in Table 13. Results for the control items are presented in Table 14.

Table 2: Results for each of the truth value combinations in the test items in Experiment 4, including percentage of true responses, average confidence rating (CR) on a scale of 1-5, and the time to render the confidence rating. Key truth value combinations (true main clause and false appositive) are indicated with a ‘*’.

<table>
<thead>
<tr>
<th>TV combination</th>
<th>% True</th>
<th>average CR</th>
<th>time to render CR (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\langle T_{MC}, T_{APP}\rangle)</td>
<td>94.0%</td>
<td>4.7</td>
<td>5606.81</td>
</tr>
<tr>
<td>*(\langle T_{MC}, F_{APP-MED}\rangle)</td>
<td>6.0%</td>
<td>4.8</td>
<td>6281.20</td>
</tr>
<tr>
<td>*(\langle T_{MC}, F_{APP-MED-!}\rangle)</td>
<td>16.0%</td>
<td>4.6</td>
<td>7045.11</td>
</tr>
<tr>
<td>*(\langle T_{MC}, F_{APP-FIN}\rangle)</td>
<td>2.0%</td>
<td>4.9</td>
<td>6102.26</td>
</tr>
<tr>
<td>(\langle F_{MC}, T_{APP}\rangle)</td>
<td>3.0%</td>
<td>4.9</td>
<td>5801.85</td>
</tr>
<tr>
<td>(\langle F_{MC}, F_{APP}\rangle)</td>
<td>1.0%</td>
<td>5.0</td>
<td>5122.31</td>
</tr>
</tbody>
</table>

13 Times over 15000 ms were excluded from all analyses. These data points accounted for under 5% of the total reaction time data. Exclusion of times over 10 ms would have resulted in exclusion of almost 14% of the data, but would have yielded a highly similar pattern and comparable times, with the lowest times deriving from \(\langle T_{MC}, T_{APP}\rangle\) and \(\langle F_{MC}, F_{APP}\rangle\) sentences, and the highest from \(\langle T_{MC}, F_{APP-MED-!}\rangle\) sentences.
Table 3: Results for the four control item types in Experiment 3, including percentage of true responses and average confidence rating (CR) on a scale of 1-5

<table>
<thead>
<tr>
<th>control type</th>
<th>% correct</th>
<th>average CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>unclear T/F</td>
<td>45.3%</td>
<td>2.2</td>
</tr>
<tr>
<td>clear T/F</td>
<td>93.3%</td>
<td>4.6</td>
</tr>
<tr>
<td>non-T/F</td>
<td>98.2%</td>
<td>4.8</td>
</tr>
<tr>
<td>T/F adverbials</td>
<td>97.8%</td>
<td>4.8</td>
</tr>
</tbody>
</table>

The $\langle T_{MC}, T_{APP}\rangle$ combination stands apart from all other combinations: it is only when both the appositive and the main clause are both true that the entire sentence is robustly assigned a truth value of True. All other combinations display extremely low percentage of True responses. Not surprisingly, this pattern is supported by pairwise comparisons between $\langle T_{MC}, T_{APP}\rangle$ sentences and all other sentence types ($\langle T_{MC}, F_{APP-MED}\rangle$: $W=3916$, $z=8.15$, $p<.0001$; $\langle T_{MC}, F_{APP-MED-!}\rangle$: $W=3315$, $z=7.39$, $p<.0001$; $\langle T_{MC}, F_{APP-FIN}\rangle$: $W=4278$, $z=8.33$, $p<.0001$; $\langle F_{MC}, T_{APP}\rangle$: $W=4186$, $z=8.28$, $p<.0001$; $\langle F_{MC}, F_{APP}\rangle$: $W=4371$, $z=8.37$, $p<.0001$). Thus, whenever the appositive is false, participants treat the entire sentence as false.

It is somewhat surprising that the $\langle T_{MC}, F_{APP-MED-!}\rangle$ sentences received a higher percentage of true ratings than any of the other sentences besides $\langle T_{MC}, T_{APP}\rangle$. Indeed, while other pairwise comparisons were not significant, this sentence received a higher percentage of True ratings than either $\langle T_{MC}, F_{APP-MED}\rangle$ or $\langle T_{MC}, F_{APP-FIN}\rangle$ ($W=105$, $z=1.95$, $p=.05$ and $W=133$, $z=2.89$, $p<.01$, respectively). It is possible that for these sentences, what we considered above occurred occasionally: participants overlooked the clearly false appositive content and based their truth value judgments on the truth of the main clause.

The truth values for the appositive test sentences were accompanied by consistently high confidence ratings. Thus, participants not only judged sentences with appositives as False, but they were quite confident in doing so. Evidence that they used the entire confidence rating scale and were cognizant of those instances in which they were uncertain of response comes from the average confidence rating exhibited for the ‘unclear T/F’ controls –
sentences that asked participants to render a T/F judgment about potentially obscure facts. With these sentences, participants performed at chance and had a consistently low confidence rating. (See the first row of Table 3.) Thus, they were uncertain of the answer, and indicated so in their confidence ratings.

A one-way ANOVA comparing the time to render a confidence rating for the three truth value cases for which we had clear expectations (〈T_{MC}, T_{APP}〉, 〈F_{MC}, F_{APP}〉, and 〈F_{MC}, T_{APP}〉), revealed no significant difference (F(2, 291)=2.25, p=.11). However, a second one-way ANOVA comparing the times for all of the sentences where participants rendered a False judgment revealed a highly significant main effect (F(4, 479)=7.74, p<.0001), driven mainly by the much longer time associated with the 〈T_{MC}, F_{APP-MED}〉 sentences. Tukey’s HSD post-hoc comparisons confirmed significant differences between these sentences and the 〈F_{MC}, F_{APP}〉 and 〈F_{MC}, T_{APP}〉 sentences (p<.01). However, the effect was also driven by the fact that times for 〈F_{MC}, F_{APP}〉 sentences were significantly shorter than when the main clause and appositive had different truth values and the appositive was false (〈T_{MC}, F_{APP-MED}〉, 〈T_{MC}, F_{APP-FIN}〉) (p<.05). Thus, while participants arrived at the same truth values (False), and had similar high confidence ratings for these sentences, they still appeared to be affected by the mismatch in truth values – and specifically that the appositive’s false status conflicted with the true main clause.

6.1.6. Discussion

The results of Experiment 4 revealed that appositives do indeed have an effect on the truth value: a false appositive renders the entire sentence false. A true appositive and true main clause combine to yield a true proposition, but any other combination of a main clause and an appositive where either one is false leads to a false proposition. Thus, our experimental participants treated sentences with appositives much like conjunctions. One could imagine that this pattern would still obtain, but that participants would have been confused by the
truth-value mismatch and uncertain of their decision. That this was not the case is reflected in the consistently high confidence ratings.

Interestingly, we observed an increase in the time it took to render a confidence rating associated with the sentences with a false, charged appositive (coupled with a higher percentage of True judgments). This pattern may be consistent with Schlenker (2009b)’s account of ‘translucency’: appositives must make a “weak” semantic contribution to the context set, in that the proposition expressed by an appositive should not be entailed by the context but should also be uncontroversial (pg. 70). The proposition expressed by the appositives in the \(\langle T_{MC}, F_{APP-MED} \rangle\) sentences did not abide by this characterization. Under Schlenker’s account, upon hearing the sentence, the hearer should update the original context \(C\) to \(C^+\) so as to render the appositive trivial. At this point, the sentence is computed with respect to this new context \(C^+\). This claim has clear consequences for the processing of these sentences, as Schlenker appears to have been aware: “the addressee must first find a \(C^+\) that makes the appositive trivial before processing further material.” In our experiments, the increased time it took may reflect the time participants spent attempting to find a suitable \(C^+\) before judging the sentence false.

Now, despite the otherwise uniform findings of this experiment, and the indication that appositives contribute to the truth value of the entire sentence much like conjunction, it still remains an open question whether sentences with appositives should indeed be treated as conjunctions. The reason for this has to do with our experimental design. One could argue that the binary forced-choice design pigeonholed participants into choosing F in instances where they knew they did not want to choose T. That is, because we did not offer them a third choice (i.e., a truth-value gap of neither T nor F), participants may have allowed F to be an umbrella response for all non-T responses. In von Fintel (2004)’s terms, participants chose F as a “fall-back strategy to fill in the gap.” Thus, it is possible that sentences with
appositives were not treated entirely like conjunctions by our participants, but this experiment merely gives the appearance of this pattern. To address this question, we conducted Experiment 5. In this last experiment, we also connected reaction times to the actual truth value ratings, rather than the confidence ratings, in order to evaluate how rapid the assignment of the truth value was in each case.

7. Experiment 5

7.1. Method

7.1.1. Participants

25 undergraduates (range: 19-22 years) participated. Five additional students were excluded for reasons of non-native status.

7.1.2. Stimuli

Test items for Experiment 5 were similar to a subset of those used in Experiment 4; however, in this experiment, we restricted our attention to those sentences in which the main clause was true, but the appositive false. As before, we varied the sentential position of the appositive, as illustrated in (32).

(32)  

a. Harry Potter, a lawyer, is a character created by J.K. Rowling.  
b. J.K. Rowling created the character of Harry Potter, a lawyer.

Participants were presented with eight appositive test items (all different sentences), among which were four NAs and four ARCs. Within these appositive types, two had the appositive in sentence-medial position, and two had the appositive in sentence-final position.

We compared the test sentences that had false appositives to five types of control sentences that are (broadly speaking) judged to be unacceptable, infelicitous, or false. The controls, presented in Table below, not only allowed us to make a comparison with appositives, but allowed us to evaluate whether participants patterned in a manner consistent with previous theoretical claims.
The first type of control sentences was VP conjuncts with one true and one false proposition. These sentences could be thought of as the closest semantically to the (sentence-medial) appositive sentences: one subject is shared between two clauses, and the truth value depends on the combination of the two propositions. The second type was similar in form, but differed in pragmatic plausibility: VP conjuncts where the conjuncts were presented in the reverse temporal order of what might be expected based on real-world facts or well-known procedures. These sentences are claimed to encode a conversational implicature with respect to temporal ordering (deriving from Grice’s Manner Maxim), and/or require discourse coherence such that the order of mention should mirror the order in which the events took place (cf. Grice, 1975; Horn, 2005; Lascarides & Asher, 1993; Noveck & Chevaux, 2002; Grice, 1975; Noveck et al., 2009; Strawson, 1952). Next, we chose a case argued by many to be an instance of conventional implicature: sentences with therefore (Bach, 1999; Grice, 1975). For these sentences, we created an infelicitous causal connection between the two clauses.

Finally, we chose two types of sentences involving presupposition. The first was regret sentences in which the embedded clause was false. Because regret is a factive verb, the presupposition of the embedded clause should project (cf. Karttunen, 1973; Kiparsky & Kiparsky, 1970). If the embedded clause is false, participants should detect something is awry, but it is an open question what truth value they will ultimately assign, given the presupposition failure. The second type of presupposition sentence involved singular definite DPs in which the presupposition of existence had been violated (cf. Russell, 1905; Strawson, 1950, 1964). In addition to these controls, there were two types of fillers: those with a clear truth value of True, and those that could not be assigned a truth value (e.g., fragments, questions). The range of controls and fillers encouraged participants to make use of the entire scale.
Table 4: Examples of control sentences and fillers used in Experiment 5

<table>
<thead>
<tr>
<th>control/filler type</th>
<th>sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP conjunct</td>
<td>Spiders have two legs and spin complex webs.</td>
</tr>
<tr>
<td>regret</td>
<td>President Obama regrets not running for office in 2008.</td>
</tr>
<tr>
<td>singular definite DP</td>
<td>The state of Boston hosts a marathon every year.</td>
</tr>
<tr>
<td>therefore</td>
<td>Whales live in the ocean, and therefore are mammals.</td>
</tr>
<tr>
<td>reverse order conjunct</td>
<td>Moviegoers watch the end-credits and buy their tickets.</td>
</tr>
<tr>
<td>filler (True)</td>
<td>Chimpanzees are primates and live in jungles.</td>
</tr>
<tr>
<td>filler (no truth value)</td>
<td>The sun and the moon</td>
</tr>
<tr>
<td></td>
<td>When is the semester over?</td>
</tr>
</tbody>
</table>

Each participant judged eight test items, 20 control items, 10 fillers. All items were pseudorandomized, based on item type and anticipated truth value. Sentences were similar to those used in Experiment 4, and were normed with native informants beforehand, as in Experiment 4. A complete list of stimuli is presented in the Appendix.

7.1.3. Procedure

The experimental session began with a brief training session, during which participants were acclimated to the task of rating sentences as True, False, or neither True nor False, on a scale of −2 to 2 (−2 −1 0 1 2), with −2 being False, 2 True, and 0 no truth value. Because we recognized the possibility that within our participant pool, there could be people who judge sentences with presupposition failures as either false or lacking a truth value (i.e., Russelians or Strawsonian), we did not want to force participants to rate sentences similar to our targets or controls as either −2 or 0. Instead, we had them rate some sentences as clearly true (i.e., The U.S. is located in the northern hemisphere; Oprah Winfrey is a very successful TV personality and author) (which could be rated as 1 or 2), some sentences as clearly false (The Beatles are a group of famous astronauts; Humans are closely related to sharks) (which could be rated as −1 or −2), and some questions or sentence fragments as not having a truth value (0) (When was the state of Missouri established?, in the middle of the room). During
the training session only, participants could not proceed to the next screen until they responded correctly. During the test session, participants read the sentence on the screen, then proceeded on to the next screen to render their truth value rating, using their response pad. As soon as they provided a truth value rating, participants proceeded to the next item. In this way, reaction times in this experiment were linked to the actual judgment itself, rather than the confidence ratings, as in the previous experiment.

If, as in the previous experiment, sentences with false appositives are treated similar to those with conjunction, then false appositive sentences in this experiment should exhibit a high percentage of ratings close to −2, and should also pattern along with the VP conjunct sentences in which one of the propositions was false (which correspondingly should also hover close to −2). We predicted that the other control sentences would not stand out as being clearly False. Thus, if participants perceive sentences with a false appositive as similar to sentences with presupposition violation or violation of conventional implicature, then the false appositive sentences should pattern with these sentences instead of with conjunction, given the wide range of possible responses. (See also discussion in Bach, 1999; Dever, 2001; Potts, 2005).

7.1.4. Results

Here we break down our analysis by truth value ratings and by reaction time, then look for correlations between these values.

Truth Value Ratings

The responses for the rating task are presented in Table.
Table 5: Mean truth value rating, standard deviation, and distribution of percentages of truth value ratings (−2: False to 2: True) for the appositive test items (in bold) and each of the five control items

<table>
<thead>
<tr>
<th>item type</th>
<th>mean rating</th>
<th>st. dev.</th>
<th>−2</th>
<th>−1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>appositives (all)</td>
<td>−1.68</td>
<td>.83</td>
<td>83.0</td>
<td>9.5</td>
<td>0.5</td>
<td>6.5</td>
<td>0.5</td>
</tr>
<tr>
<td>ARCs</td>
<td>−1.80</td>
<td>.59</td>
<td>86.0</td>
<td>11.0</td>
<td>0.0</td>
<td>3.0</td>
<td>0.0</td>
</tr>
<tr>
<td>NAs</td>
<td>−1.56</td>
<td>1.00</td>
<td>80.0</td>
<td>8.0</td>
<td>1.0</td>
<td>10.0</td>
<td>1.0</td>
</tr>
<tr>
<td>VP conjunct</td>
<td>−1.61</td>
<td>.85</td>
<td>76.0</td>
<td>17.0</td>
<td>0.0</td>
<td>6.0</td>
<td>1.0</td>
</tr>
<tr>
<td>regret</td>
<td>−1.59</td>
<td>.75</td>
<td>72.0</td>
<td>18.0</td>
<td>7.0</td>
<td>3.0</td>
<td>0.0</td>
</tr>
<tr>
<td>singular def. DP</td>
<td>−.89</td>
<td>1.52</td>
<td>60.0</td>
<td>7.0</td>
<td>6.0</td>
<td>16.0</td>
<td>11.0</td>
</tr>
<tr>
<td>therefore</td>
<td>−.37</td>
<td>1.56</td>
<td>41.0</td>
<td>9.0</td>
<td>10.0</td>
<td>26.0</td>
<td>14.0</td>
</tr>
<tr>
<td>rev. order conjunct</td>
<td>−.51</td>
<td>1.71</td>
<td>26.0</td>
<td>7.0</td>
<td>4.0</td>
<td>16.0</td>
<td>47.0</td>
</tr>
</tbody>
</table>

Note first that sentences with false appositives – and ARCs in particular – have the lowest overall mean rating, the lowest standard deviation of ratings (roughly speaking, variance), and the highest percentage of −2 ratings. This is the first indication that participants treated these sentences as False, and that they were consistent in their judgments, as in the previous experiment.

We conducted a series of ANOVAs to probe the similarities and differences among the sentence types. A 2×2 repeated measures ANOVA comparing appositive type (NA, ARC) and position (medial, final) revealed a main effect of appositive type ($F(1, 49)=7.01, p=.01$), with ARCs receiving lower overall ratings (i.e., closer to −2). There was no main effect of position ($F(1, 49)=.08, p=.78$), and no interaction ($F(1, 49)=.64, p=.43$). A one-way repeated measures ANOVA with a Greenhouse-Gessier correction evaluating the truth value ratings for the two types of appositive test items and the five control items indicated that there was a highly significant effect of sentence type ($F(3.82, 781.94)=55.06, p<.0001$). Post hoc tests using Bonferroni correction revealed that there was a marginally significant difference between the mean ratings for the NAs and the ARCs ($p=.10$), but no difference between either of the appositive sentence types and the regret sentences ($p=1.0, p=.53$, respectively),
or between either of the appositive sentence types and the VP conjuncts ($p=1.0$, $p=.45$, respectively). Both NA and ARC appositive sentences differed significantly from the singular definite DP sentences ($p<.01$, $p<.0001$, respectively), from the therefore sentences ($p<.0001$ for both), and from the reverse order conjunct sentences ($p<.0001$ for both). Singular definite DP sentences did not differ significantly from therefore sentences ($p=.15$), but did differ from reverse order conjuncts ($p<.0001$), and the latter two differed significantly from each other ($p=.01$). Thus, appositives patterned with the regret sentences and VP conjuncts with respect to their truth value ratings: when one clause is False, the entire sentence is False.

The high standard deviation for the singular definite DPs, the therefore sentences, and the reverse order conjuncts stems from the fact that there was variability in the truth value ratings within these groups of sentences. For example, for two of the definite DP sentences (the two involving ‘Barack Obama’s husband’ and ‘the King of New Jersey’), participants treated them as False, and ratings hovered around $-2$, while for two others (the two involving ‘the State of Boston’ and ‘Nebraska’s Pacific Coast’), the ratings were scattered all over the scale. Three of the therefore sentences exhibited a wide range of ratings, while one exhibited ratings hovering around $-2$ (Diet Pepsi contains no sugar, and is therefore non-alcoholic).

Finally, we observed an interesting split for the reverse order conjuncts, such that the two sentences involving predication of individuals (Steve Jobs and Barack Obama) in which the order of events was clearly reversed were judged true the vast majority of the time. By contrast, those sentences about habitual procedures with a clear order (Students graduate from high school and take the SAT; Moviegoers watch the end-credits and buy their tickets) exhibited a range of ratings. We discuss a possible account of these various items in the discussion section.
Reaction Times

The reaction times (RTs) for each of the sentence types are presented in Table 6.\(^4\)

**Table 6:** Mean reaction time to render a truth value (in ms) and standard deviation for the appositive test items (in bold) and each of the five control items, for all truth value judgments (left) and judgments for a \(\neg 2\) rating (right)

<table>
<thead>
<tr>
<th>item type</th>
<th>All RTs (ms)</th>
<th>RTs for (\neg 2) ratings (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean RT</td>
<td>st. dev.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>appositives</td>
<td>4365.14</td>
<td>1990.37</td>
</tr>
<tr>
<td>ARCs</td>
<td>4493.47</td>
<td>1729.72</td>
</tr>
<tr>
<td>NAs</td>
<td>4238.08</td>
<td>2220.06</td>
</tr>
<tr>
<td>VP conjunct</td>
<td>5363.26</td>
<td>2358.43</td>
</tr>
<tr>
<td>regret</td>
<td>5103.24</td>
<td>2504.26</td>
</tr>
<tr>
<td>singular definite DP</td>
<td>4612.49</td>
<td>2630.94</td>
</tr>
<tr>
<td>therefore</td>
<td>7030.77</td>
<td>2695.52</td>
</tr>
<tr>
<td>reverse order conjunct</td>
<td>6566.89</td>
<td>3006.74</td>
</tr>
</tbody>
</table>

The RTs complement the truth value ratings by demonstrating that participants took the least amount of time to respond to sentences with a false appositive, ostensibly illustrating that they did not deliberate over their \(\neg 2\) ratings: to our participants, these sentences were clearly just False. A 2\(\times\)2 repeated measures ANOVA comparing appositive type (NA, ARC) and position (medial, final) ANOVA on the reaction times revealed no main effect of appositive type (\(F(1, 49)=.56, p=.46\)) or position (\(F(1, 49)=.80, p=.38\)), and no interaction (\(F(1, 49)=1.09, p=.30\)).

A one-way ANOVA revealed a significant difference among sentence types (\(F(6, 682)=17.94, p<.0001\)). Tukey’s post-hoc tests showed that the two types of appositive sentences did not differ significantly from each other (\(p=.99\)), and neither differed from the regret sentences (ARC v. regret: \(p=.59\); NA v. regret: \(p=.17\)). Interestingly, it was also the case that neither appositive sentence differed from the singular definite DP sentences (\(p=1.0,\)

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\(^4\) As in the previous experiment, RTs over 15000 ms were excluded from analysis.
While ARCs v. VP conjuncts patterned together \( (p=.17) \), the RT for NAs was significantly shorter than the RT for VP conjuncts \( (p=.02) \). Definite DPs and VP conjuncts were not significantly different from each other \( (p=.34) \). The regret sentences were not different from the VP conjuncts \( (p=.99) \) or definite DPs \( (p=.81) \). The therefore sentences and reverse order conjuncts exhibited the longest RT. These sentence types did not differ from each other \( (p=.86) \), but differed from every other sentence type \( (therefore \ v. \ all \ other \ types: \ p<.0001; \ reverse \ order \ conjuncts \ v. \ both \ appositive \ types, \ definite \ DP: \ p<.0001; \ v. \ regret: \ p=.001; \ v. \ VP \ conjunct: \ p=.01) \). Thus, the overall RT means gave rise to a split between therefore and reverse order conjuncts with longer RTs on the one hand, and sentences with shorter RTs, including appositive sentences, on the other.

We then restricted our analysis to the RTs for −2 ratings so that we could focus exclusively on the time it took participants to render judgments of ‘clearly False’ for each of the sentence types. This one-way ANOVA mirrors the analysis of all RTs, with a significant effect of sentence type \( (F(6, 435)=11.90, p<.0001) \). As before, Tukey’s post-hoc tests showed that the two types of appositives did not differ significantly from each other \( (p=1.0) \), and neither differed from the regret sentences \( (p=1.0, \ p=.95, \ respectively) \) or from the singular definite DP sentences \( (p=1.0 \ for \ both) \). The therefore sentences and reverse order conjuncts again exhibited the longest RTs. These sentence types did not differ from each other \( (p=1.0) \), but were highly significantly different from both appositive types, regret sentences, and definite DPs \( (p<.0001) \), and significantly different from VP conjuncts \( (p<.02) \). Definite DPs were only marginally different from VP conjuncts \( (p=.09) \) and the RTs for NAs were significantly shorter than the RTs for VP conjuncts \( (p<.05) \). The regret sentences were not different from the VP conjuncts \( (p=.46) \) or definite DPs \( (p=.97) \).

Thus, the RT means for judgments of ‘clearly False’ \( (−2) \) solidified the split between therefore and reverse order conjuncts with longer RTs on the one hand, and some
combination of shorter RTs on the other, and reinforced the connection between the appositives sentences, VP conjuncts, and regret sentences, which had been observed with the truth value ratings. That appositives also patterned with definite DPs for False ratings seems to indicate that for those cases in which the presupposition was violated (and potentially easily verifiable), judgments of False were equally automatic.

**Truth Value Ratings and Reaction Times**

Here, we present scatterplots of truth value ratings and RTs for each of the sentence types. These plots reinforce the connection between appositives, VP conjuncts, and regret sentences on the one hand, and singular definite DPs, therefore sentences, and reverse order conjuncts on the other. For the first set of sentences, ratings are clustered toward the left of the x-axis (toward False ratings), whereas for the others, ratings are spread across the axis.

**Figure 5**: Scatterplots presenting truth value ratings and reaction times for the appositive test items and each of the five control items. Each dot is one data point.

The correlations between ratings and RTs are, however, somewhat challenging to
interpret. While there was a correlation between the reaction time and truth value ratings for
the regret sentences ($r^2=.127$, $t(97)=3.75$, $p<.001$) and the reverse order conjuncts ($r^2=.044$, $t(95)=-2.09$, $p<.05$), there was not for the other sentence types (appositives: $r^2=.007$, $t(197)=1.2$, $p=.23$; VP conjuncts: $r^2=.016$, $t(96)=1.26$, $p=.21$; singular definite DPs: $r^2=.008$, $t(96)=.85$, $p=.40$; therefore sentences: $r^2=.0004$, $t(90)=.19$, $p=.85$), making it somewhat harder to make a parsimonious statement about the other cases.

7.1.5. Discussion
This experiment supported the previous experiment by revealing that sentences with false appositives are judged to be clearly False, and that this decision appears to be fairly automatic. While the pattern for our test items is quite robust and fairly clear, at the same time, the findings are fairly complex, in light of the way that participants responded to the control items. What one might have expected to find is that sentences containing false asserted content (regular asserted content or conventionally implicated content) – i.e., sentences with false appositives, sentences with false VPs and sentences with infelicitous uses of therefore – to receive the highest percentage of False responses. However, what we found instead was that certain sentences with false presuppositions are more likely to be judged False than sentences with certain conventional implicatures, and that regret sentences with false complements are almost as likely to be given a False response as are sentences with false conjuncts. Indeed, participants were incredibly consistent in their judgments about sentences with false appositives, regret sentences with false complements, and VP conjuncts with one false proposition – and not so with the other sentences. Interestingly, others have also observed variability in projection behavior in experimental investigations of presupposition triggers (e.g., Smith & Currie Hall, 2011; Xue & Onea, 2011).

We would like to entertain the possibility that the variability we observe among the truth value ratings for the singular definite DP sentences, the therefore sentences, and the
reverse order conjuncts reflects the fact that an evaluation of the truth value of these sentences is heavily dependent on the context. By contrast, an evaluation of the truth value of appositive sentences, sentences with regret and an embedded clause, and conjunctions is invariably tied to the truth or falsity of lexical content: given a false proposition, the entire sentence becomes false. Thus, appositives and VP conjuncts patterned together, as expected, but so did regret sentences, because the false presupposition projected, rendering the entire sentence False (see also Chemla & Bott, 2013). Thus, items containing lexical content that expresses false information are more likely to be judged False (−2) whereas sentences that are false or infelicitous due to functional syntactic structure or extragrammatical factors are more likely to be judged as neither True nor False (0) and exhibit variability among ratings.

8. General discussion

In this paper, we presented five experiments that addressed two major questions: (i) What is the information status of appositives (Experiments 1-3), and (ii) What is the contribution of appositives to the truth value of the entire sentence (Experiments 4-5)? Our experimental investigations revealed the following. First, Experiment 1 demonstrated that direct rejections are largely dispreferred when targeting appositives, furnishing evidence in support of previous intuitions that appositives generally contribute not-at-issue content. While this finding is in and of itself not entirely surprising, it provided us with a baseline for Experiment 2, which demonstrated that among different appositive types and positions, sentence-final ARCs can compete with the main clause as the target of a direct rejection and acquire at-issue status. Experiment 3 further highlighted the privileged status of sentence-final ARCs by demonstrating that they can compete with the main clause to provide the at-issue assertion that associates with ellipsis in the following discourse. Finally, Experiments 4 and 5 showed that false appositive content has an incontrovertible effect on the truth value of the entire sentence: a false appositive is reason enough for participants to judge the entire sentence...
False. Thus, appositives contribute to the overall truth conditions of the sentence in a manner similar to that of conjunction.

In §2, we outlined two approaches to the semantics of appositives: the conjunction approach and the multidimensional approach. In this section, we link the predictions of those two approaches to our experimental results and point out that none can fully capture the patterns we uncovered. We then sketch an alternative approach, which we think can best explain the data.

Recall that according to the conjunction approach (Böer & Lycan, 1976; Frege, 1892; Rodman, 1976; Sells, 1985), appositives contribute content that is conjoined with the main clause content. Thus, the sentence with the appositive in (33) should be interpreted the same way as the conjunction in (34).

(33) My friend Sophie, (who is) a classical violinist, performed a piece by Mozart.
(34) My friend Sophie is a classical violinist and she performed a piece by Mozart.

By virtue of the standard rule for conjunction, both sentences are true just in case the two claims about the sentential subject are true; otherwise both sentences are false. According to the conjunction approach, then, sentences with appositives have a single truth value, of which appositive content is a vital part. This prediction is fully in line with the results of Experiments 4 and 5. However, if appositives were just regular conjuncts, it would not be clear why their content is often considered to be not at issue, as demonstrated in Experiments 1-3. A purely conjunctive approach seems to lack the tools necessary to distinguish between at-issue and not-at-issue content in general and therefore fails to capture the way in which sentences with appositives are interpreted.

The accounts of AnderBois et al. (2010) and Murray (2010) (see also Schlenker, 2009a, b) enrich the conjunction approach by assuming that appositives are assertions that represent a special type of context update. These authors distinguish between two types of
assertive content: one that *directly* updates the context (e.g., content introduced by appositives), and one that introduces an update *proposal*, which can be accepted or rejected by the conversational participants (e.g., content introduced by main clauses). Thus, while appositives have an immediate effect on the context and hence are not at issue, main clauses only potentially update the context and hence are at issue. By aligning the appositive and main clause content as both affecting the truth conditions, but allowing them to differ in their information status, this version of the conjunction approach can account for our findings in Experiments 1, 4, and 5.

However, what is still left unresolved is the ability of sentence-final ARCs to become at issue, observed in Experiments 2 and 3. AnderBois et al. (2010) were well aware of this problem, and discussed examples illustrating the shifting status of final appositives. Indeed, in their footnote 9 (pg. 17), they acknowledged that they had yet to account for such examples, and entertained the possibility (suggested to them by Nicholas Asher, p.c.) that sentence-final appositives can “enter into matrix-level discourse relations in a discourse structure.”¹⁵ Medial appositives, they proposed, would be subject to more constraints on interpretation, because they are discourse-subordinate to the clause to which they are attached. While this suggestion may be on the right track, it crucially does not draw a distinction between ARCs and NAs, and therefore cannot explain why sentence-final ARCs are the only appositives (in our experiment, at least) that display this characteristic.

According to the multidimensional approach (Bach, 1999; Berckmans, 1994; Chierchia & McConnell-Ginet, 2000; Dever, 2001; Potts, 2005), appositives contribute secondary propositions that are fully independent of the primary proposition expressed by the main clause. The multidimensional approach could straightforwardly account for the

¹⁵ AnderBois et al. (2010) do not distinguish here between ARCs and NAs, but discuss ARCs in particular in their examples.
predominantly not-at-issue status of appositives in Experiments 1 and 2 by saying that only the meaning dimension associated with the main clause is at issue, while supplements (e.g., appositive content) are not at issue. It is less clear, however, how this approach could handle the key set of results from Experiments 2 and 3, where sentence-final ARCs were able to take on at-issue status.

Moreover, it is an open question how the multidimensional approach would handle the results of Experiments 4 and 5, where sentences with conjuncts pattern much like conjunctions. Inherent to the multidimensional approach is the idea that the truth values attributed to the two meaning dimensions are not semantically combined. While propositions introduced by appositives, when taken in isolation, do have truth conditions, these propositions are seen as independent and therefore cannot contribute to the truth conditions in the same direct way primary propositions do. Thus, when participants are forced into a binary judgment, the prediction is that they might disregard the appositive or exhibit reluctance when rendering their judgment. However, the results of Experiments 4 and 5 showed that sentences with appositives were treated much like conjunctions. The truth value of our appositives (both NAs and ARCs) was not overlooked (as would have been predicted by Bach (1999)) and did not seem to elicit additional deliberation on the part of the experimental participants (as Dever (2001) would have it).

A reviewer alerts us to the following intriguing possibility: even though the multidimensional approach may not predict that the truth values of the appositive and the main clause are combined in the semantics, they might be combined at the discourse level, e.g., by sequentially updating the context with the two types of content. Indeed, if this move is made, the predictions of the two-dimensional approach with respect to truth value judgments would not be much different from the predictions of the conjunction approach. However, the details of how multidimensionality and discourse dynamics are integrated still
need to be worked out, and the influence of appositive position and shifting at-issue status would still need to be accounted for.\textsuperscript{16}

In what follows, we outline a version of the conjunction approach that we think can best account for the observed interpretational properties of appositives. We assume that appositives represent regular truth conditional content (similarly to conjuncts) but that, in addition, they are \textit{illocutionarily independent}, i.e. the speech act associated with an appositive is independent from the speech act associated with the rest of the sentence (cf. Arnold, 2007; McCawley, 1988; Potts, 2005; Thorne, 1972). The illocutionary independence of appositives is empirically supported by the fact that appositives accept speech act adverbials or “utterance modifiers” (Potts, 2005) like \textit{hands down}, as in (35), or can express a different type of speech act whose illocutionary force differs from that expressed by the main clause, e.g. a statement versus a question, as in (36).

(35) We rented \textit{The Good, the Bad, and the Ugly}, \textit{hands down} the best \textit{Clint Eastwood} movie ever made.

(36) Has Cameron, who was talking to Gloria a minute ago, gone home?

Given the truth-conditional nature of appositives and their illocutionary independence, we propose to account for the shifting status of ARCs observed in Experiments 2 and 3 by assuming that appositives can compete with main clauses for at-issue status, and by relating the ordering of the appositive assertion and the main clause assertion to the overall flow of discourse.

We first assume that sentence-medial ARCs (and NAs) are obligatorily attached to their anchor, as illustrated in (37).

(37) my friend [\textsubscript{DP} Sophie [\textsubscript{CP} who is a classical violinist ]] performed a piece by Mozart

Given that appositives are interpreted in surface position, it follows that the assertion

\textsuperscript{16} See Potts (2005, pg. 95) and Koev (2013, pg. 123-125) for further discussion on this point.
associated with the medial ARC below is introduced hand in hand with the anchor before the assertion associated with the main clause. If direct rejections and elliptical Why? questions primarily target the assertion that has been performed last, it becomes clear why in sentences with medial appositives, only the main clause is at issue, while the appositive is treated as not at issue.\footnote{Sentences with final ARCs are different. We assume that they are structurally ambiguous: the ARC can be attached to either the anchor or the root node of the sentence.\footnote{A reviewer asked about our predictions for other languages, given, for example, Cinque (2008)’s claims that English ARCs are always attached at the sentence level, but in languages like Italian or French, ARCs could be attached at the DP or CP level. We would expect that “integrated” non-restrictive relative clauses pattern much like restrictive relative clauses in English, while “nonintegrated” non-restrictive relative clauses in French or Italian are similar to ARCs in English in that they are at-issue only if they are CP-level. We leave this interesting investigation of the cross-linguistic typology of appositive content to future research.}}

Sentences with final ARCs are different. We assume that they are structurally ambiguous: the ARC can be attached to either the anchor or the root node of the sentence.\footnote{Local attachment of appositives is proposed in Jackendoff (1977), Kayne (1994), Potts (2005), de Vries (2006), a.o. For global or late attachment accounts, see, for example, Emonds (1979), McCawley (1982, 1988), Ross (1967), and Safir (1986).} If the ARC is attached to the anchor, as in (38), the appositive assertion is made before the main clause assertion, and consequently the main clause is at-issue in such sentences.\footnote{A reviewer points out that when the appositive attaches to the root node of the sentence, then its anchor should not be accessible anymore for composition with the appositive. Koev (2013) provides compositional rules that accommodate appositives in either position, with the}
However, when the final ARC is attached to the root node of the sentence, as in (39), the appositive content is asserted *last*, allowing the ARC to be at issue.²¹ In this second case, the discourse effect is similar to that of having two independent sentences that follow upon each other.

(38) the symphony hired my friend [_{DP} Sophie [_{CP} who is a classical violinist ]]

(39) [_{CP1} the symphony hired my friend Sophie ] [_{CP2} who is a classical violinist ]

This distinction between the possibilities for appositive attachment and sentential position lays the groundwork for the shifting at-issue/not-at-issue status of ARCs, and provides us with an explanation for the results of Experiments 2 and 3.

The view that the recency of an assertion exerts an effect on its at-issue status finds independent support in the minimal pair presented in (40)-(41). In (40), there are two independent sentences and thus two separate assertions. The second sentence seems to be a more natural target for “That’s not true” responses or “Why?” questions. In (41), by contrast, the two conjuncts are part of a single assertion, and this preference for targeting the second assertion seems to disappear.

(40) Ryan lives in Boston. Sarah moved there a month ago.

(41) Ryan lives in Boston and Sarah moved there a month ago.

If, as we suggest, appositives and main clauses make separate assertions, two questions immediately arise. First, if ARCs have the potential to be at issue, why are they not considered at issue more often? Recall that in Experiment 2, sentence-final ARCs were only treated as targets of a direct rejection approximately one third of the time. Second, why were

²¹ One might expect that the difference between (38) and (39) might be reflected in a different prosodic delivery. At this point, we are unsure of what that might be, if any.
we only able to observe positional effects with ARCs, but not with NAs, in Experiment 2?

In regard to the first question, recall that participants in Experiment 2 were given a choice between directly rejecting the main clause or the sentence-final ARC. Thus, given a forced choice between two potential targets of a “No” rejection, participants demonstrated a preference for the main clause over the appositive. This difference may arise from a difference in frequency: not only are main clauses overwhelmingly more common than appositives, but we suspect (although cannot confirm in the space of the current research) that of all appositive types, (sentence-final) ARCs might be among the least frequent of all appositive constructions, carving out only a small portion of all possible appositive forms. In other words, we suspect that the deck is stacked against them. Of course, the data we present here are silent on such frequency trends, but we think this would be an interesting project for future research.

This brings us to the second question: why can final ARCs compete with main clauses to gain at-issue status while final NAs cannot? It is possible that certain surface-level features of ARCs (their tense/mood marking, their clausal status, the presence of a wh-word signaling the presence of a CP, etc.) make them better candidates for at-issueness. The wh-word, in particular, establishes a discourse-anaphoric dependency between the ARC and its anchor (cf. Del Gobbo, 2003; Demirdache, 1991; Sells, 1985), allowing non-locally attached ARCs to remain linked to their DP anchors. Arguably, NAs, which lack wh-words, may need to be in a local configuration with the anchor, from which it would follow that they are invariably not at issue. This discussion raises the possibility that there may be a way for NAs to take on at-issue status if they could adopt some of the properties of ARCs. For example, supplementing a sentence-final NA with a restrictive relative clause, could induce a shift in their information status. We leave investigation of this possibility to further research.

More generally, however, we may ask about the status of NAs: are they like ARCs in
that they make independent assertions whose information status is primarily determined by the relative order with the main clause assertion, or are they (unlike ARCs) specified for not-at-issue status? If the latter is correct, then NAs and ARCs do not share the same status, and we have introduced an inherent split within the class of appositives between ARCs and NAs. This distinction may not be entirely unreasonable, given their difference in surface form and the results of Experiment 2. However, one might find such a distinction somewhat unparsimonious, given the otherwise uniform behavior of appositives, and further ask whether sentence-final NAs could be coerced into behaving like sentence-final ARCs under certain conditions.

We would like to entertain the possibility that all appositives (both NAs and ARCs) and main clauses introduce independent assertions. But because NAs and sentence-medial ARCs are locally attached to their anchors in the syntax, assertions introduced by such appositives are non-final and do not compete with the assertion associated with the main clause. As a result, NAs and sentence-medial ARCs are treated as not-at-issue content. When ARCs are sentence-final, these ARCs have two attachment sites available: the anchor or the entire sentence. As with NAs and sentence-medial ARCs, when the attachment site is the anchor, ARCs are not at issue, while the main clause is. When the ARC is attached to the sentence, however, the ARC competes with the main clause to gain at-issue status. This approach to appositives has the potential to derive all the desired properties of appositives, including the required flexibility to explain why sentence-final ARCs can shift their information status.

Before closing, we wish to address two additional issues, which were raised by reviewers and which are related to the topic of at issuenss. The first is how to diagnose at issue status. The second is the connection between at-issueness and projection, or the scopal properties of the appositive.
In the experiments reported in this paper, we made use of direct rejections and elliptical questions as tests for at-issueness. Another test discussed in depth by Simons et al. (2010) and Tonhauser (2012) is the ability of content to address the Question Under Discussion (QUD) (Büring, 2003; Farkas & Bruce, 2010; Ginzburg, 1996; Roberts, 1996). A reviewer used the following contrast between (42) and (43) as evidence that only at-issue content can address the QUD, and therefore that the appositive in (43) cannot be at issue, as the main clause in (42) is, since it cannot serve as answer to the QUD.

(42) Q: What did John do?
   A: John took care of his husband, who had prostate cancer.

(43) Q: What illness did John’s husband have?
   A: # John took care of his husband, who had prostate cancer.

We agree that the sentence with the appositive in (43) does not provide a suitable answer to the question preceding it. However, we do not think that this set of examples illustrates that appositives cannot address any QUD. For example, the appositive content in (44) helps to provide an answer to either of the two QUDs preceding it.

(44) Q1: Why was John out of the office for so long?
   Q2: Why is John fundraising for the upcoming Walk for Cancer?
   A: He took care of his husband, who had prostate cancer.

In addition, Koev (2013) points out that final ARCs can naturally address one part of a coordinated QUD, as in (45).

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

To us, such data suggest that appositives are not barred from addressing QUDs. Moreover, if they are shown to address some QUDs, and the ability to provide an answer to a QUD is a
diagnosis for at-issueness, then the examples we have provided above are further evidence that appositives can be at issue.

The second issue concerns the fact that appositives are known to project past propositional operators such as negation, modals, or attitude verbs. Recent work by Tonhauser et al. (2012) and Simons et al. (2010) has argued quite convincingly that the range of content that projects past such operators goes beyond presupposed content. Instead, projective content is content that is not at issue, and propositional operators only target at-issue content. Appositive content projects and is typically construed as a commitment on the part of the speaker, as seen in (46). Here, the speaker seems to be committed to the opinion that Sue is a movie aficionado; this content projects past the attitude verb believe, and cannot be canceled later.

(46) Ed believes that Sue, a movie aficionado, has never seen Singin’ in the Rain.

# But Sue isn’t a movie aficionado.

Thus, one might wonder how we can reconcile the at-issueness of appositives as witnessed in our experiments with their robust projection behavior.23

22 See Chierchia & McConnell-Ginet (2000) and Potts (2005) on the projection behavior of appositives. Amaral et al. (2007), Harris & Potts (2009), Potts (2009), Schlenker (2009a, b) and Wang et al. (2006) discuss several (apparent) exceptions to appositive projection. It is an interesting question whether such interpretations are accompanied by a shift in information status.

23 Although Simons et al. (2010, pg. 323) do discuss instances of “apparently at-issue NRRCs” in which the partial answer to a question is contained in the appositive, but the appositive still seems to project.

(27) Q: Who’s coming to the dinner tonight?
One way of getting around this apparent inconsistency is to say that propositional operators target material in their syntactic scope selectively. Thus even when in the syntactic scope of an operator, appositives are predicted to project, because of their illocutionary independence.24 We would also like to point out that given the observation that appositives are typically not at issue and project, it does not necessarily follow that because they project, they cannot be at issue. A possible example of this is in (47), where the appositive projects past the modal might, but nevertheless can be targeted by B’s direct rejection.

(47) A: Liz might be with her husband, who has prostate cancer.

B: That’s not true—he has lung cancer.

We have shown that appositives pass multiple tests for at-issue status (they can be the target of a direct rejection, can provide the main assertion for ellipsis in a following sentence, and can address a QUD), and we do not dispute that they typically project past operators. Instead, we regard the projection behavior of appositives as independent from their at-issue status and take the precise relationship between projective content and information status as a very exciting avenue for future research.

9. Conclusion

The combined findings of our experiments demonstrate that appositives – while typically not at issue – can take on at-issue status, as seen in the ability of sentence-final ARCs to be directly rejected and be associated with an elliptical question, and that appositives do contribute to the truth conditions of the sentence in which they appear, rendering the sentence

A: Well, I haven’t talked to Charles, who probably won’t be able to come, but I did talk to Sally, who is coming.

They argue that with such examples, an implicit question must be reconstructed.

24 See Koev (2013) for a dynamic implementation that derives the projection behavior of appositives directly from their illocutionary independence.
False if the appositive content is deemed False. However, we also saw that appositives do not pattern as a uniform class with respect to their information status. Differences based on surface-level position and syntactic form, which are linked to their role in the flow of discourse and their relation to the anchor, give rise to differences in whether appositives are considered to be at issue or not. The potentially at-issue status of sentence-final ARCs demonstrates a previously unrecognized interplay between conventionalized meaning of an appositive and its salience relative to the rest of the sentence, and one which we hope will result in further research in this area.
Appendix A

Experiments 1 and 2

Test Items

Six permutations of each exemplar generated a set of similar sentences. Factors manipulated included appositive type (nominal appositive (NA) v. appositive relative clause (ARC)), appositive position (medial v. final), and ARC aspect (stative v. eventive). A full set of six sentences has been provided in (1). The remaining sets can be generated in a similar fashion using the two sentences provided for each set. The appositive in each sentence is underlined.

(1)  
   a. My friend Sophie, a classical violinist, performed a piece by Mozart. 
   b. My friend Sophie, who is a classical violinist, performed a piece by Mozart. 
   c. My friend Sophie, who performed a piece by Mozart, is a classical violinist. 
   d. The symphony hired my friend Sophie, a classical violinist. 
   e. The symphony hired my friend Sophie, who is a classical violinist. 
   f. The symphony hired my friend Sophie, who performed a piece by Mozart. 

(2)  
   a. Edna, a fearless leader, led the team to victory. 
   b. The team congratulated Edna, a fearless leader. 

(3)  
   a. Clyde, the subject of a long manhunt, committed a felony. 
   b. The officer arrested Clyde, the subject of a long manhunt. 

(4)  
   a. Dr. Richards, a dentist only in it for the money, set up a practice in Princeton. 
   b. Everyone despises Dr. Richards, a dentist only in it for the money. 

(5)  
   a. Catherine, an experienced climber, made it to the summit. 
   b. The photographer took a picture of Catherine, an experienced climber. 

(6)  
   a. Jill, a frequent traveler, took a flight from Newark to Los Angeles. 
   b. The airline attendant greeted Jill, a frequent traveler. 

(7)  
   a. Sheila, an avid runner, participated in a marathon last weekend.
b. The people cheered on Sheila, an avid runner.

(8)  
   a. John, a motorcycle enthusiast, recently bought a Harley Davidson.
   b. Everyone in town has heard of John, a motorcycle enthusiast.

(9)  
   a. Bruce, a senior in high school, has just started his college applications.
   b. Top universities have been recruiting Bruce, a senior in high school.

(10)  
   a. Sally Phillips, a proud New Yorker, won this year’s cake-baking contest.
   b. The local news is interviewing Sally Phillips, a proud New Yorker.

(11)  
   a. Larry, a comic actor, delivered a rousing performance.
   b. The audience applauded Larry, a comic actor.

(12)  
   a. Professor Clemens, an expert in Russian literature, published a well-known anthology.
   b. The department is honoring Professor Clemens, an expert in Russian literature.

Control Items

**Factive verb with false embedded clause (presupposition trigger)**

B1: Hey, wait a minute…

B2: That’s not true…

(13)  
   Sid discovered that Honey Nut Cheerios has been discontinued.

(14)  
   Mark discovered that a storm destroyed his home yesterday.

(15)  
   Lisa discovered that we need 250 credits in order to graduate.

(16)  
   Katherine learned that the Super Bowl is played twice a year.

(17)  
   Connor learned that the French Open is played on grass courts.

(18)  
   Emilia learned that NBC airs American Idol.

**Definite Singular DP (presupposition failure of existence)**

B1: That’s wrong…

B2: Hold on…
(19) The United States Prime Minister went sailing off Nantucket.

(20) The soccer team’s quarterback scored the goal.

(21) The ski team from the Dominican Republic likes to fly United.

(22) The state of Philadelphia hosts a marathon in November.

(23) The official Food Network mascot has filmed 50 commercials.

(24) The governor of New Brunswick visited Rutgers today.

Scalar Implicatures (lower value on scale asserted)

B1: Actually,…

B2: Yes, …

(25) The food here seems good.

(26) The prices at this store seem reasonable.

(27) Lara’s car appears rather affordable.

(28) I think the hurricane will possibly do damage to this town.

(29) Emily just started her book report.

(30) Joseph has two kids.

Conjunctions (target: truth of part of one conjunct)

B1: No,…

B2: Absolutely, …

(31) Ryan bought a Dell and set it up in his office.

(32) Darius performed well and won many awards.

(33) Andrea studied finance and worked as an intern.

(34) Christine walked home and called her mother.

(35) Michael asked Kate to marry him and Kate happily answered, “yes.”

(36) The machine began to shake and the electricity went out.

Simple Clauses
B1: Kind of…

B2: No, …

(37) Katrina called the radio station to make a request.

(38) Diego purchased a new pair of jeans.

(39) This product was designed to clean grease stains.

(40) Carpenter ants have infested the kitchen.

(41) Erin just spilled milk everywhere.

(42) Thomas’s mother calls him Teddy.
Experiment 3

Test Items

(1)
Laura's family is growing, and she is in the market for a car that will accommodate all of her children. She's considering a minivan. But since this kind of car is frequently stolen in her neighborhood, she's decided to pay for monthly parking at a local parking garage, where her car will be safe.

Possible continuations

a. Final
   Laura decided to purchase a minivan, which she parks in a garage.

b. Medial
   Laura's car of choice, which she parks in a garage, is a minivan.

Answer choices for test question: Why?

a. main clause target
   Because of her growing family

b. appositive target
   Because of the potential for theft

(2)
The Spartanburg High football team usually plays conservative, and typically runs the ball or throws it to their star wide receiver. But they need to do something the defense won’t expect, since it’s the 4th quarter, and they’re down by 5 points. The defense definitely won’t be expecting a fake handoff! All the fans are depending on the quarterback to pull this off and win the game.

Possible continuations
a. Final

The MVP of the game was the quarterback, who faked a handoff to the
running back to score a touchdown.

b. Medial

The quarterback, who faked a handoff to the running back to score a
touchdown, was named the MVP of the game.

Answer choices for test question: Why?

a. main clause target
   Because he won the game with his decision to fake a handoff

b. appositive target
   Because they needed to do something unexpected to win

Chloe is auditioning for the “All Stars” Dance Company. They only invite the top dancers in
the area to audition, and they have identified Chloe as being a great potential addition to their
company. They offer a variety of classes, but Chloe is most interested in being taken
seriously as a classical ballet dancer more than anything. So she decided to put her hair up in
a classical bun and wear pin leggings and a black leotard to the audition.

Possible continuations

a. Final

   The “All Stars” Dance Company has chosen to audition Chloe, who decided to
dress in a classical ballet style.

b. Medial

   Chloe, who decided to dress in a classical ballet style, has been chosen to
audition for the “All Stars” Dance Company.
Jack has been looking for the perfect Christmas present for his daughter. He learned that the "Pretty Pony Spa" is very popular among little girls this year, so he's leaning towards that toy. But Jack knows that whatever toy he gets, his daughter will search all over the house in an attempt to find it, so he'll need to hide it well before the big day.

Possible continuations

a. Final

Jack bought a Pretty Pony Spa, which he hid on the top shelf in his closet.

b. Medial

The toy Jack bought, which he hid on the top shelf in his closet, was the Pretty Pony Spa.

The Hendersons have been looking for a good location to host their family reunion in September. They have set their sights on Charleston, SC, since it has many amenities, such as
an accessible airport, good weather, beaches, and inexpensive lodging. But they know some family members will object to traveling south during hurricane season. They’re bracing themselves for the backlash of angry emails from this decision.

Possible continuations

a. Final

The Hendersons have decided to have their family reunion in Charleston, which is a location that some family members will object to.

b. Medial

Charleston, which is a location that some family members will object to, is where the Hendersons have decided to have their family reunion.

Answer choices for test question: Why?

a. main clause target

Because of all of the amenities the city has to offer

b. appositive target

Because that will mean traveling south during hurricane season

Arnold is interviewing for a promising new position at the office next week. He’s considering wearing his lucky brown suit, since things always seem to go his way whenever he wears it. However, he just wore this suit to a convention and it’s a little dirty, so he’s taking it to local dry cleaner this afternoon, so it will be fresh-pressed and clean for the occasion.

Possible continuations

a. Final

Arnold chose to wear his lucky brown suit, which he took to the local dry cleaner.

b. Medial
Arnold’s lucky brown suit, which he took to the local dry cleaner, is what he chose to wear.

Answer choices for test question: *Why?*

a. main clause target
   Because things go his way when he wears it

b. appositive target
   Because he wanted it to be clean and pressed for the interview

Viv is a fan of indie music. She really gets into the range of musical styles and lyrics. There’s a good college radio station that plays a lot indie music, and she could in theory listen to it on her long commute. But the other people in her carpool are more “Top 40” listeners, and they don’t tolerate anything else. So she listens to pop radio in the car, and waits to stream her indie music online when she arrives at work.

Possible continuations

a. Final
   Viv prefers to listen to indie music, which she streams online at work.

b. Medial
   Viv’s preferred style of music, which she streams online at work, is indie.

Answer choices for test question: *Why?*

a. main clause target
   Because of the range of musical styles, lyrics, and band stories

b. appositive target
   Because the people in her carpool only tolerate pop music

Adam has been practicing yoga for a little over a year now, and has been determined to learn
how to do a headstand. In his mind, learning how to do a headstand means he is on his way to having a serious yoga practice. His instructor told him to practice it every single day. So for the last month, Adam has followed these instructions and attempted a headstand every single day. In yoga class this morning, Adam got into a headstand and held it for 30 seconds before exiting out of the pose.

Possible continuations

a. Final
Adam has been learning to do a headstand, which he was finally able to hold in his yoga class today.

b. Medial
The pose Adam has been working on, which he was finally able to hold in his yoga class today, is a headstand.

Answer choices for test question: Why?

a. main clause target
Because he thinks of it as a sign of having a serious yoga practice

b. appositive target
Because he has practiced it every single day for a month

(9)
Amelia is looking for new flowers for her garden. She wants something that smells lovely and will attract butterflies. She’s considering lavender. But since these flowers are light purple, she’ll need to think carefully about how they go with the rest of the colors in the garden. They may have to go along the right edge, away from the bright yellow coneflowers.

Possible continuations

a. Final
Amelia newest flower is lavender, which she planted along the right edge of
Amelia’s newest flower, which she planted on the right edge of her garden, is lavender.

Answer choices for test question: Why?

a. main clause target
   Because it smells lovely and will attract butterflies

b. appositive target
   Because that’s where it won’t clash with the yellow coneflowers

Patrick is determined to have six-pack abs. This way, when he goes to the beach in the summer, all eyes are sure to be on him and those abs. He downloaded a new app on his iPhone to help him work out every day. But he doesn’t want his roommates to know he’s working out so much, so he does his workout bright and early at 5 am, when nobody else is up.

Possible continuations

a. Final
   Patrick has a new ab-focused workout, which he does at 5 am everyday.

b. Medial
   Patrick’s workout, which he does at 5 am everyday, focuses on his abs.

Answer choices for test question: Why?

a. main clause target
   Because he wants six-pack abs for the summer

b. appositive target
   Because his roommates aren’t awake at this hour
Today, when Adrian was driving home to work, he was stuck behind a slow-moving Buick. Late enough already, he quickly accelerated to pass to the right, only to discover the traffic was stopped up ahead. He slammed into the back of the car in front of him. He picked up his cell phone and immediately called his insurance agent to report the incident. After he wrecked his car, Adrian contacted his insurance agent.

Answer choices for test question: How?

a. main clause target
   With his cell phone

b. appositive target
   By passing quickly to the right

Marjorie had a lot to do to get ready for the holiday party. She had been crossing things off her “to do” list all day. Looking around the kitchen, she went on to the next item on the list: washing the dishes. Unfortunately, the dishwasher was broken, so she had to wash them all by hand. Once this was done, she proceeded to the next item: the holiday cookies. She took out her Kitchenaid mixer, and made the sugar cookie batter. After washing the dishes, Marjorie made the cookie batter.

Answer choices for test question: How?

a. main clause target
   With her mixer

b. appositive target
   With her hands
Henry has arts & crafts class on Tuesday and Thursday every week. On Tuesday, they worked with origami. That day, Henry learned how to fold paper and make a frog. On Thursday, they worked with Play-Doh. That day, Henry squished and rolled the Play-Doh, and made a bear. Before he made a bear, Henry made a frog.

Answer choices for test question: How?

a. main clause target
   With origami

b. appositive target
   With Play-Doh

(14)
Sonja and Will just had a baby, and like all new parents, they are adapting to their new role. There are so many things they have to know, one of which is what to do at baby’s bedtime. Their friends had lots of advice, some of it conflicting. At their recent visit to the pediatrician, the doctor sat them down and cleared things up. She told them that they should put their baby to bed on his back. Sonja and Will learned the best way to put their baby to bed.

Answer choices for test question: How?

a. main clause target
   From their pediatrician

b. appositive target
   On the baby’s back

(15)
David was coming downstairs to eat breakfast yesterday morning, when he overheard his parents talking in the kitchen. His mother was taking a new route to her doctor’s appointment, and his father was giving her advice. He said that there’s a speed trap on one part of the route: he knows, because the police gave him a speeding ticket last summer.
was shocked! He didn’t know that his dad had ever gotten a speeding ticket. He coughed loud before he proceeded to make his way to the breakfast table. David found out that his dad got a speeding ticket.

Answer choices for test question: *When?*

a. main clause target
   
   Yesterday morning

b. appositive target
   
   Last summer

(16)

Last week over coffee, Damien and his girlfriend started to plan their road trip. Damien thought it might be fun to go to Vermont and was surprised when his girlfriend said she had already been there. He thought he knew everything about her. She explained that she visited a friend there a few years ago when she was in college. This week, they’re meeting to talk about the possibility of traveling to Maine. Damien learned that his girlfriend had been to Vermont.

Answer choices for test question: *When?*

a. main clause target
    
    Last week

b. appositive target

    A few years ago

(17)

Amy auditioned for the school play, which is taking place next month. She found out quite by accident that she got a lead role, and wasn’t supposed to say anything. But she couldn’t keep this news from her best friend Maddie, and today during gym class, Amy shared her secret with her best friend. Amy told Maddie she was going to be in the school play.
Answer choices for test question: *When*

a. main clause target
   Today during gym

b. appositive target
   Next month

(18)

Elisa placed an order on Amazon for some new books. Against her better judgment, she went with a new bookseller, even though she has had good luck with one in particular – all to save $5. Wouldn’t you know it, her order took longer than usual to arrive. It finally arrived last week! She was so incensed that when the bookseller emailed to ask if her order had arrived, she waited until earlier today to respond to them. Elisa emailed the bookseller to say that her order had arrived.

Answer choices for test question: *When*

a. main clause target
   Earlier today

b. appositive target
   Last week

(19)

Every winter break, Sofia’s family takes a vacation somewhere new. This year, they went skiing in the Poconos. Sofia had so much fun on this trip that she couldn’t wait to tell all of her friends about it. As soon as she got home, she posted pictures and a detailed account of her vacation on her online blog. Sofia wrote about the trip her family took over the holidays.

Answer choices for test question: *Where*

a. main clause target
   On her blog
(20)

Mr. Schwartz thinks it’s important to keep his office team happy. So each year, he and his team spend a weekend on a retreat. Everyone was really looking forward to hearing about his selection for this year. Given the interest, he decided to make the announcement in the large conference room in order to accommodate everyone. He couldn’t wait to share the location with them: Whole in One, a resort that combines golfing, pilates, spa services, and teambuilding exercises. Mr. Schwartz announced the location of the next teambuilding retreat.

Answer choices for test question: Where?

a. main clause target
   In the large conference room

b. appositive target
   Whole in One resort
Appendix C

Experiment 4

Test Items

Five permutations of each exemplar generated a set of similar sentences. Factors manipulated included the truth value of the appositive and main clause, position of the appositive (medial v. final), and degree of falsity of appositive (false v. blatantly false). The appositive in each sentence is underlined.

(1)  
   a. \( \langle T_{MC}, T_{APP} \rangle \)
       
       Australia, which is a continent, is in the **Southern** hemisphere.

   b. \( \langle F_{MC}, F_{APP} \rangle \)
       
       Australia, which is a planet, is in the **Northern** hemisphere.

   c. \( \langle F_{MC}, T_{APP} \rangle \)
       
       Australia, which is a continent, is in the **Northern** hemisphere.

   d. \( \langle T_{MC}, F_{APP} \rangle \)
       
       Australia, which is a planet, is in the **Southern** hemisphere.

   e. \( \langle T_{MC}, F_{APP-!} \rangle \)
       
       Australia, which is part of the **Axis of Evil**, is in the **Southern** hemisphere.

(2)  
   a. \( \langle T_{MC}, T_{APP} \rangle \)
       
       Rutgers, the state university of New Jersey, has a football team.

   b. \( \langle F_{MC}, F_{APP} \rangle \)
       
       Rutgers, the state university of Texas, is located in France.

   c. \( \langle F_{MC}, T_{APP} \rangle \)
       
       Rutgers, the state university of New Jersey, does not have a football team.

   d. \( \langle T_{MC}, F_{APP} \rangle \)
       
       Rutgers, the state university of Texas, has a football team.
e. \( \langle T_{MC}, F_{APP} \rangle \)

Rutgers, a maximum security prison, is the state university of New Jersey.

3. a. \( \langle T_{MC}, T_{APP} \rangle \)

Barack Obama, Michelle Obama’s husband, is the President of the United States.

b. \( \langle F_{MC}, F_{APP} \rangle \)

Barack Obama, an Asian, is the Governor of Montana.

c. \( \langle F_{MC}, T_{APP} \rangle \)

Barack Obama, the President of the United States, is an Asian.

d. \( \langle T_{MC}, F_{APP} \rangle \)

Barack Obama, an Asian, is the President of the United States.

e. \( \langle T_{MC}, F_{APP} \rangle \)

Barack Obama, a convicted murderer, is the President of the United States.

4. a. \( \langle T_{MC}, T_{APP} \rangle \)

Harry Potter, a wizard, went to Hogwarts.

b. \( \langle F_{MC}, F_{APP} \rangle \)

Harry Potter, a lawyer, is the Prime Minister of Canada.

c. \( \langle F_{MC}, T_{APP} \rangle \)

Harry Potter, a wizard, went to Rutgers.

d. \( \langle T_{MC}, F_{APP} \rangle \)

Harry Potter, a lawyer, went to Hogwarts.

e. \( \langle T_{MC}, F_{APP} \rangle \)

Harry Potter, a Biblical figure, went to Hogwarts.

5. a. \( \langle T_{MC}, T_{APP} \rangle \)

The Yankees, a baseball team, are from New York.
b. \(\langle F_{MC}, F_{APP}\rangle\)

The Yankees, a political party, are from Paris.

c. \(\langle F_{MC}, T_{APP}\rangle\)

The Yankees, a baseball team, are from Paris.

d. \(\langle T_{MC}, F_{APP}\rangle\)

The Yankees, a political party, are from New York.

e. \(\langle T_{MC}, F_{APP-!}\rangle\)

The Yankees, a baseball team with the worst record ever, are from New York.

(6) a. \(\langle T_{MC}, T_{APP}\rangle\)

China, one of the world’s most populous countries, has a growing economy.

b. \(\langle F_{MC}, F_{APP}\rangle\)

China, a country bordering the U.S., predominantly speaks Japanese.

c. \(\langle F_{MC}, T_{APP}\rangle\)

China, one of the world’s most populous countries, predominantly speaks Japanese.

d. \(\langle T_{MC}, F_{APP}\rangle\)

China, the world’s smallest country, has a growing economy.

e. \(\langle T_{MC}, F_{APP-!}\rangle\)

China, a country at nuclear war with the United States, is one of the world’s most populous country.

(7) a. \(\langle T_{MC}, T_{APP}\rangle\)

Mark Zuckerberg, who invented Facebook, was a student at Harvard.

b. \(\langle F_{MC}, F_{APP}\rangle\)

Mark Zuckerberg, who invented the light bulb, was a student at Rutgers.

c. \(\langle F_{MC}, T_{APP}\rangle\)
Mark Zuckerberg, who invented Facebook, was a student at Rutgers.

d. \(\langle T_{MC}, F_{APP}\rangle\)
Mark Zuckerberg, who invented the light bulb, was a student at Harvard.

e. \(\langle T_{MC}, F_{APP}!\rangle\)
Mark Zuckerberg, who harbors terrorists, was a student at Harvard.

(8) a. \(\langle T_{MC}, T_{APP}\rangle\)
Gay marriage, which is legal in only some states, is not legalized by the federal government.

b. \(\langle F_{MC}, F_{APP}\rangle\)
Gay marriage, which caused the Great Depression, is the most popular form of marriage.

c. \(\langle F_{MC}, T_{APP}\rangle\)
Gay marriage, which is legal in only some states, caused the recession.

d. \(\langle T_{MC}, F_{APP}\rangle\)
Gay marriage, which caused the Great Depression, is not legalized by the federal government.

e. \(\langle T_{MC}, F_{APP}!\rangle\)
Gay marriage, which is endorsed by the Pope, is legal in some states.

(9) a. \(\langle T_{MC}, T_{APP}\rangle\)
McDonalds, which is one of the most successful fast food restaurants, sells burgers and fries.

b. \(\langle F_{MC}, F_{APP}\rangle\)
McDonalds, which has no locations in New Jersey, sells used cars.

c. \(\langle F_{MC}, T_{APP}\rangle\)
McDonalds, which is one of the most successful fast food restaurants, sells used
McDonalds, which has no locations in New Jersey, sells burgers and fries.

McDonalds, which is a branch of Al-Qaeda, sells burgers and fries.

The U.S., whose capital is Washington, D.C., has 50 states.

The U.S., whose capital is Paris, has 100 states.

The U.S., whose capital is Washington, D.C., has 100 states.

The U.S., whose capital is Paris, has 50 states.

The U.S., whose citizens are the most impoverished in the world, has 50 states.

Control Items

Clear True or False

(11) Spiders have eight legs.  
     (T)

(12) South America is a continent.  
     (T)

(13) Washington, D.C., is the capital of the U.S.  
     (T)

(14) Grasshoppers are mammals.  
     (F)

(15) The U.S. borders Brazil.  
     (F)

(16) Hugo Chavez has ruled Belgium for many years.  
     (F)

Unclear True or False

(17) Ratanakiri is a province in northeastern Cambodia.  
     (T)
(18) The republic of South Sudan acquired its independence in 2011. (T)

(19) Antoni Marti is the current Prime Minister of Andorra. (T)

(20) Bucharest is the capital of Bulgaria. (F)

(21) Nigeria gained its independence from the United Kingdom in 1960. (F)

(22) Chea Sim is the Prime Minister of Cambodia. (F)

**True/False Adverbials**

(23) If you add four and five, you get nine. (T)

(24) Every four years, there are presidential elections in the U.S. (T)

(25) When you travel internationally, you need a passport. (T)

(26) If you divide nine by three, you’ll get two. (F)

(27) Twice a year, the U.S. President delivers speeches in Yiddish. (F)

(28) Before becoming a celebrity, Paris Hilton was a biomedical engineer at Harvard. (F)

**Non-True or False (correct answer in (a))**

(29) Two times three equals ___.
   
   a. six
   
   b. five

(30) One plus one equals ___.
   
   a. two
   
   b. three

(31) The first President of the U.S. was ___.
   
   a. George Washington
   
   b. George Walker Bush

(32) Fish breathe with ___.
   
   a. gills
   
   b. lungs
(33) Kim Kardashian is ___.
   a. a celebrity
   b. the current world chess champion

(34) Brad Pitt is currently married to ___.
   a. Angelina Jolie
   b. Angela Merkel

(35) Disney World is located in ___.
   a. Florida
   b. Montana

(36) The Super Bowl is played once a ___.
   a. year
   b. month

(37) The Earth has ___.
   a. 1 moon
   b. 16 moons

(38) Light travels ___ than sound.
   a. faster
   b. slower

(39) Autumn comes immediately ___ summer.
   a. after
   b. before
Appendix D

Experiment 5

Test Items

Each sentence contained a false appositive (underlined) in either sentence-medial or sentence-final position and a true main clause.

(1)  
a. Harry Potter, a lawyer, is a character created by J.K. Rowling.
    b. J.K. Rowling created the character of Harry Potter, a lawyer.

(2)  
a. Barack Obama, an Asian, is the current president of the U.S.
    b. The current president of the US is Barack Obama, an Asian.

(3)  
a. Rutgers, the state university of Texas, is located in New Brunswick.
    b. New Brunswick hosts Rutgers, the state university of Texas.

(4)  
a. China, the world's smallest country, predominantly speaks Mandarin.
    b. Mandarin is predominantly spoken in China, the world's smallest country.

(5)  
a. Mark Zuckerberg, who invented the light bulb, was a student at Harvard.
    b. Harvard is the alma mater of Mark Zuckerberg, who invented the light bulb.

(6)  
a. Gay marriage, which was the cause of the Great Depression, is recognized by some states.
    b. Some states recognize gay marriage, which was the cause of the Great Depression.

(7)  
a. McDonalds, which has no locations in New Jersey, is the world's largest fast-food chain.
    b. The world's largest fast-food chain is McDonalds, which has no locations in New Jersey.

(8)  
a. The U.S., whose capital is Paris, is the world's strongest economy.
    b. The world's strongest economy is the US, whose capital is Paris.
Control Items

**Definite Determiners** (presupposition failure of existence)

(9) Barack Obama’s husband is from Houston.

(10) The King of New Jersey owns two cats.

(11) The state of Boston hosts a marathon every year.

(12) Nebraska’s Pacific coast is 150 miles long.

**Presupposition Triggers** (factive verb with false complement)


(14) Bill Gates regrets not contributing to the Microsoft corporation.

(15) Greg Schiano regrets coaching the Rutgers volleyball team.\(^\text{25}\)

(16) James Cameron regrets that Avatar was such a flop.

**Conventional Implicature** (therefore without causality between clauses)

(17) Rutgers University is located in New Brunswick, and therefore has 30,000 undergraduates.

(18) The busses at Rutgers are always crowded, and therefore connect all the campuses.

(19) Whales live in the ocean, and therefore are mammals.

(20) Diet Pepsi contains no sugar, and is therefore non-alcoholic.

**Implicature** (conjunction with reversed temporal order of conjuncts)

(21) Students graduate from high school and take the SAT.

(22) Moviegoers watch the end-credits and buy their tickets.

(23) Barack Obama became the President and the people voted for him.

(24) Steve Jobs died of cancer and started the Apple company.

\(^{25}\text{Greg Schiano was the coach of the Rutgers football team until 2012, and was well-known, because of the controversy surrounding the funding allocated to the Rutgers football program and his decision to leave the university to coach in the NFL.}\)
Falsity (conjunction with one false conjunct)

(25) Spiders have two legs and spin complex webs.

(26) Elvis Presley is famous for his contributions to neuroscience and for his bluesy rock music.

(27) Kangaroos are marsupials and overpopulate the Pine Barrens of southern New Jersey.

(28) Florida is a peninsula and shares a border with California.

True Fillers

(29) The pilgrims sailed across the ocean and landed at Plymouth Rock.

(30) Chimpanzees are primates and live in jungles.

(31) If you add eighteen and seven, you get twenty-five.

(32) Chickens are birds, and therefore lay eggs.

(33) Lady Gaga performed "Poker Face," which was a very popular song.

(34) Facebook, a social networking site, is popular among students.

Fillers with no truth value (fragments and questions)

(35) The sun and the moon

(36) With a hat on his head

(37) How much money does that cost?

(38) When is the semester over?
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