

Small Antecedents: presupposition accommodation in ellipsis resolution

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1. Small antecedents

A verb phrase can be elided when its meaning is recoverable from an antecedent VP in the discourse. Sometimes more than one antecedent is available. In (1), both the modified (1a) and unmodified VP (1b) are possible resolutions.

- (1) Jordy carefully reviewed the book after Kiley did.
 - a. after Kiley carefully reviewed the book.
 - b. after Kiley reviewed the book.

Using experimental methods I will show that the smaller, unmodified antecedent in (1b) is preferred when presented out-of-the-blue. This paper reports on three experiments designed to test the hypothesis that the presuppositional nature of the clause containing the ellipsis (hereafter C_E) constrains ellipsis resolution. If the elided VP is found in a C_E that is presupposed, and the context does not satisfy this presupposition, then a resolution strategy makes the smaller antecedent preferable. If the ellipsis is not presupposed, as is the case when the C_E is coordinated with the antecedent clause (hereafter C_A), there is a clear preference for resolving the ellipsis with the larger antecedent (2a) and the unmodified antecedent (2b) is not easily available.

- (2) Jordy carefully reviewed the book and then Kiley did Δ .
 - a. Δ = carefully reviewed the book
 - b. Δ = reviewed the book

A very clear preference for an unmodified antecedent is observed when the C_E is embedded in a relative clause, as in antecedent-contained deletion (ACD). Experimental evidence will show that in (3), like (1), the ellipsis is preferentially resolved with the smaller, unmodified antecedent—what I will call the ‘small antecedent’ effect.

- (3) Jordy carefully reviewed the book that Kiley did Δ .
 - a. Δ = carefully reviewed the book
 - b. Δ = reviewed the book

The experiments reported below will show that the small antecedent effect arises when an ellipsis constitutes presupposed content, as in (1) and (3), in contrast to (2), where the ellipsis is asserted. The C_E in (3) is part of a definite description which presupposes the content of its NP complement (Stawson 1952); the C_E in (1) is headed by a temporal subordinator which presupposes the content of its clause. (Hooper and Thompson 1978, Larson and Sawada 2004). A presupposition trigger imposes certain conditions on the context in which it is uttered. The felicity of the definite determiner heading the relative clause in (3) requires that there exists a (unique or familiar) book in

the context that satisfies the description of the complex NP, which is in part provided by the elided VP. However the ellipsis is resolved in (3), it must be assumed of the context that there is a book that Kiley read. In absence of a context satisfying this presupposition, readers can *accommodate* this information, assuming a context that supports the presupposition (Lewis 1979). I propose that accommodation is constrained, however, by a principle that prevents comprehenders from assuming a richer context than needed in order to rescue unsatisfied presuppositions:

(4) *Accommodate Conservatively* (AC)

Do not accommodate more than necessary to satisfy a presupposition.

As with principles of referential parsimony proposed for other ambiguities in sentence processing (Crain and Steedman 1985, Crain et. al. 1994, Sedivy 2002), Accommodate Conservatively (AC) requires that, matters of plausibility held constant, hearers choose an interpretation that carries the fewest presuppositions. AC does this by preventing accommodation of a more articulated context than needed. In cases when an elided VP is found under an unsatisfied presupposition trigger, readers need to accommodate it by virtue of accommodating the content of the entire presupposition of which the elided VP is part. If more than one antecedent is available, the choice will be determined by how the possible antecedents compare with respect to AC. This can be seen intuitively by comparing the two possible antecedents in (3). Choosing a small antecedent requires readers to accommodate a context in which there is a book that Kiley read. Choosing the modified antecedent, *carefully reviewed*, requires that readers assume a narrower context, one where the manner in which the book is reviewed is specified. All else being equal, AC predicts that comprehenders avoid the large antecedent in (3) because it requires a narrower context. (If all else is not equal, and comprehenders feel greater accommodation is warranted by the context or discourse considerations, the preference can be overturned (see section 7).) Abstracting from these considerations, the central hypothesis of the paper is summarized as the preference below:

(5) *Conservative Antecedent Hypothesis* (CAH)

Given more than one antecedent for an ellipsis in a presuppositional context, readers prefer the one that requires the least amount of accommodation.

I will provide a way of evaluating the amount of accommodation required by competing antecedents by modeling the context as a common ground in the sense of Stalnaker (1972, 1973). In contrast to examples like (1) and (3), the coordinated C_E in (2) is asserted, not presupposed, and AC does not constrain antecedent choice.

The following sections review the role that discourse principles play in antecedent selection, followed by some background assumptions about presupposition accommodation and a concrete formulation of AC. It will then be shown that when the content of the elided VP needs to be accommodated, a small antecedent is natural. Crucially, however, when the large VP is given in the context, it becomes available for ellipsis resolution. A series of experiments are then reported that establish the small antecedent effect as a comprehension preference resulting from AC. Experiment 1

establishes that comprehenders are more likely to choose small antecedents when C_E is presuppositional than when C_E is asserted. Experiment 2 replicates these effects and shows, by varying the placement of the adverb in the antecedent clause, that the small antecedent preference does not follow from the syntactic structures tested (compare to Matsuo 2001). Experiment 3 supports the CAH by comparing ellipses in main clauses with ellipses under presupposition-triggering subordinators as in (1).

2. Antecedent selection and accommodation

Work on ellipsis has shown that an elided VP must match its antecedent at some level of linguistic representation (Fiengo and May 1994, Merchant 2001; see Johnson 2001 for an overview). Less studied is where such matching antecedents can be found, but it is clear that the principles guiding antecedent selection belong to the study of discourse and information structure. Ellipsis can operate across a discourse, as (6) shows (elided VPs shown by a ~~strikeout~~).

- (6) A: Who chose this wine?
B: Gord did ~~choose this wine~~.

Early accounts constrained antecedent selection by banning an ellipsis from preceding and commanding its antecedent as in (7a) (Ross 1967, Jackendoff 1972, Sag 1976). Ross (1967) suggests that the independent constraint against Backwards Pronominalization, (7b), applies to such configurations.

- (7) a. *He did ~~leave~~ when they asked him to leave. (Sag 1976:346 (50))
b. *She_i left when Mary_i wanted to leave.

However, Sag (1976) shows that the condition on VP antecedence is less strict than pronominal antecedence. Unlike pronouns, when a VP antecedent can also be found in the preceding discourse, as in (8), the backwards deletion is fine.

- (8) A: Did Harry leave?
B: He did ~~leave~~ when they asked him to leave. (Sag 1976: 356 (52))

Elliptical and pronominal antecedents are alike, however, in their discourse properties. A good pronominal antecedent is one that is salient in the discourse (Brennan, Friedman, and Pollard 1987). It has been argued that matrix antecedents are more salient than embedded ones (Suri, McCoy, and DeCristofaro 1999, Miltsakaki 2002). The first pronoun in (9) is most naturally related to a name in the matrix clause rather than the embedded one.

- (9) Agnes_i edited the paper that Mary_j wrote. She_{i/?j} was praised for her work.

Hardt (1992) argues that ellipsis shows a similar preference for matrix antecedents. The embedded clause in the first sentence in (10) does not serve as a salient antecedent for the ellipsis.

- (10) Agnes arrived after John ate. But Bill didn't ~~arrive after John ate~~/*eat.
(Hardt and Romero 2004:384 (34))

Similarly in (11), Hardt (1992: 308) argues that the embedded clause, being part of a restrictive relative, is not salient enough to serve as antecedent.

- (11) A: The policeman paid no attention to the girl who was driving the car.
B: *Was she really? (Halliday and Hasan 1976:196 (4:94))

A salient clause is one that bears the main assertion of the sentence. Ellipses prefer to be related to a main assertion (Frazier and Clifton 2005, and for earlier applications of this to attachment ambiguities see Hemforth et. al. 1998)). While discourse factors, such as those noted above, put conditions on the antecedent clause (C_A), the 'small antecedent' effect is the result of presuppositional requirements imposed by the C_E . Presupposition triggers are elements that impose certain conditions on the contexts in which they can be felicitously uttered: the presupposed content must be taken for granted by the discourse participants before the proposition it is part of can be accepted. A satisfied presupposition is one that is entailed by the context. Following Stalnaker (1972, 1973), we can informally think of the context as the set of worlds in which the beliefs that the speaker and hearer knowingly share are true—the common ground. In addition to definite descriptions noted above, certain subordinators, such as *when*, *after*, *before*, presuppose that their complement is true (Hooper and Thompson 1973, Sawada and Larson 2004):

- (12) The Canadian team celebrated after/before/when they won the silver medal.
Asserted: The Canadian team celebrated after/before/when...
Presupposed: The Canadian team won the silver medal.

These presuppositions hold even if the matrix clause is negated (13a), just as the presupposition of a definite projects out of negation (13b).

- (13) a. The Canadian team didn't celebrate after they won the silver medal.
Presupposed: The Canadian team won the silver medal.
b. Eddy didn't like the song that Joni sang.
Presupposed: there is a (unique) song that Joni Mitchell sang

In addition, quantifiers such as *every* and *all* presuppose that the sets denoted by the NPs *American king* and *unicorn* in (13a,b) are non-empty (McCawley 1972, Diesing 1992).

- (14) a. All/every American king(s) lived in New York. (Lappin and Reinhart 1988)
b. All unicorns have accounts at the Chase Manhattan Bank.(McCawley 1972)

When the denotation of the restrictive clause is empty, as in these examples, a presupposition failure occurs. In more plausible cases, however, unsatisfied presuppositions can be rescued by the process of accommodation (Lewis 1979). A hearer can adjust the common ground so that the presupposed content is entailed. For instance, the possessor phrase in (15) presupposes that the speaker has a daughter.

- (15) I am sorry that I am late. I had to take my daughter to the doctor.
(von Fintel 2000:3 (2))

The sentence can be felicitous even if the speaker knows that his having a daughter is not part of the common ground (von Fintel 2000). To accommodate, the hearer will eliminate those worlds in the common ground that are inconsistent with the speaker having a daughter. Without extra motivation, however, hearers will only alter the common ground to the extent necessary to satisfy the presupposition. In (16), for instance, the hearer will accommodate the definite description.

- (16) Michael likes the song that Joni sang at the coffee house.

A hearer who accommodates the definite in (16) would not, however, alter the common ground to the subset of worlds in which there is a song Joni sang at the coffee house in Yorkville in January 1964 with a 12-string guitar. This may be true, but since the hearer has no reason to believe it, or to suppose the speaker intends it, it is not accommodated.

The Conservative Antecedent Hypothesis (CAH), informally described in (5), can now be demonstrated more concretely. There are two grammatical antecedents for the elided VP in (17), one modified and the other not (17a,b). Both antecedents form part of the presupposed content of the definite that contains the C_E .

- | | | |
|------|---|--|
| (17) | Eddy quietly sang the song that Fred did Δ . | |
| | <i>Candidate antecedents</i> | <i>Presupposition</i> |
| | a. $\Delta_1 =$ quietly sang the song | there is a song that Fred quietly sang |
| | b. $\Delta_2 =$ sang the song | there is a song that Fred sang |

If the common ground does not entail the existence of a song that Fred sang, both antecedents require accommodation. The two candidate antecedents stand in an entailment relation: the modified VP will be true in a subset of the contexts in which the unmodified one is true. According to the CAH, the unmodified antecedent is preferred, since it is compatible with a larger context set. Simply put, in an out-of-the-blue presentation, accommodating the manner in which the song was sung is unwarranted, and given the competing option of an unmodified antecedent, unnecessary. The same logic applies with other presuppositional triggers containing elided VPs.

The CAH constrains antecedent selection only in presuppositional contexts, not in asserted ones. A coordinated C_E , as in (2), forms its own assertion and the ellipsis is not subject to the CAH, therefore there is no pressure to choose a small antecedent. (In fact, further considerations of parallelism and pragmatic strengthening, discussed in section 7,

as often as the relative clause sentence was when its presuppositions were not met. C&S argue that their principle of parsimony, which tells reader to prefer the analysis that leads to the fewest unsatisfied presuppositions, predicts these judgments, since choosing the complement continuation after (20) would result in a definite description that failed to pick out a unique wife. Their principle of parsimony is similar to Accommodate Conservatively, in that an analysis is chosen which requires less accommodation. C&S's results show a preference for a satisfied presupposition over an unsatisfied one. AC, on the other hand, distinguishes between different strengths of accommodation, as modeled by the entailment relation between the two available antecedents. In the ellipsis cases, both choices of antecedent (see (17)) lead to a presupposition failure, but the small antecedent requires the most minimal change to the context to rescue the presupposition.

Like C&S's Principle of Parsimony, however, AC allows that if we enrich the context appropriately, the presupposition of the larger antecedent will be satisfied. In the context in (21), where the manner of the activity described in the C_E is both given and relevant, the presupposition of a large antecedent is satisfied. AC, then, does not apply, and the ellipsis (presented in the question answer pair in (22)) is resolved with the large antecedent.

(21) *Large antecedent scenario*

Fred competed against Maria and Joe in a singing competition, in which they all had to sing the same 4 songs. All three sang their songs well, but they each only sang one song flawlessly.

(22) A: Which piece did Fred sing flawlessly?

B: He flawlessly sang the (same) piece Maria did ~~flawlessly sing~~ / #sing.

The ellipsis in (22B) is most naturally interpreted with a large, modified VP for the same reason as in Crain and Steedman's relative clause inducing context: choosing the small antecedent will lead to a presupposition failure in that the definite description will fail to pick out a unique song that Maria sang. On the large antecedent resolution, the definite picks out a unique song that Maria sang – the one she sang flawlessly. What is important for our purposes is that the definite does not need to be accommodated so a large antecedent is available. In a poor context, where the manner of the embedded activity is not given, the large antecedent is no longer preferable:

(23) *Small antecedent scenario*

Fred, Maria and Joe are competing in a music competition. Maria and Joe each sing a different song. Fred sings both of these, and well, but he only sings one of them flawlessly.

(24) A: Which song did Fred flawlessly sing? Joe's or Maria's?

B: Fred flawlessly sang the song that Maria did.

The ellipsis in (24B) is most naturally interpreted with an unmodified VP, *Mary sang*. The context does not specify the manner of Maria's singing. In accordance with

Accommodate Conservatively, a small antecedent is preferred since it requires less accommodation than the modified one. The relative clause with a small antecedent felicitously picks out a unique song, especially if we contrast Maria with Joe. Specifying the manner is unnecessary, and given AC, unwarranted.

What we have seen is that a large antecedent is possible when a richer context is supplied that satisfies the presupposition induced by a large antecedent, in which case the CAH does not apply. (I will return in Section 7 to other cases where the CAH is overcome by a richer context or a discourse that induces a large antecedent.) The goal of the following experiments is to reveal the ‘small antecedent’ preference in general and to demonstrate that this preference is a result of Accommodate Conservatively. To this end, the following experiments present comprehenders with poor contexts, in relatively simple constructions stripped of interfering confounds, where the elided material, whether resolved with a large or small antecedent, must be accommodated.

3. Experiment One

To test the hypothesis that AC guides antecedent selection—summarized as the CAH in (5)—ellipses in presuppositional environments were compared to ellipses in non-presuppositional environments, presented out-of-the-blue so that readers had to accommodate the elided material in the former cases. In (25), the coordinated C_E is asserted, there is no need to accommodate the elided VP, and a preference for small antecedents is not predicted. The C_E in (b) and (c) are each contained within a presupposition trigger: a temporal subordinator in (b), and definite determiner in (c):

- (25) a. Eddy quietly sang the song and Fred did too. $C_E = \text{coordinated main clause}$
b. Eddy quietly sang the song after/when/before Fred did. $C_E = \text{temporal adv.}$
c. Eddy quietly sang the song that Fred did. $C_E = \text{relative clause (ACD)}$

Each antecedent clause contains a preverbal manner adverb. If AC is reflected in preferences for interpretations, comprehenders will choose a smaller antecedent more often in (25b,c) than in (25a), since the former two require accommodation and a smaller VP is chosen according to the CAH.

3.1 Methods

3.1.1 Materials Three versions of nine sentences were created following the pattern in (25). The connective used in the temporal adverbial varied between *before*, *when*, or *after*.¹ These nine items were included among 32 others, which consisted of one- or two-sentence discourses from an unrelated experiment. Each of the nine sentences was

¹ Coordination items included the particle *too*. Experiments 2 and 3 show that such a particle is not the source of the difference between presupposed and asserted C_E s.

followed by a multiple-choice question with the modified and unmodified antecedents as options. For instance, items in (25) were followed by (26):²

- (26) What did Fred do?
(i) quietly sing the song
(ii) sing the song

In principle, a small antecedent response is compatible with participants' interpreting the sentence with a large antecedent; because of the entailment relation, (26ii) will be a true, albeit under-informative, response even if a participant resolves the ellipsis with (26i). However, the questions are identical across conditions so this does not present a confound.³ Materials appear in Appendix A.

3.1.2 Participants and procedure Fifteen native English speakers completed a written questionnaire. Three counterbalanced lists were created, so that each participant saw each item once in only one condition. Participants were instructed to read each sentence or two-sentence discourse at a normal reading speed and circle their interpretation of what they understood the sentence meant. The order of answer options alternated pseudo-randomly.

3.2 Results

The results for the questionnaire are presented in Table 1, which shows the mean proportion of large antecedent responses for each condition.

Table 1 Percentage of 'large antecedent' responses, Experiment 1

Status of C _E		
Coordinated	Adverbial	Relative clause (ACD)
84.5	13.3	11.1

As the CAH predicted, ellipses embedded under presupposition triggers were resolved less often with large antecedents than ellipses in asserted (coordinated) clauses. The results counter the potential confound of the entailment relation between the answer options (where a small antecedent response does not in principle rule out a large antecedent construal), since this would not influence responses just in the presupposed

² Two of the nine answer options used indefinites which were infelicitous given that a universal was often used in the antecedent. This mistake was totally corrected in Experiments 2 and 3.

³ It is assumed that participants chose the most informative answer they could. However, if there were a tendency to choose under-informative (i.e. small) antecedents, this might affect the overall proportion of large antecedent responses. While this does not interact with the manipulation of C_E, it may account for the overall variation in large antecedent responses. Moreover, it is also possible that there is variation among individuals.

conditions but not in the asserted condition. An effect would not have been observed if comprehenders were not giving informative responses.

3.3 A syntactic account

There is an alternative account for this result, however, that competes with the CAH. An account of the data based on the syntactic structures involved is a plausible alternative (Matsuo 2001). While there is no structural ambiguity in the coordination condition in (25), the position of the C_E in the embedded conditions (25) is ambiguous. A syntactic account would posit that the ‘small antecedent’ preference in is due to the attachment of the C_E below the VP projection dominating the preverbal adverb. Consider the temporal adverbial C_{ES} first. Assuming a fairly simple account of adverb location, it may be that the C_E adjoins to VP_1 (27), below the adverb.⁴

- (27) a. Eddy quietly sang the song after Fred did.
b. Eddy [VP_3 quietly [VP_2 [VP_1 sang the song] [C_E after Fred did]]]

In this structure, the only VP constituent that excludes the C_E is the ‘small antecedent’, VP_1 . Alternatively, the antecedent C_E may adjoin above the projection that contains the preverbal adverb, and both the large and small antecedents are accessible:

- (28) Eddy [VP_3 [VP_2 quietly [VP_1 sang the song]] [C_E after Fred did]]

Well-understood parsing principles predict that the syntactic processor will preferentially follow the analysis in (27). Late Closure (Frazier 1978, Frazier 1987) favors attachment to phrases lower in the tree or those currently being processed. Comprehenders would then be forced to find the ‘small antecedent’ since the ‘large antecedent’ is not a constituent that excludes the C_E . Late Closure could also explain the ‘small antecedent’ preference in the relative clause, or ACD, cases like (25c). ACD requires some form of syntactic reorganization in order for the ellipsis to find an antecedent that does not contain it (Sag 1976, May 1985, Baltin 1987, Fox 2002). There are several ways to achieve this. Baltin (1987) extraposes the relative clause outside the VP projection that serves as the antecedent. Fox (2002) and Merchant (2000) give the C_E a similar location.⁵ This structure is shown below.

- (29) a. John quietly sang the song that Fred did.
b. John [VP_3 quietly [VP_2 [VP_1 sang the song] [C_E that Fred did Δ]]]

⁴ As a reviewer points out, (27) is a simplification since the adverb and temporal adjunct could interact scopally. To avoid this confound, adverbs were chosen that would not likely interact truth-conditionally with the temporal adjunct.

⁵ This formulation is a simplification. The object DP needs to be converted to a variable for the VP to serve as antecedent. Using the tools of Fox and Nissenbaum (1999), Fox (2002) quantifier raises the object DP and then late merges the relative clause. For present purposes the two variants are equivalent.

As with the temporal adverbials in (27), this constituency forces a ‘small antecedent’, VP₁. Although a higher attachment of C_E would allow for a large antecedent that includes the adverb, it would be less preferred when the principle of Late Closure is applied on the reanalysis of the extraposed material:

(30) John [VP₃ [VP₂ quietly [VP₁ sang the song]] [C_E that Fred did Δ]]

Under this account, the ‘small antecedent’ preference is due to the specific structures tested, which provide a lower attachment site for the C_E than coordination. This Syntactic Attachment Hypothesis is defined below, along with its predictions for antecedent preferences:

(31) *Syntactic Attachment Hypothesis (SAH)*

Following Late Closure, an embedded C_E preferentially adjoins to a projection below a preverbal adverb, and only a ‘small antecedent’ is available. When there is no low attachment option, there is no preference for a ‘small antecedent’.

The SAH predicts that if the processor has overt evidence that the C_E is structurally higher than an antecedent VP₂ then there will be no preference for a smaller antecedent. The CAH, however, does not tie the ‘small antecedent’ preference to syntactic constituency. Even if the overt syntax provides a larger antecedent, a smaller antecedent is chosen according to the CAH. These two approaches can be tested with (32), where a postverbal adverb is followed by an extraposed relative clause C_E. On the assumption that the parser builds the structure in (32b), then there is no reason under the SAH to resolve the ellipsis with an unmodified antecedent, since the overt syntax provides a constituency where the C_E scopes over the modified VP.

(32) a. Jordy read every book carefully that Kiley did.
 b. Jordy [VP₃ [VP₂ [VP₁ read every book] carefully] [C_E that Kiley did]].

The CAH, on the other hand, predicts that given (32), comprehenders will still choose a ‘small antecedent’. Regardless of the constituency the unmodified resolution of ellipses requires less accommodation than the modified resolution.

4. Experiment Two

Experiment 2 was designed to distinguish the CAH from the SAH. Two factors were manipulated: (i) whether the C_E was asserted (a coordinated C_E) or headed by a presupposition trigger, *every* or *the* (i.e. ACD); (ii) whether the adverb was preverbal or postverbal. The two factors were crossed creating four conditions shown in (33).⁶

⁶ The degraded grammaticality of condition (d) sentences, with extraposition of a short phrase over the adverb, is a confound that was unavoidable in order to keep sentence length manageable. Identical structures are put to independent uses in the ACD literature. Interestingly, when the structure is presented in Fox (2002), it is indicated that the ellipsis is resolved with a small antecedent, without the adverb ‘yesterday’:

- (33) a. Edna quietly entered the room and then David did. asserted/pre
 b. Edna entered the room quietly and then David did. asserted/post
 c. Edna quietly entered every room that David did. presupposed/pre
 d. Edna entered every room quietly that David did. presupposed/post

The CAH predicts an effect due to the presuppositional status of C_E , with the proportion of modified antecedents greater for the coordinated cases in (33a,b) than the presupposed ACD cases in (33c,d). Adverb position is not predicted to affect antecedent choice in any way that is dependent on the syntax of the C_E . The SAH, on the other hand, predicts an interaction between embeddedness and adverb position. Under that account, the (c) condition will show a ‘small antecedent’ effect compared to the (d) condition, which is predicted to behave like coordination since the overt syntax makes the modified antecedent available.

A secondary purpose of Experiment 2 was to verify that the absence of ‘small antecedents’ in coordinated ellipses is not due to the presence of the particle *too*, which has its own presuppositions. The coordinated examples in Experiment 1 contained *too* in the second conjunct. The particle *too*, and similar particles such as *also*, imposes a matching condition on the two clauses. Frazier and Clifton (2006) argue that adding *too* to a C_E increase expectations of syntactic parallelism. It is possible that similar motivations compelled comprehenders to choose a large antecedent in coordination because *too* forced parallelism. The ‘small antecedent’ preference in presupposed C_E s, which did not include *too* or *also*, would then be an artifact of comparing them to coordinations with *too*. To control for this confound, half of all the items tested in Experiment 2 did not have any such particle and the corresponding coordinated items used *and then* (33). The other half of the items included *also* in both the coordinated and embedded ellipses (34).⁷

- (34) a. Larry energetically played every sport and Fred also did.
 b. Larry played every sport energetically and Fred also did.
 c. Larry energetically played every sport that Fred also did.
 d. Larry played every sport energetically that Fred also did.

If antecedent preference is simply due to the presence in coordination of a particle such as *too* or *also*, then items like those in (33) and (34) will not show an effect due to the

(i) I visited a city yesterday near the city John did ~~visited~~. (Fox (2002): 83 (50))

Since his concern was not antecedent selection, Fox’s choice provides natural evidence for a small antecedent preference.

⁷ *Also* was chosen since four out of five native speakers preferred it in a mini-questionnaire over *too* in ACD. In fact, *too* is often judged ungrammatical in ACD:

(i) #Jordy read everything that Kiley did too.

Although, the ACD items with *also* are degraded, they represent a quarter of the items. Experiment 3 removes these confounds.

presupposition trigger. In contrast, the CAH predicts a ‘small antecedent’ preference for the (c) and (d) conditions in all cases.

4.1 Methods

4.1.1 Materials 16 sentences were created in four conditions following the pattern of (33) and (34). Four counterbalanced lists were created in which each item appeared once in only one condition. Each item was followed by a multiple-choice question just as in Experiment 1. The placement of the adverb in the answer option alternated, as did the order of answer options. The 16 items were included among six unrelated experiments, all followed by a comprehension question or a naturalness rating. Materials are provided in Appendix B.

4.1.2 Participants and procedures 48 University of Massachusetts undergraduates participated in a computerized sentence judgment questionnaire. Participants were tested in individual twenty-minute sessions. Each list was seen by 12 participants, with the items presented randomly. Participants were instructed at the beginning of each trial to read the sentence or pair of sentences and answer a question. The sentences then automatically appeared on the screen, with the question presented below the sentence. Participants choose their answer (‘1’ or ‘2’) using the keyboard.

4.2 Results and Discussion

Table 2 shows the mean proportion of large (modified) antecedent responses for each condition. The coordinated conditions showed more large antecedent responses than the presupposed ACD conditions. In both cases, the larger antecedent was chosen more often when the adverb was postverbal.

Table 2 Means for ‘large antecedent’ responses, Experiment Two

Adverb position	Status of C _E	
	Embedded (ACD)	Coordinated
Preverbal	.216	.506
Postverbal	.284	.609

A 2x2 ANOVA analysis revealed a main effect of C_E type (ACD vs. coordination) ($F(1, 47) = 53.70$; $p < .001$, $F(1,15) = 36.59$; $p < .001$) and main effect of adverb position by subjects ($F(1,47) = 6.60$, $p < .02$; $F(1,15) = 4.15$, $p < .07$). There was no interaction ($F(1,47) = .18$, $p > .60$; $F(1,15) = .362$, $p > .56$).

Table 3 shows the mean proportion of large antecedents broken down according to the presence or absence of *also*. Items with *also* showed a slight increase in ‘large antecedent’ responses in the postverbal condition, for both the embedded and coordinated ellipses. Comparing the presence or absence of *also* returned no significant effects.

Table 3 Means of ‘large antecedent’ responses by presence of *also*, Experiment 3

Adverb position	Without <i>also</i>		With <i>also</i>	
	Embedded (ACD)	Coordinated	Embedded (ACD)	Coordinated
Preverbal	.24	.50	.19	.51
Postverbal	.23	.58	.33	.64

The results of Experiment 2 are consistent with the CAH, which predicted that the presence of a presupposition trigger heading the C_E would affect antecedent choice. Smaller antecedents were chosen more often in ACD constructions, where the ellipsis constituted part of the presuppositional content. Regardless of the position of the adverb, ACD showed this preference compared to coordination, so the SAH was not confirmed. If the ‘small antecedent’ preference were due to the low attachment of the C_E when the adverb was preverbal, then an effect of clause type was not predicted, but an interaction was. The SAH predicted ‘large antecedents’ in ACD conditions with postverbal adverbs because in this position the effects of Late Closure would not produce a small antecedent effect. In principle, the lack of a significant interaction does not disconfirm the SAH, opening the possibility that the experiment simply was not sensitive enough to detect an interaction. However, the experiment was sensitive to a distinction between pre- vs. postverbal adverbs, as that manipulation constituted a second main effect. A main effect of adverb order was not predicted by the CAH or the SAH, and it was significant only in the subjects analysis. Preverbal adverbs were taken as part of the ellipsis less often than postverbal adverbs. This was observed in both coordination and ACD, and therefore constituted a separate effect from the one resulting from the presence of a presupposition trigger. The adverb placement effect is discussed after Experiment 3.

The results also show that the ‘small antecedent’ preference is not the result of the absence of a particle such as *too* or *also* in presupposed ellipses. All conditions of any one item tested either did or did not include *also*. If *also* were the source of the difference between coordinated versus embedded ellipses, we would have failed to predict the difference between ellipsis in presupposed versus asserted contexts. Numerically, the presence of *also* does appear to increase large antecedent responses in the postverbal conditions, but the effect was not significant.⁸ In sum, the SAH was not confirmed. The choice of antecedent was sensitive not to the syntactic constituency presented to comprehenders, but to the presupposition of the C_E .

In the next experiment, the CAH is further tested with ellipses under different presuppositional triggers. Recall that connectives like *after* and *before* presuppose the truth of their propositional complement, and hence require accommodation in out-of-the-blue contexts. Ellipses within temporal subordinate clauses such as these are compared to

⁸ The ACD items without *also* showed nearly identical responses in both the pre- and postverbal conditions (24% and 23%, respectively). ACD structures modified by *also* showed a 14% difference between the pre- and postverbal conditions, analogous to that found in coordination. It may be that there simply is no pre/post asymmetry in ACD when *also* is not present; such an interaction may not have been found because in performing a between-items analysis the number of observations was reduced by half.

identical sentences where the ellipsis is in a main clause. According the CAH, the ‘small antecedent’ preference should be absent from main clauses just as it was in coordinated ones, since both constitute assertions. In this way Experiment 3 also shows that the effects are not due to special properties of coordination.

5. Experiment Three

Two factors were manipulated: (i) whether the C_E was a main clause (which is asserted) or embedded under a presupposition trigger, *after*, *before*, or *when*; (ii) whether the adverb was preverbal or postverbal. The two factors were crossed creating four conditions shown in (35).

- (35) a. Peter quietly walked into the house after Lesley did. *embedded/pre*
b. Peter walked into the house quietly after Lesley did. *embedded/post*
c. After Peter quietly walked into the house, Lesley did. *main/pre*
d. After Peter walked into the house quietly, Lesley did. *main/post*

The CAH predicts an effect of clause-type, with the presuppositional C_E inducing small antecedent responses more often than main clause C_{ES} , regardless of adverb position. The experiment also provides another test case for the SAH, which predicts that ‘small antecedents’ are due to the fact that in (35a) the *after*-clause preferentially attaches to the lowest VP projection it can, thereby forcing a small antecedent. In (35b), the *after*-clause is unambiguously attached higher than the VP projection containing the adverb and a large antecedent should be available according to the SAH. These analyses were shown in (27) and (28). The MAH predicts ‘small antecedents’ in all cases that require accommodation, regardless of the position of the adverb.

5.1 Methods

5.1.1 Materials 20 items were created in four versions following the pattern in (35), using the three kinds of temporal subordinators. These items were included among 20 other items from an unrelated experiment. Each sentence was followed by a multiple choice question with the modified and unmodified antecedents as options as in Experiments 1 and 2. Materials appear in Appendix C.

5.1.2 Participants and procedures 40 University of Massachusetts undergraduates participated in a written comprehension questionnaire. Four lists were created so that each participant saw each item in only one condition. Participants were instructed to circle the multiple-choice answer that corresponded to their understanding of what they read. Participants were instructed to read at a normal speed and answer with their first impression.

5.2 Results and Discussion

Table 4 shows the mean proportion of large antecedent responses. When the ellipsis was presented in an asserted main clause, participants chose the large antecedent more often than if the ellipsis was found in a presuppositional temporal adverbial. In both cases, more large antecedent responses were given if the adverb was postverbal in the antecedent.

Table 4 Means of ‘large antecedent’ responses (Experiment 3)

Adverb position	Status of C _E	
	Embedded (presupposed)	Main (asserted)
Preverbal	.405	.545
Postverbal	.500	.675

A 2x2 ANOVA revealed a main effect of C_E type ($F(1,39) = 13.93, p < .01; F(1,19) = 20.21, p < .001$) and a main effect of adverb position ($F(1,39) = 10.16, p < .01; F(1,19) = 10.70, p < .01$). There was no interaction ($F(1,39) = .50, p > .40; F(1,19) = .44, p > .50$).

The experiment confirmed the predictions of the CAH. The presence of a presupposition trigger induced a ‘small antecedent’ preference compared to main clause C_{ES} which do not presuppose their content. According to the CAH, readers chose the ‘small antecedent’ in the presupposed C_{ES} because they had to accommodate the content of the *after/before/when*-clause. Given a choice, readers opted for the antecedent that did not unnecessarily narrow the common ground in assuming the *manner* of the elided VP in a presupposed clause. The contrast also confirms that the ‘small antecedent’ preference generalizes to cases where the non-presuppositional control condition is a main clause, and not simply a coordinated clause, as in Experiments 1 and 2. The experiment failed to confirm the SAH, since regardless of the syntactic constituency readers choose an unmodified antecedent when the elided VPs were presupposed, even when the syntactic constituency was unambiguous (condition (35b)).

As in Experiment Two, a second main effect of adverb position was observed. Preverbal adverbs were chosen as part of the antecedent less often than postverbal adverbs. Just as in Experiment 2, though, this effect was independent of the clause-type manipulation. The adverb position effect, however, can be understood as result of discourse considerations as well and I will now briefly outline such a hypothesis for this asymmetry.

6. Adverb position effects

It is well known that there are subtle differences between pre- and postverbal adverbs (Jackendoff 1972, Ernst 2001). Morzycki (2005) claims that postverbal adverbs always

restrict the manner of the VP, while preverbal adverbs may be interpreted nonrestrictively, like nonrestrictive nominal modifiers. Nonrestrictive elements are typically secondary assertions, evaluated independently of the main assertion of the sentence (Potts 2003). Morzycki, citing Peterson (1997), notes that in their preverbal position, manner adverbs can often be paraphrased as nonrestrictive clauses. The following gerundives highlight this interpretation:

- (36) The Titanic('s) **rapidly** sinking caused great loss of life.
Restrictive: 'The Titanic's sinking being rapid caused a great loss of life'
Nonrestrictive: 'The Titanic's sinking, which was rapid, caused great loss of life' (Morzycki (2005:3-4))

The same adverbs in postverbal position resist nonrestrictive paraphrases:

- (37) The Titanic('s) sinking **rapidly** caused great loss of life
Restrictive: 'The Titanic's sinking being rapid caused a great loss of life'
*Nonrestrictive: 'The Titanic's sinking, which was rapid, caused great loss of life' (Morzycki (2005:2 (10)))

Morzycki (2005) shows that preverbal adverbs, as nonrestrictive material, can escape the truth-conditional evaluation of the main assertion they are embedded in, as Potts (2005) shows for other secondary or supplementary assertions. For present purposes, what matters is that nonrestrictive meanings have the effect of being secondary, rather than main, assertions. As Frazier and Clifton (2005) argue, ellipses prefer to find antecedents that constitute the main assertion of the preceding sentence. It is natural, then, that secondary assertions about the manner of a VP antecedent are not targeted for ellipsis resolution. Preverbal adverbs can be part of the antecedent, since they are ambiguous, but they need not be. Postverbal adverbs, which are only restrictive, necessarily form part of the main assertion of the antecedent clause, and are more likely to be resolved as part of the ellipsis.

7. General Discussion

The three studies reported here support the hypothesis that antecedent choice is constrained by the pragmatic requirements of the clause containing the ellipsis. In particular, when an elided VP has to be accommodated—because it is part of presupposed content that is unsatisfied—a smaller antecedent is chosen more often than if the elided VP does not need to be accommodated, being part of an assertion. The choice is constrained by the principle Accommodate Conservatively, which explains a range of data concerning antecedent selection that cannot be accounted for by syntactic structure alone. Experiments 2 and 3 showed that even when the overt syntax unambiguously makes a large antecedent available, comprehenders still prefer the unmodified VP for presupposed ellipses in comparison to asserted ellipses. Furthermore, ellipses in several types of accommodation seeking environments (definite descriptions, strong quantifiers, and temporal subordinators) were compared with ellipses in two types of asserted

contexts (coordinated and matrix clauses). The CAH was confirmed by each of these cases.

I have argued for a pragmatic constraint that chooses between modified and unmodified antecedents, both of which are made available by the syntax. In some cases, our intuition is that one of the resolutions is unavailable. In particular, certain ACD examples where the antecedent adverb is preverbal appear to categorically rule out a modified ellipsis resolution (see Matsuo 2001). This intuition is expected, because even though the application of AC for ellipsis has been invoked as a preference, there are cases, notably out-of-the-blue examples, where only a small antecedent is available. At the same time, in the case of coordinated ellipses, where CAH does not apply, the rather low absolute proportion of ‘large antecedents’ responses in the coordination cases in Experiment 2 is surprising. For these, comprehenders chose the large antecedent roughly 50-60% of the time. It was expected that comprehenders would choose the large antecedent nearly all the time in coordination (as was the case in Experiment 1). In fact, there is a large processing literature on parallelism effects in coordinate structures, and coordinated ellipsis structures in particular, that suggests comprehenders prefer coordinated clauses to be identical at various levels of analysis, which would include manner modification (Carlson 2002, Frazier, Munn and Clifton 2000). The absolute values do not tell us much, however. The experiments do not tell us the relative preference of ‘large’ over ‘small’ antecedents within the each condition. One possibility is that the lower than expected proportion of large responses in coordination is due to participants giving a small antecedent response even if they construed the ellipsis with the adverb. Recall, that we do not know the extent to which participants were choosing the most informative answer possible given the two options. Nevertheless, it is important to stress that even if this happened, it would apply to both the coordinated and presupposed ellipsis. What is important for the CAH is that the resolution of ellipses in asserted contexts differed significantly from that in presupposed contexts.

The pragmatic approach to the ‘small antecedent’ preference makes a prediction about the availability of large antecedents. Since the pragmatic account is sensitive to contextual factors, we expect that if accommodation is motivated, then the ‘small antecedent’ effect will be mitigated. There are a number of ways in which greater accommodation can be motivated. One is to supply a richer context. As we saw in (21-22), if the context provided the content of a large antecedent, then it can be naturally chosen. There are other ways to overcome the CAH. The discourse coherence relations between the C_A and C_E (Kehler 2000) can force accommodation of larger antecedents. For instance, the ellipsis in (38a) prefers to find the antecedent modified by the locative prepositional phrase. A small antecedent appears to be marked in such cases. The intuition is that resolving the ellipsis without the prepositional phrase makes the presence of the PP in the antecedent clause marked, just as in the unelided (38b).

- (38) a. Phonology group meets in the seminar room before Syntax group does
~~meet in the seminar room~~ / # meet.
b. #Phonology group meets in the seminar room before Syntax group meets.

There is a pay-off for accommodating a larger antecedent here. For the locative's contribution to the first clause to be relevant to the discourse established by the temporal connective, both events need to make reference to a location. This kind of "bridging" requires that accommodated material relate to information already in the discourse (Heim 1982:373ff.). In (38a) accommodating more information leads to a more coherent discourse.⁹

Similarly, properties of the discourse connective can obscure the CAH. The temporal connective *since* presupposes its complement, and yet an elided VP in its scope prefers a large antecedent.¹⁰

(39) No one has flawlessly sung this song since Maria did.

However, apparent counterexamples such as these need to be compared to their counterparts where the ellipsis spelled out:

(40) No one has flawlessly sung this song since Maria sang it.

Even though the adverb is not spelled out in the *since*-clause, (40) most naturally implicates that Maria flawlessly sang the song, and no one has done so since. If the *since*-clauses identifies a left boundary for the time interval of the matrix clause, which asserts the absence of flawless singing (Iatridou and von Stechow 2005), then it is natural to assume the relevance of the *since*-clause is to identify an interval at which the opposite holds (flawless singing). The hearer then assumes the speaker is making the most informative statement they can, in which case they assume that Maria's singing is flawless (if Maria's singing was not flawless, we assume the speaker would have chosen an earlier performance that was flawless).¹¹ It is not surprising that the elliptical sentence in (39) receives the same interpretation. The CAH is obscured, then, by the competing factors on interpretation.¹² The sources for over-riding Accommodate Conservatively are likely

⁹ It remains an open question why locatives behave differently from manner adverbs. A similar asymmetry is found in Stroik (1992), who argues that *wh*-manner phrases extracted from the antecedent VPs of ACDs cannot be construed in the ellipsis site, but *wh*-temporals and locatives can. Stroik reports that (ia) can ask (ib), but that (iia) cannot ask (iib):

- (i) a. When/where did Mary read everything Bill did?
b. What is the location/time l such that for all x Bill read x at l, Mary read x at l.
- (ii) a. Why/how did Mary read everything Bill did?
b. *In what manner/for what reason m such that for all x that Bill read x in m, Mary read x in m. [my paraphrase]

¹⁰ I thank an anonymous reviewer for this example.

¹¹ This implicature can be verified by simpler examples. If the café has been empty since 1pm, the barista cannot say (i) at 4pm since it is not the strongest claim he could make.

- (i) #No one has been in the café since two o'clock.

In (40), the hearer assumes the speaker has made the strongest claim. If Maria did not sing the song flawlessly, (40) may still be true, but a stronger statement would be required. Hence readers assume (40) is the strongest claim and derive the implicature.

¹² The choice of modified VP alone can bring along real-world knowledge that may induce a large antecedent. As one reviewer points out, (i) naturally evokes a competition scenario, where the manner of puzzle solving is identified:

- (i) Fred quickly solved every puzzle Maria did.

varied and are now open to systematic investigation. However, when those overriding factors are eliminated as in the experiments above, the effect of small antecedents emerges.

8. Conclusion

The results of the three experiments support a pragmatic source for the ‘small antecedent’ effect. Faced with the option of a modified or unmodified VP antecedent, readers choose to resolve the ellipsis with an unmodified VP just in those cases where the ellipsis forms presupposed content. In that case, comprehenders need to accommodate. Their choice of the smaller, unmodified antecedent is guided by Accommodate Conservatively, a strategy similar to those proposed for other discourse-based accounts of ambiguity in processing (Crain and Steedman 1985, Crain et. al. 1994).

Recent linguistic and psycholinguistic work has investigated the discourse properties that affect ellipsis resolution (Kehler 2000, Frazier and Clifton 2005, Hardt and Romero 2004). These studies for the greater part examine how the status of the clause containing the antecedent C_A , or its relation to the C_E , affects antecedent choice. This study shows that pragmatic properties of the C_E can influence antecedent choice. A very basic implication of these data and experiments should also be stressed: the syntactic conditions on VPE antecedents in these cases are quite free. The evidence presented from cases where accommodation was warranted (22,39) showed that both the modified and unmodified VP antecedents are grammatical in embedded contexts, and the preference for one over the other is regulated by pragmatic factors. That the source ‘small antecedent’ effect is pragmatic was supported in two ways: by experimental evidence showing a preference for small antecedents when the ellipsis needed to be accommodated and by additional data showing that this preference can be overturned when a large antecedent does not need to be accommodated or competing discourse considerations make a large antecedent preferable. Collecting sentence interpretations from a large population of nonlinguists, even using experimental methods as straightforward as those employed here, allows us not only to clarify our intuitions about antecedent choice but to investigate the source of those intuitions, something not available from linguist’s judgments alone (Schütze 1996). In the domain of ellipsis, this method is especially fruitful in determining whether certain phenomena require a grammatical explanation or a pragmatic one.

While the out-the-blue presentation gives a poor context, it is not a null context, and (i) by itself provides a scenario. As with Crain and Steedman’s Parsimony Principle (1985:333(7)), plausibility considerations can make accommodation easier.

Appendix A: Materials used in Experiment One

The three alternative clausal connectives are separated by | within { } brackets. Parentheses around *too* indicate it appeared only in the coordination condition.

1. John carefully read every book {and | before | that} Bill did (too).
What did Bill do? (i) read a book.
(ii) carefully read a book.
2. Edna could easily finish every chore {and | before | that} Lisa could (too).
3. Larry energetically played every sport {and | when | that} Fred did (too).
4. John closely watched every movie {and | after | that} Bill did (too).
5. Lesley eagerly read every novel {and | when | that} Fred did (too).
6. Angela gradually gave up every bad habit {and | when | that} Foster did (too).
7. Nadia quickly found every solution {and | when | that} George did (too).
8. The Judge firmly rejected every claim {and | after | that} the lawyer did (too).
9. Eddy quietly sang the song {and | when | that} Fred did (too).

Appendix B: Materials used in Experiment Two

The adverbs are shown in both positions in parentheses, collapsing two distinct conditions in the experiment; The coordinated and relative clause connectives are separated by | within { } brackets.

1. John (carefully) read every book (carefully) and then Bill did. | John (carefully) read every book (carefully) that Bill did.
What did Bill do? (i) read books
(ii) (carefully) read books (carefully)
2. John (closely) watched every movie (closely) {and then | that} Bill did.
3. Angela (gradually) gave up every bad habit (gradually) {and then | that} Foster did.
4. The amateur singer (flawlessly) sang every song (flawlessly) {and then | that} the professional did.
5. Ed (violently) ripped out every page in the book (violently) {and then | that} Lesley did.
6. Fred (gently) petted the kitten (gently) {and then | that} Bill did.
7. Edna (quietly) entered the room (quietly) {and then | that} David did.
8. Tina (slowly) approached the gravestone (slowly) {and then | that} Joan did.
9. Edna will (easily) finish every chore (easily) {and | that} Lisa also will.
10. Larry (energetically) played every sport (energetically) {and | that} Fred also did.
11. Lesley (eagerly) read every novel (eagerly) {and | that} Fred also did.
12. Heidi (calmly) spoke to the guests (calmly) {and | that} Nancy also did.
13. Nadia (quickly) found every solution (quickly) {and | that} George also did.
14. Larry (hesitantly) rejected every claim (hesitantly) {and | that} the lawyer also did.
15. Eddy (quietly) sang the song (quietly) {and | that} Fred also did.
16. Nina (loudly) played the song (loudly) {and | that} the band also did.

Appendix C: Materials used in Experiment Three

1. Fred (calmly) spoke to the class (calmly) when Jill did. | When Fred (calmly) spoke to the class (calmly), Jill did.
What did Jill do? (i) speak to the class (ii) speak to the class calmly
2. Nina (loudly) played the national anthem (loudly) when the band did. | When Nina (loudly) played the national anthem (loudly), the band did.
3. Peter (quietly) walked into the house (quietly) after Lesley did. | After Peter (quietly) walked into the house (quietly), Lesley did.
4. Edna (quietly) entered the room (quietly) after David did. | After Edna (quietly) entered the room (quietly), David did.
5. Tim (forcefully) rejected the argument (forcefully) after Maria did. | After Tim (forcefully) rejected the argument (forcefully), Maria did.
6. Fred (gently) petted the kitten (gently) when Bill did. | When Fred (gently) petted the kitten (gently), Bill did.
7. Nancy (gracefully) climbed the steps (gracefully) before Joan did. | Before Nancy (gracefully) climbed the steps (gracefully), Joan did.
8. Tina (slowly) approached the gravestone (slowly) when Fred did. | When Tina (slowly) approached the gravestone (slowly), Fred did.
9. The amateur singer (flawlessly) sang the song (flawlessly) after the professional did. | After the amateur singer (flawlessly) sang the song (flawlessly), the professional did.
10. Edna (easily) finished every chore (easily) after Lisa did. | After Edna (easily) finished every chore (easily), Lisa did.
11. Polly (secretly) spoke to the spy (secretly) after Fred did. | After Polly (secretly) spoke to the spy (secretly), Fred did.
12. John (carefully) studied every article (carefully) before Bill did. | Before John (carefully) studied every article (carefully), Bill did.
13. Larry (energetically) played the game (energetically) when Fred did. | When Larry (energetically) played the game (energetically), Fred did.
14. John (closely) watched every movie (closely) before Fred did. | Before John (closely) watched every movie (closely), Fred did.
15. John (carefully) read every book (carefully) when Bill did. | When John (carefully) read every book (carefully), Bill did.
16. Angela (gradually) gave up every bad habit (gradually) when Foster did. | When Angela (gradually) gave up every bad habit (gradually), Foster did.
17. Lesley (eagerly) read every novel (eagerly) when Fred did. | When Lesley (eagerly) read every novel (eagerly), Fred did.
18. Nadia (quickly) found the solution (quickly) when George did. | When Nadia (quickly) found the solution (quickly), George did.
19. Fred (hesitantly) rejected every claim (hesitantly) after Bill did. | When Fred (hesitantly) rejected every claim (hesitantly), Bill did.
20. Jeffrey (politely) spoke to the teacher (politely) when Fred did. | When Jeffrey (politely) spoke to the teacher (politely), Fred did.

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