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To accommodate or to ignore?: The presuppositions of *again* and *continue* across contexts

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One central question in presupposition theory concerns the effect of using a presupposition trigger in a context where its presupposition is not supported. We test the predictions of recent accounts based on the idea that presuppositions of certain triggers, such as *again*, can be ignored entirely in such circumstances. We sketch two possible alternative accounts wherein presuppositions cannot be ignored and provide experimental results suggesting that presupposed content is fully considered for all triggers across contexts. Specifically, we find that presupposition accommodation does take place when not strictly necessary for the task at hand. We also find some indications of differences between triggers, which are consistent with our alternative accounts.

Keywords: presupposition triggers; presuppositions; accommodation; experimental pragmatics

1 Introduction

The overall meaning contributed by a linguistic utterance consists of various distinct parts, such as lexically encoded truth-conditional meaning, presuppositions, and various types of implicatures, which differ in their source and status. While the arguments for distinguishing different aspects of meaning in the theoretical literature are extensive and compelling, the investigation of potential cognitive correlates of these distinctions is still in its early stages. While there is a by now fairly extensive experimental literature indicating distinct behavioural patterns for implicatures (Bott & Noveck 2004, and much subsequent work; see Chemla & Singh 2014a; b for a recent review), this is particularly true for presuppositions. Initial results provide some behavioral differentiation from both implicatures (Chemla & Bott 2013; Schwarz 2014; see Schwarz 2015 for a recent review) and literal truth-conditional content (Schwarz 2016).

The present paper contributes to the overall project of investigating different aspects of meaning experimentally on several levels. The main point of the present experiment is to provide evidence against recent proposals in the literature (Glanzberg 2005; Domaneschi et al. 2014; Tiemann 2014) that the contribution of certain presupposition triggers is ignored in contexts that do not support them. Furthermore, the experimental paradigm we utilize introduces a novel approach to comparing asserted and presupposed content more generally, and provides further evidence for a differential treatment at a cognitive level in language comprehension. Finally, our experiment includes a comparison between two representative triggers to further elucidate whether there is a need to distinguish different classes of presupposition triggers. Our results provide some further support for distinctions between triggers.

To situate our approach, let us begin with a brief review of some core themes from the theoretical literature. Following Stalnaker (1973; 1974; 1978), the notion of presupposition encompasses all information that is mutually assumed to hold by the discourse participants prior to the utterance – everything that is entailed by the *Common Ground*. Assertions, on the other hand, are proposals to enter new information into the Common Ground. In the linguistic tradition, specific presuppositions are typically assumed to be associated with particular lexical items, and impose requirements on the Common Ground in the form of pre-conditions for a successful integration of the meaning of their sentence into the discourse context.

An important question in presupposition theory is what happens when a presupposition occurs in a context that does not in fact entail it. One possible result is plain infelicity, but in many such cases, the repair mechanism of *accommodation* can be invoked (Lewis 1979) to underhandedly add the presupposed content to the context in order to allow the utterance in question to be evaluated (e.g., you might accommodate that I have a cat if I utter *Sorry I'm late, I had to take my cat to the vet*, based on the existence presupposition of the possessive). Accommodation thus constitutes a way of effectively suspending the presuppositional status of certain content. Alternative treatments of presuppositions by Soames (1979; 1982) and Gazdar (1979a; b), allow for a different way of diminishing the impact of presuppositions, as they see them as defeasible inferences, i.e., they allow for the cancellation of presuppositions when they are inconsistent with other information in the context.¹ For our purposes, the crucial question is whether effectively ignoring presuppositional content altogether is a legitimate option, resulting in only adding the asserted content to the common ground instead, and if so, in what circumstances. As discussed below, more recent approaches featuring in relevant experimental work also appeal to the possibility of cancelling, or simply ignoring, presupposed content in certain circumstances. While the notions of accommodation and cancellation spell out important theoretical possibilities, relatively little is known about the specific conditions under which they might be available. An important recent theoretical development concerns proposals to distinguish different types of triggers on the grounds of different behaviors with regards to options for suspending their presuppositions (e.g., Abusch 2010). But no comprehensive, let alone widely agreed upon, explanation of such differences exists (though various proposals have been made, see, e.g., Beaver & Zeevat 2007; Kripke 2009).

One perspective pursued in recent experimental work is that accommodation is generally avoided if possible, but that triggers differ in whether or not they require accommodation due to the relation of their presupposition to the remainder of the sentence. In particular, Tiemann (2014) and Tiemann et al. (2015) argue based on experimental data that the presupposition of *again* is effectively ignored when its context does not support it. Similarly, Domaneschi et al. (2014), building on Glanzberg (2005), distinguish between *weak* and *strong* presupposition triggers, which differ in whether accommodation is optional or obligatory, respectively, and present experimental data which is argued to support this distinction.

The present study focuses on two presupposition triggers, *again* and *continue*, which fall into the *weak* vs. *strong* categories of Glanzberg's respectively, and also wind up on opposite sides on virtually all proposals for distinctions between presupposition triggers (e.g., the hard (*again*) vs. soft (*continue*) distinction of Abusch 2010). We use a picture matching

¹ Note that in principle, *cancellation* and *accommodation* could co-exist, as they apply in different circumstances (inconsistency vs. lack of support in the context). However, the very notion that presuppositions are mutually taken for granted in a given discourse is hard to reconcile with cancellability, so theories don't typically posit both of these mechanisms in parallel.

task to assess what role the relevant presuppositions play in subjects' considerations, using response choice, response times and subsequent confidence ratings. The results provide evidence against the view that accommodation is avoided altogether whenever possible, (contra Domaneschi et al. 2014; Tiemann 2014; Tiemann et al. 2015), while lending some support to the notion that triggers do differ with respect to the availability (and confidence in the result) of accommodation. Furthermore, we find clear differences between presupposed and asserted content, providing further behavioral support for the cognitive reality of the fundamental and underlying theoretical distinction.

The paper is structured as follows: first, we briefly review the theoretical motivation behind the *strong* vs. *weak* trigger distinction, and then summarize the results from Domaneschi et al. (2014) and Tiemann (2014) and the interpretations these authors offer. We also discuss potential alternative theoretical perspectives on their data. Next, we present our experiment using a picture matching task with confidence ratings. Finally, we discuss the results and their impact on our understanding of the role of presuppositions in online comprehension in contexts that do not explicitly support them.

2 Can (certain) presuppositions be ignored?

2.1 *Obligatory vs. optional accommodation*

Let us turn in some more detail to the theoretical and empirical issues in terms of dealing with presuppositions in contexts that do not support them. In the Common Ground model (Stalnaker 1973; 1974; 1978), one obvious choice is that of accommodation, which is standardly construed as a reasoning process by the hearer that the speaker would not have used a given presuppositional expression if they did not think that the presupposition either was already established, or the hearer could otherwise easily update their representation of the Common Ground to ensure that it is. Barring any reasons to resist this adjustment, the hearer then proceeds by first updating their representation of the Common Ground, and then interpreting the original utterance relative to this new Common Ground (for a detailed presentation of this process in the Stalnakerian framework, see von Stechow 2004).

While hearers may well have independent reasons to resist accommodation (e.g., based on contradictory beliefs of their own, implausibility of the presupposition, etc.), there seem to be additional constraints on accommodation, at least some of which may be specific to certain triggers (Beaver & Zeevat 2007; Kripke 2009). A proposal of crucial relevance for our study in this regard is that by Glanzberg (2005), which argues for a distinction between triggers for which accommodation is obligatory and optional, respectively. The central idea is that for some triggers, presuppositional and asserted content are neatly separable pieces, whereas for others, the asserted content is dependent on the presupposed content in such a way that without the presupposition being met, there is no way to construe the proposition to be asserted. For illustration, consider the two triggers we investigate, *continue* and *again*, in sentences used in our experimental design. (Note that Glanzberg does not discuss these triggers in particular, but the parallels to his cases are fairly straightforward).

- (1)
 - a. On Wednesday, John went to the aquarium again.
 - b. On Wednesday, John continued going to the aquarium.

Both of these examples come, roughly, with a presupposition that John had been to the aquarium before (see discussion below for further details). However, while it's straightforward to consider the asserted contribution of (1a) – that John went to the aquarium on Wednesday – separately from this presupposition, it's much less clear what it would

mean to assess the assertion of (1b) independently of the presupposition. Put differently, the intuition is that one could perfectly well accept the assertion of (1a) to be true without accepting the truth of the presupposition, but one could not straightforwardly do so for (1b). Building on this basic idea, Glanzberg distinguishes two types of presupposition failure, which in turn are associated with optional vs. obligatory repair (for *again* and *continue* respectively in our examples). Domaneschi et al. (2014) adopt the labels of *weak* and *strong* presupposition triggers for these two cases. Glanzberg captures the contrast formally by spelling out update procedures in a dynamic semantic system (Heim 1983); see Glanzberg (2005) and Domaneschi et al. (2014) for more details. For our purposes, the crucial point consists of the claim that sentences containing weak triggers, which are associated with optional repair, can contribute their main assertion independently of the presupposition, and correspondingly do not necessarily require accommodation of the presupposition when it is not met in context. In contrast, sentences containing strong triggers, associated with obligatory repair, cannot lead to any update of the Common Ground independently of the presupposition. This and related considerations have been subject to experimental investigations, in particular by Domaneschi et al. (2014), with related results and discussion by Tiemann (2014) and Tiemann et al. (2015), to which we turn next.

2.2 Experiments suggesting lack of accommodation

Domaneschi et al. (2014) explicitly base their experiment on Glanzberg's distinction, and aim to evaluate "whether different categories of triggers lead to either optional or mandatory processing of the information conveyed by the presuppositions required" (p. 1).² Subjects listened to short stories that contained various presupposition triggers whose presupposition was not explicitly supported in the context, e.g., in the context of a discussion of recent developments at an aquarium, "[...] the re-introduction of a male shark into the main tank has been discussed." Subsequently, they carried out a memory task involving colored shapes, with different levels of complexity. Finally, they were asked questions about the text they had heard. The critical questions were set up to assess whether subjects had considered and retained the information introduced by the presupposition trigger, e.g., "Has a male specimen been introduced into the main tank in the past?" (p. 4), based on the prefix *re-*. Their prediction is that strong triggers will yield higher accuracy rates in question answering, because it was necessary to consider the presupposition when updating the discourse representation with the relevant sentence, whereas updating for sentences with weak triggers does not necessarily involve adding the presupposition in the first place. Their findings are consistent with a distinction between triggers along these lines, as weak triggers such as focus sensitive particles (*even*) and iteratives (*re-*) yield lower accuracy (roughly 50–60%) than strong triggers such as change of state verbs (*give up*) and factive verbs (*explain*) (mostly around 80% or higher).

The second highly relevant experimental finding, from Tiemann (2014) (also discussed in Tiemann et al. 2015), concerns subjects' answers to questions pertaining directly to the presupposition of *again*, which were part of a self-paced reading study on its German counter-part *wieder*. Subjects saw (German) versions of sentences and subsequent questions such as the following:

- (2) Context: Last week, Judith bought Linda a pink lamp for a room.

² Note that there may be two ways this could be understood, namely as being about whether or not the presupposed information is processed in the first place, or about whether it is ultimately added to the Common Ground. Both versions are relevant for our discussion below, but Domaneschi et al. mostly seem to assume the former, which – based on our understanding – does not directly follow from Glanzberg's proposal.

- (3) Target: Two days ago, {Linda/Judith} received a pink lamp again, when she was out with a friend.
- (4) a. Question: How many pink lamps has {Linda/Judith} received?
b. Answer choices: Cannot be answered/one/at least two

In the “positive context” condition, *Linda* was used both in the Target and the Question, and subjects overwhelmingly answered “at least two” (over 80% of the time), as expected. However, the results in the “neutral context” condition, with *Judith* in both the Target and the Question, were somewhat surprising, in that subjects chose “one” as an answer over 80% of the time in this condition. While the context itself does not make any mention of Judith receiving a pink lamp before, it is certainly not inconsistent with this, and if the corresponding presupposition of *wieder* were accommodated by subjects, one would expect that they chose the “at least two” answer. Tiemann (2014) interprets the fact that they don’t as evidence for subjects avoiding accommodation when it is not necessary. More specifically, she proposes the following principle:

- (5) *Minimize Accommodation*
Do not accommodate a presupposition unless missing accommodation will lead to uninterpretability of the assertion!

Based on this, she spells out a more general procedure (shown in Figure 1) for interpreting presuppositions: first, the relation of the presupposition to the context is evaluated. If the context does not entail the presupposition, an attempt is made to update the context with the asserted content only – this amounts to trying to ignore the trigger altogether, as far as context update is concerned, to avoid accommodation.³ Only if this is not possible is the accommodation process invoked. In other words, this approach sees accommodation as a last-resort repair strategy, which only occurs if ignoring the presupposition is not an available option.

In sum, the general thrust of both of the studies considered here is that certain triggers, including *again*, do not, or at least not generally, give rise to accommodation when occurring in contexts that do not explicitly support their presupposition. The reasoning

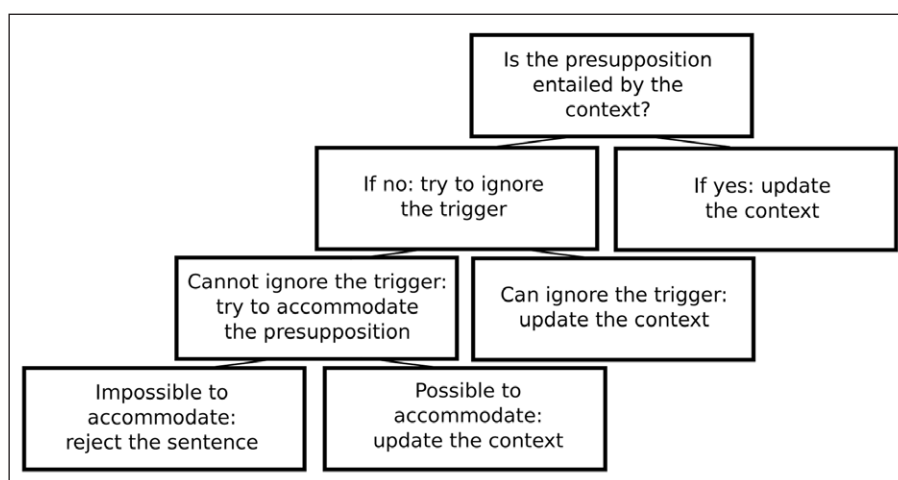


Figure 1: Minimize accommodation procedure (adapted from Tiemann et al. 2015: Figure 4).

³ Note that this is different from the interpretation of Domaneschi et al.’s proposal where the presupposition of weak triggers may not be processed to begin with; see footnote 2.

is that since in these cases the assertion is sufficiently independent of the presupposition, in that context update with the asserted content can proceed even in a context that does not entail the presupposition, the presupposition can simply be ignored, or may not even be processed at all.

2.3 *Alternative explanatory approaches*

While the experimental results reviewed above are certainly consistent with the notion that, broadly speaking, presuppositional content can be ignored altogether, there are other theoretical options as well. We briefly sketch two possible alternative perspectives on these results. Both reject the idea that presuppositions can be ignored. They maintain that in order for an utterance with a presupposition to be accepted, the presupposition has to either be independently satisfied or the common ground must be altered to accommodate the presupposition. Failure on the part of participants to take into account the accommodated material in the relevant tasks can be attributed to two sources on these accounts: (1) failure of accommodation with consequent rejection of the original utterance (a possibility not directly tested in either of the previous experiments) or (2) accommodation with a failure to recall or consider the accommodated material at the time of the question task based on independent reasons.

One perspective along these lines follows Sudo (2012) (for a related proposal, see Klinedinst 2016), who proposes that the presupposition of *continue* has a dual status of sorts, in that it contributes at the levels of entailed and presupposed content in parallel. One main argument for this comes from the impact that the different ingredients of meaning have on the evaluation of certain quantificational sentences, e.g., with *exactly one*. In a nutshell, *Exactly one kid continued going to the beach on Wednesday* requires there to be one and only one child with the property of both having gone to the beach before Wednesday and having gone to the beach on Wednesday. In contrast, a parallel sentence with *again*, as in *Exactly one child went to the beach again on Wednesday*, may be considered false in situations where multiple children went to the beach on Wednesday, even though there is just one child with the property of both having gone to the beach before Wednesday and having gone to the beach on Wednesday. This indicates that the presupposition is not part of the content relevant for evaluating *exactly one* – what matters, at least under one possible construal of the sentence, is how many children went on Wednesday. Under this perspective, triggers that also entail their presuppositions (like *continue*) would be easier to accommodate, since a listener can rely on the already present assertion of the content of the presupposition. This predicts that accommodation should be successful more often with these triggers and that the content of the presupposition would be recalled by listeners more often (for further discussion, also see Klinedinst 2016).

Turning to the results from the experiments discussed above, the entailment contrast account can attribute the differences in recall accuracy and the failure to consider the presupposition of *again* in question answering to the way in which the different ingredients of meaning are clearly separated for non-entailment triggers. In other words, the content of the presupposition of *again* is entirely backgrounded, while in the case of *continue* it also features as part of the main at-issue meaning. (Indeed, in this regard the entailment contrast perspective is quite parallel to the weak vs. strong distinction discussed above). Assuming that there is a tendency to primarily attend to the entailed content both in a textual memory task and in direct question answering, the presupposition of *again* can fall by the way-side, as it were. In contrast, the presupposition of *continue* is necessarily attended to as part of the entailed content. Thus, drawing a difference between triggers

along the lines proposed by Sudo (2012) has the potential to capture all of the empirical points under discussion.⁴

A second perspective we'd like to briefly consider starts out from an observation commonly reported in the literature to the effect that triggers like *again* are more directly anaphoric in that they relate back to previous circumstances that typically have to be rather salient in the discourse context (Zeevat 1992; Kripke 2009). Correspondingly, a distinct event (of the same type) must have occurred before the event discussed in the asserted content for *again* (for more detailed related discussion on additive particles, see Abrusán 2016). This means that accommodation needs to both establish a new (backgrounded) event and ascribe certain properties to it. For *continue*, however, the presupposition relates to the asserted event more directly as being part of an ongoing larger event, and thus does not involve reference to an entirely separate event. In this case, accommodation is only adding new information about an already foregrounded event. Since a new discourse element does not need to be established, accommodation is predicted to be easier with *continue*. And since the asserted event is foregrounded, the accommodated material is more likely to be recalled later. While the details clearly need to be fleshed out further, this general approach promises the capacity to account for all the empirical phenomena under consideration as well.

As already indicated in the introduction, the main point established by the experiment reported below is to argue against the notion that presuppositions can be ignored entirely in contexts that do not support them. This calls for a different perspective on the experimental data from Domaneschi et al. (2014) and Tiemann (2014). While we have to leave the details of such an alternative perspective to future work, we hope to have at least conveyed that there are promising theoretical options that can explain the previous data without assuming that presuppositions can be ignored.

3 Experiment

3.1 Background and design

Our experiment aimed to assess the interpretation process of presuppositional sentences such as those in (1a) and (1b) in contexts that did not support the presupposition, focusing on the triggers *continue* and *again*. In order to test whether and how participants considered the presupposition, we used a picture selection task, where participants chose between two pictures on the basis of a linguistic description. In critical trials, the Target picture always satisfied the asserted content, while the status of the presupposed content was varied. The Distractor picture, which was kept constant across conditions, failed to match the asserted content of the description. This design was chosen to focus on how changes in presupposed content impacted picture selection, while holding asserted content constant.

In order to make the task seem more natural, the participants were instructed to “take on the role of a detective that is trying to identify suspects based on very partial information about what their activities are during a certain week.” They were told that an assistant would provide a report of conclusions about the culprit’s activities during that week, which should be assumed to be correct. Independently, two pictures of suspects provided by the detective’s department came with each case, which depicted what different individuals did on a given day of the week. Participants’ task was to choose which of

⁴ For a more direct experimental assessment of this proposal, see Zehr & Schwarz (2016), who find support for a contrast between relevant triggers along the proposed lines, though the results for triggers like *continue* are less clear-cut than the entailment contrast account would predict. See their discussion for more details.

two pictures they believed represented the culprit and to rate how confident they were in their selection. The participants were explicitly told that due to occasional administrative errors, the pictures would not always be a very good match for the report, and that any uncertainty due to that should be indicated through the confidence ratings. An illustration of the linguistic stimuli is provided in (6). The respective meaning components are spelled out in (7).

- (6) *Context Sentence*: Henry came to town for the first time on Tuesday.
- a. *Again*: On Wednesday, he went to the aquarium again.
 - b. *Continue*: On Wednesday, he continued going to the aquarium.
- (7) a. *Presupposition*: Henry went to the aquarium before Wednesday⁵
- b. *Asserted Content*: Henry went to the aquarium on Wednesday⁶

Picture stimuli were constructed using calendar strips with the image of a person above them, as illustrated by the picture pairs in Figure 2. Each day in the calendar strip represented a location that the person visited that day. Two abstract symbols appeared on certain days as well, and their meaning was explicitly explained to participants in the instructions: a blue question mark indicated lack of knowledge on the part of the department about what the person in the picture did on that day. A red “X” indicated that the person had not yet arrived in town on that day. The latter, together with the context sentences, played a crucial role in circumventing additional accommodation interpretations, where the relevant presupposed activity (e.g., having gone to the aquarium before the depicted Wednesday) could be understood as referring to other preceding events, either within the illustrated week or prior to it.

The picture variations manipulated how the context related to the evaluation of the presupposition. The Distractor picture was constant across conditions, and was incompatible with the assertion (as it depicted a library trip on Wednesday), but in principle consistent with the presupposition, given the question mark on Tuesday. All Target versions were compatible with the asserted content (aquarium on Wednesday), and indeed explicitly depicted the corresponding image except in the Assertion Open condition where a question mark occurred on the day pertaining to the asserted content. For the Target picture,

⁵ Note that we do not mean to commit here to the view that this is all there is to the presupposition of either *again* or *continue*, although we do believe that this is the core that they share. *Again* may come with an additional anaphoric requirement, and it’s possible that *continue* furthermore requires the preceding activity to go on immediately before the present activity. Our stimuli are consistent with this either way to the extent possible: a prior day gets mentioned in the context, to provide a potentially needed antecedent for *again*; and for *continue*, the relevant previous activity always takes place on the immediately preceding day in our calendar displays. An anonymous reviewer raised a related further concern about *continue*, specifically with regards to the naturalness of (7b) for describing the depiction of events we used. They argue that the (linguistically) most natural interpretation of the sentence is an implausible one, where travel towards the aquarium starts on Tuesday and continues on Wednesday. But we believe it quite natural to interpret *going to* as “attending” or “visiting” (much as in *going to College*), with the sentence thus conveying a visit being continued on a later day. This reading seems easily available when there are three instances of traveling, with daily visits Tuesday-Thursday, which can be described as *After going to the aquarium on Tuesday and Wednesday, Henry continued going to the aquarium on Thursday*. This reading may be slightly less salient when the location is only visited on two days, but we’d argue that it still is available and reasonably natural. Participant behavior and result patterns are in line with this: (a) none of our participants commented on the naturalness of the stimuli although they were given an opportunity to comment on the experiment, and (b) as described below, subjects performed as expected, with greatest confidence in their choice when both days explicitly showed the relevant destination (in the True Control condition), rather than, e.g., a question mark on the first relevant day (in Presupposition Open). Based on these points, we do not believe that such concerns undermine the validity of our data or their interpretation.

⁶ Following Sudo (2012), one could argue that in the case of *continue*, the presupposition is also part of the entailed content that gets asserted. We leave this issue aside for the most part, but see our brief remarks in 2.3 above and the Discussion section.

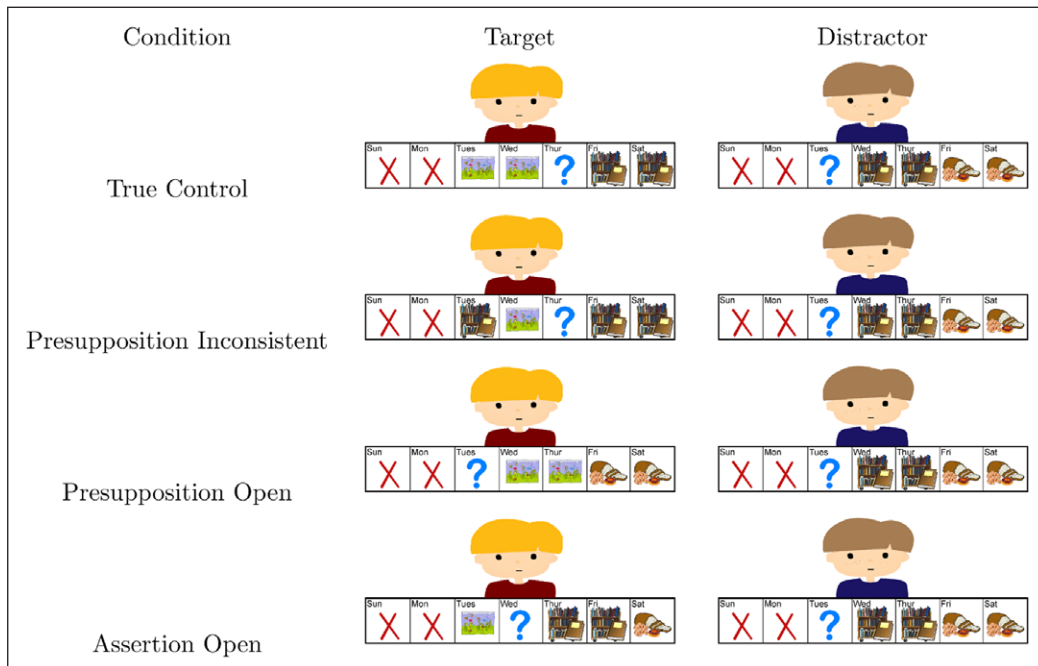


Figure 2: Picture stimuli paired with the linguistic stimuli in (6).

the True Control condition furthermore explicitly supported the presupposition, as an aquarium is also shown on Tuesday. The Presupposition Inconsistent condition is explicitly incompatible with the presupposition, as the only preceding day following the arrival on Tuesday shows a picture of a library. In the Presupposition Open condition, whether or not the presupposition is met is left undetermined through the use of a question mark on Tuesday. Finally, the Assertion Open condition provides a further comparison with regards to the impact of uncertainty introduced by the question mark on assertion as compared to presupposition, with the presupposition explicitly met (aquarium on Tuesday) and the assertion left open (question mark on Wednesday).

The manipulation of the relation of the target picture to the presupposition introduced by the sentence directly impacted the potential role of accommodation. In the True Control and Assertion Open conditions, the picture satisfies the presupposition and accommodation is unnecessary. In the other two conditions, however, the presupposition is not explicitly supported by the context. In the Presupposition Inconsistent condition, the Target can only be confidently selected if the presupposition is ignored. However, in the Presupposition Open condition, the picture is at least consistent with the presupposition being met, given the question mark. Thus, the Target can be confidently selected here either if the presupposition is ignored, or if the participant updates their representation of the context to satisfy the presupposition through accommodating that the relevant suspect must have been to the aquarium on Tuesday.

3.2 Predictions

Tying the properties of the stimuli back to the theoretical proposals discussed above, it's clear that different views of dealing with presuppositions in non-supporting contexts predict different patterns across conditions. Both of the alternative perspectives sketched above assume that the presupposition is always considered for both triggers, which will lead to an attempt at accommodation. This would add the presupposed proposition to the Common Ground. In our task, such a context update will necessarily involve checking whether the visual information in the context can be reconciled with the presupposed content. Crucially, in the Presupposition Open condition (as well as in the conditions where

the presupposition is explicitly supported) this is possible, while in the Presupposition Inconsistent condition, it is not. Correspondingly, the confidence in selecting the Target picture should be greater in the former. Depending on how grave the impact of inconsistency with the accommodated presupposition is, Target selection rates could decrease with Presupposition Inconsistent as well.

Approaches that allow for the option of ignoring presuppositions in non-supporting contexts suggest a different picture. On these proposals, if the presupposition is considered at all, this is only with regards to an initial check of whether the common ground entails it. This does not differentiate the Presupposition Open and Presupposition Inconsistent conditions, as both fail to entail it. Thus, if the presupposition is subsequently ignored, no behavioural difference between these conditions is expected. Note that consideration of the presupposition is, by design, not necessary to perform the experimental task, since only one of the two pictures shown matches the asserted content. Considering the asserted content alone, if possible, thus suffices to make the decision to select the Target picture.

Turning to the proposals by Domaneschi et al. and Tiemann in a bit more detail, they make slightly different predictions. Tiemann's Minimize Accommodation predicts that triggers like *again* never show accommodation, as ignoring the presupposition is a viable strategy for such triggers and ignoring is always preferred to accommodation. For Domaneschi et al., ignoring the presupposition is at least optionally available for *again*, while *continue* obligatorily shows accommodation, but it remains unclear how frequently the presupposition is expected to be ignored in the former case. Correspondingly, the former predicts no difference between Presupposition Open and Presupposition Inconsistent for *again*, while the latter may be compatible with such a difference, as long as it is smaller than for *continue*.

A crucial prediction shared by both accounts is that in both Presupposition Open and Presupposition Inconsistent, we should, on average, find higher confidence ratings (and possibly higher selection rates) for *again* than *continue*, due to the option of ignoring the presupposition. Adapting Figure 1, we illustrate further predictions that the procedure of Tiemann (2014) makes for our specific design in Figure 3.⁷ From a behavioral perspective, such a procedure predicts that in the Presupposition Inconsistent condition target choices

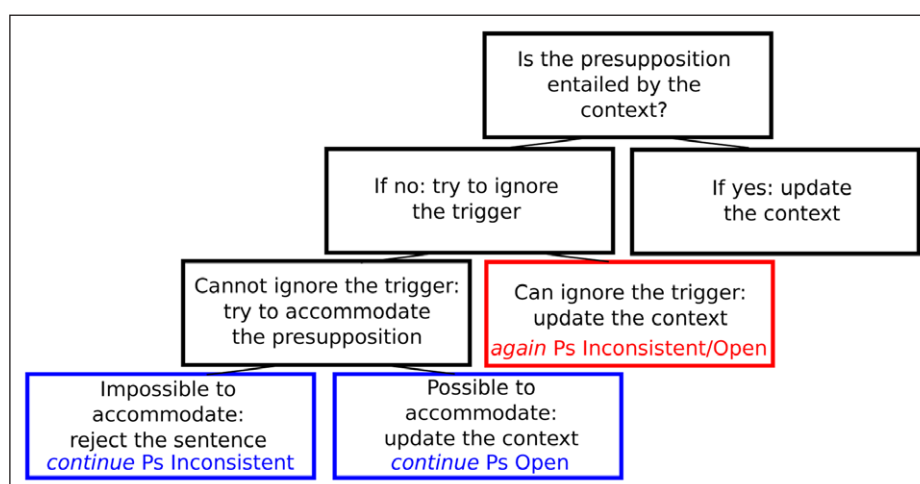


Figure 3: Evaluation of *again* and *continue* against the target picture in Presupposition Open and Presupposition Inconsistent as predicted by the procedure illustrated in Figure 1.

⁷ (Tiemann et al. 2015) analyse change-of-state verbs like *continue* (even though they only explicitly discuss *stop*) as differing from additive particles like *again* precisely in the possibility to ignore their presuppositional contribution.

should be less frequent with *continue* than with *again*. Furthermore, under the assumption that each verification step incurs additional processing time, this procedure predicts a response time delay with *continue* over *again*, as it involves an additional step in relating the sentence to the picture.

The alternate accounts we sketched predicts there to be no difference in Presupposition Inconsistent, since presuppositions are always considered, leading to a clash with the context here for both triggers. For Presupposition Open, the opposite pattern is predicted, i.e., *continue* should exhibit greater confidence ratings than *again*. Since accommodation will always be at play, acceptance of the target picture and confidence in the choice should derive from differences in the ease of accommodation between triggers. Both theories predict that *continue* should be easier to accommodate than *again* (and thus receive more Target picture selections with higher confidence). For the entailment approach, *continue* entails its presupposed content, so accommodation can rely on the entailed copy of the content for support. For the anaphora approach, *continue* is non-anaphoric, which means that the presupposition is about the foregrounded eventuality. On the assumption that foregrounded material is more easily modified than backgrounded material, accommodation should be easier for *continue*. Also, the anaphoric nature of *again* means that not only does the presupposed proposition need to be added, but a new backgrounded discourse referent for the anaphoric eventuality also needs to be added. Since *again* requires more operations on the common ground for accommodation to occur, its accommodation should be more difficult.

Additional theoretical issues of interest relate to further comparisons across conditions. First, differences between Presupposition Open and True Control would provide further evidence for a vital role of the presupposition in relating the linguistic stimuli to the pictures, as only the latter explicitly supports the presupposition. In contrast, if weak triggers can get ignored entirely, no difference is predicted here at all, and if that option is merely available to some extent, the difference for *again* should be smaller than for *continue*. Secondly, a comparison between the Presupposition Open and Assertion Open conditions can help elucidate how presupposed and asserted content differ in language comprehension, and thereby contribute the empirical foundation of our understanding of these different aspects of meaning.

3.3 Methods

3.3.1 Stimuli

The linguistic stimuli were recorded by the first author using Praat, for auditory presentation in the experiment. Each critical item was identified by which two people were shown (including the name used in the sentence), the day of the week used for context and critical sentence, and the three types of activities represented in the calendar strip. One activity was used for the asserted context of the critical sentence, one was used for the presupposition, and one was used to fill out the remaining fields in the calendar strip. There were 24 experimental items, each with 8 versions combining the four conditions picture versions with minimally varied sentences for the two triggers.

In addition, 24 filler items were constructed to distract from the experimental manipulations, with varying names, days of the week for the context sentence and critical sentence, and pictures of individuals and locations (see Figure 6 in the Online Appendix for illustrations). None of the fillers contained a presupposition trigger. There were six different filler types. Two of them were designed to accustom the participants to seeing trials in which both of the pictures were equally good/bad matches for the critical sentence (“Both Correct” and “Both Incorrect” in Figure 6), in case this is how they perceived any of the experimental conditions. Another condition was designed to test their proficiency with

the task, as one picture was clearly the correct choice (“True Filler”). A fourth type was a variant of the Assertion Open condition in that it had a question mark on the asserted content, so that this configuration was not associated with the presence of a presupposition trigger. The final two conditions were used to ensure that the subjects pay attention to the context sentence about the day the suspect first arrived in town (“Context Early” and “Context Late”). Both of the pictures in these conditions were consistent with the critical sentence, but one picture had the suspect arrive too early or too late based on the information in the context sentence.

3.3.2 Participants and procedure

40 participants were recruited using Amazon Mechanical Turk. All participants were compensated with a small monetary amount. Participants accessed the experiment on their web browser. The experiment was run using the IBEX experimental software. Each trial consisted of a context sentence, a critical sentence, and two pictures. Context and critical sentence were presented aurally. Participants selected one of the pictures by pressing the ‘Q’ or ‘Y’ key. Participants could only select a picture after the context sentence had finished playing.

After selecting a picture, participants rated their confidence in their choice using the number keys on their keyboard (1–5) on a separate screen. For each trial, the rating prompt was “How confident are you that the picture you selected is the one described by the sentence?”. The five ratings were associated with descriptions: Not confident, Somewhat confident, Confident, Quite confident, and Very confident.

Participants only saw sentences with one of the two presupposition triggers. Within each trigger group (*again* vs *continue*), four further groups were created in a Latin square design to counterbalance the 24 critical items across the four experimental conditions. The experiment took an average of 16 minutes to complete.

3.3.3 Dependent variables, analyses and data treatment

For each trial, response times for picture selection (measured from end of the context audio file) were recorded and analysed. A by-subject accuracy measure was computed on the basis of the picture choice for the True Control among the experimental condition and for the filler types with a clearly correct answer (True Filler, Context Early, Context Late) in order to ensure that participants performed adequately in the task. Response time was transformed by (1) centring the response time at 200 milliseconds before the end of the critical audio stimuli, (2) eliminating all negative responses (i.e., responses from before 200 milliseconds, which could have missed crucial information from the sentence), (3) applying the log transform to the remaining results to better approximate a normal distribution.

To investigate main effects of trigger and condition, 2×2 mixed effect models were fit, reducing condition to a binary comparison of two conditions per model. For condition comparisons crucial to our theoretical claims (namely, Presupposition Open vs Assertion Open and Presupposition Open vs Presupposition Inconsistent) we also fit separate models for each trigger in order to identify simple effects of condition with each trigger.

Data on target choice did not converge with *lme4* (Bates et al. 2015b) models, however, Bayesian models fit with *rstanarm* (Gabry & Goodrich 2016) did converge. Bayesian models approach statistical questions by investigating how prior beliefs about model parameters should be updated by the new evidence (creating a posterior belief). The *rstanarm* package provides Bayesian equivalents of *lme4* models. In practice, these models are fit by simulating the posterior distribution. Properties of these posterior samples reflect the new beliefs about credible parameter values. In the discussion below,

we provide the model descriptions (i.e., description of fixed and random effects) and three model outputs: i. point estimate, PE, (median sample value); ii. median absolute deviation, MAD, from the point estimate; and iii. credible interval, CI, (a range with a 95% chance of containing the true parameter value). The Bayesian models were always fit with the maximal random effects structure: (main effect) Dependent Variable \sim Trigger * Condition + (Condition|Participant) + (Trigger * Condition|Item) and (simple effect) Dependent Variable \sim Condition + (Condition|Participant) + (Condition|Item).⁸

For rating and RT data, *lme4* models did converge and yielded comparable results to Bayesian models; only null hypothesis testing results are reported below. Random effect structure was determined using Bates et al. (2015a).⁹ Most models had an intercept only random effect structure (for both subjects and items) based on this approach, and this is the default to be assumed when no further details are provided below. For models with random slopes, we explicitly specify which random slopes were included in the relevant results section.

For all models, the two values of the categorical predictors were coded as -0.5 and 0.5 . For triggers, *again* was assigned -0.5 and *continue* was assigned 0.5 . For condition, if Presupposition Open was included in the comparison, then it was assigned 0.5 and its opposite was assigned -0.5 .

2 participants were excluded because they failed to achieve 70% accuracy on filler items/true controls and 1 participant was excluded because their response time mean was longer than 6 seconds. After those participants were excluded, 1.5% of the data was excluded because the response occurred more than 250 ms before the end of the stimulus (representing the average duration of the final word in the stimulus). In addition, 1.5% of the remaining data was excluded because the RT was more than 3 standard deviations away from the by-condition mean. A total of 3.1% of the data (from accepted participants) was excluded because of RT variation.

3.4 Results

3.4.1 Response patterns

The response patterns, summarized in Table 1, were mostly unsurprising, but validate the experimental methodology employed, with most critical conditions showing near ceiling

Table 1: Percent of Target 2 responses with total number of Target 2 choices/total number of trials in parentheses.

	Again	Continue
True Control	99% (103/104)	99% (109/110)
Presupposition Inconsistent	89% (92/103)	97% (109/112)
Presupposition Open	97% (98/101)	100% (110/110)
Assertion Open	94% (99/105)	100% (111/111)
	Filler	
True Filler	98% (140/143)	
Both Incorrect	64% (93/145)	
Both Correct	57% (83/145)	
Assertion Open	93% (135/145)	

⁸ Default priors were used, i.e., normal distributions with mean = 0 and sd = 10 (for the intercept) and sd = 2.5 (for remaining fixed effects).

⁹ Results did not change when maximal converging random effects were used instead.

level selection of the Target. Beginning with the fillers, whether pictorial information was explicitly represented or merely consistent with aspects of the linguistic stimuli through use of “?” strongly affected response behavior, as expected. When the Distractor was explicitly inconsistent with the critical sentence and the Target was subject to some uncertainty relative to the asserted content, as represented by “?”, (Assertion Open in both critical and filler versions), participants reliably chose the Target. In comparison, when both Target and Distractor were explicitly consistent or inconsistent with the asserted content of the critical sentence (Both Correct and Both Incorrect Fillers), participants selected between the pictures at chance levels. Together, these results confirm that speakers are willing to draw inferences within the task about what activities take place on days marked with “?”.

Turning to the critical items, target selection levels were close to ceiling in all of the critical conditions, as can be seen in the top part of Table 1. As mentioned above, logistic regression models using *lme4* did not consistently converge for this data (most likely because of the 100% target selection in the *continue* Presupposition Open and Assertion Open cells). Therefore, we report results from Bayesian logistic mixed effect models. For most comparisons, zero was within the credible effect interval (i.e., the data is consistent with the null hypothesis of no difference between triggers/conditions). However, there was a main effect of condition in the Presupposition Inconsistent vs Presupposition Open comparison (PE = 2.5, MAD = 1.3, CI = 0.25 – 5.69). There was neither a credible main effect of trigger (PE = 1.8, MAD = 1.2, CI = –0.86 – 4.37) nor a credible main interaction (PE = 0.6, MAD = 2.0, CI = –3.33 – 5.10). These results indicate that looking at *again* and *continue* together, there was a credible difference in Target selection frequency between leaving the presupposition open and explicitly contradicting the presupposition. The lack of an interaction contrasts with the prediction of accounts that treat weak (or, in Abusch’s terms, hard) triggers as ignoring the presupposition. And while lack of an interaction only constitutes the absence of evidence in this regard, it is worth noting that the descriptive pattern across triggers was opposite of that predicted by such accounts: the effect was more pronounced for *again*, with relatively fewer Target choices when the picture was explicitly inconsistent with the presupposition, compared to *continue*.

A further point of theoretical interest is that the response patterns reflect the difference between asserted and presuppositional content. In the Presupposition Inconsistent condition, i.e., when the presupposition was not met in the Target but the asserted content was true, and the Distractor had the asserted content false and the presupposition left open, the participants overwhelmingly chose the picture with the failed presupposition over failed asserted content, suggesting that asserted content has priority.¹⁰

3.4.2 Rating

Mean confidence ratings by conditions are illustrated in Figure 4(a), and the distributions across rating categories in Figure 4(b). For purposes of statistical analysis, both ordinal mixed effects regressions using the *ordinal*-package in R and linear Bayesian model analyses (since ordinal mixed effects have not yet been implemented in the *rstanarm*-package in R) were conducted, and yielded comparable results. We report the ordinal mixed effects analyses here. In line with the chance-level response patterns, the confidence ratings for cases where both pictures are (in)consistent with the asserted content of the critical sentence (Both Correct and Both Incorrect filler conditions) were low (i.e., participants were

¹⁰ Even better evidence for such a priority would come from a variation where the presupposition was met in the Distractor, rather than merely being consistent with it, but since this aspect was not a focus of our design, we did not include such a condition. It seems intuitively unlikely that the results would come out differently in that case.

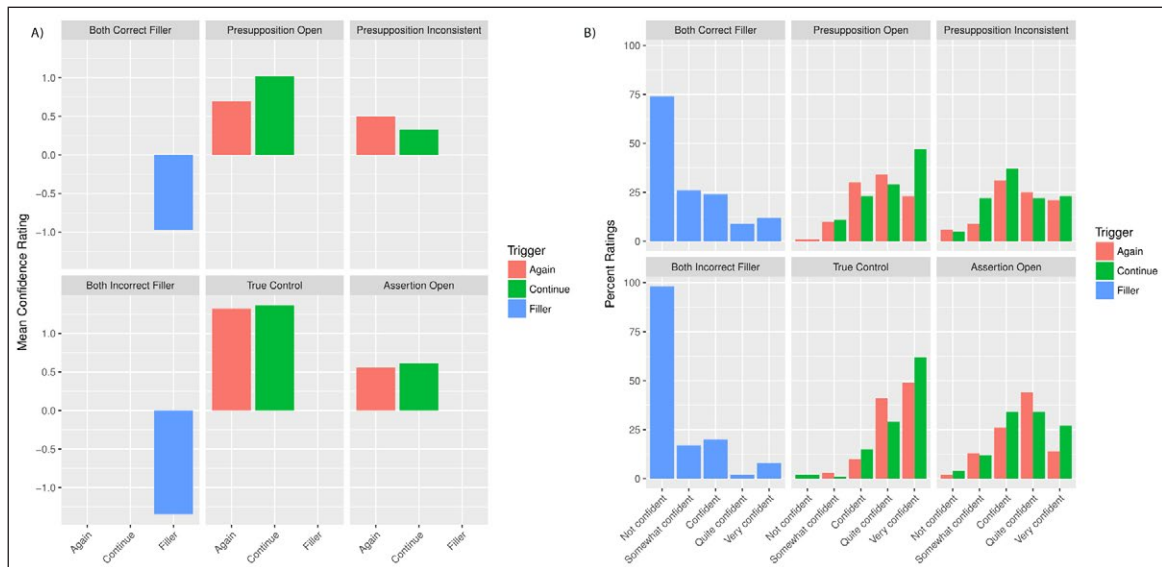


Figure 4: Rating graphs. (a) Mean value of confidence ratings with Confident = 0 (Target response-trials only). (b) Histogram of confidence ratings (Both response trials included for Fillers; Target response-trials only for critical conditions).

not confident when they chose items at random). This validates that participants were using the confidence ratings in the expected fashion.

For the comparison between the Presupposition Open and the Presupposition Inconsistent conditions, a random slope of Condition|Subject was included in the model. There was a significant difference between the Presupposition Open and the Presupposition Inconsistent conditions ($\beta = 1.30, SE = 0.28, z = 4.67, p < 0.001$), with higher confidence ratings in the Presupposition Open condition, indicating that uncertainty about the presupposition resulted in greater confidence in the picture choice than a picture explicitly inconsistent with the presupposition. There was no main effect of trigger type ($\beta = 0.24, SE = 0.66, z = 0.36, p = 0.72$), but there was a significant main interaction between condition and trigger type ($\beta = 1.07, SE = 0.54, z = 1.98, p < 0.05$) indicating that the relative impact of uncertainty and inconsistency was greater for *continue*. The interaction may at first sight seem in line with the prediction of accounts allowing certain presuppositions to be ignored. Importantly, however, as a visual inspection of the results in Figure 4(b) reveals, the interaction seems to be driven primarily by higher ratings for *continue* in the Presupposition Open condition. This suggests that presupposition accommodation with *continue* is associated with greater confidence than with *again*. But accounts that allow for the presupposition of *again* to be ignored predict exactly the opposite here, with greater confidence for *again*. In contrast, the alternative accounts we sketched predict the observed pattern.

In light of the theoretical importance of these pairwise comparisons and the significance of the interaction, simple effects of condition were also statistically assessed for each trigger. The model for *continue* included a random slope of Condition both by Subject and by Item. Both *again* ($\beta = 0.77, SE = 0.28, z = 2.75, p < 0.01$) and *continue* ($\beta = 1.80, SE = 0.45, z = 4.03, p < 0.001$) showed significant effects of condition. Thus, resolving uncertainty with regards to a presupposition was rated better than ignoring a presupposition for both triggers, but the difference was more pronounced for *continue* than for *again*, as reflected in the interaction.

The comparison between Presupposition Open and True Control conditions shows whether participants were sensitive to the presupposed content of the sentence for either

trigger. The ordinal model included the following random slopes: Condition|Subject and Trigger|Item. There was a significant main effect of condition ($\beta = -1.38$, $SE = 0.30$, $z = -4.59$, $p < .001$) with the True Control conditions rated higher, indicating that the uncertainty with respect to whether or not the presupposition holds, given the question mark, decreases participants' confidence relative to situations where all relevant information is explicitly provided. There was neither a main effect of trigger ($\beta = 0.64$, $SE = 0.67$, $z = 0.954$, $p = .340$) nor an interaction ($\beta = 0.71$, $SE = 0.58$, $z = 1.22$, $p = .221$), suggesting that there was no detectable difference between triggers in the effect of uncertainty about the presupposition holding.

In comparing the Presupposition Open and Assertion Open conditions, there was a significant main effect of condition ($\beta = 0.88$, $SE = 0.20$, $z = 4.46$, $p < .001$), with Presupposition Open rated higher than Assertion Open, suggesting that participants were more confident in the results of accommodating a presupposition than of drawing a comparable inference about a question mark in the picture based on the asserted content. The main effect for trigger type was not significant ($\beta = 0.56$, $SE = 0.6285$, $z = 0.89$, $p = 0.374$), but there was a marginally significant interaction ($\beta = 0.75$, $SE = 0.39$, $z = 1.93$, $p = 0.054$) presumably driven by the greater confidence ratings found for *continue* in the Presupposition Open condition.

Given that the interaction approached significance, simple effects of condition were also checked for each trigger. The main effect of condition was primarily driven by a significant effect for *continue* ($\beta = 1.27$, $SE = 0.30$, $z = 4.26$, $p < 0.001$), while the effect for *again* was only marginally significant ($\beta = 0.52$, $SE = 0.27$, $z = 1.909$, $p = 0.056$). While the interaction that could suggest a trigger difference here is marginal, it is worth highlighting in theoretical terms that the direction of the effect again goes in the opposite direction from that predicted by accounts that assume that certain presuppositions, including that of *again* can be ignored altogether, since *again* shows lower confidence ratings for unmet presuppositions, which are only marginally greater than those for the Assertion Open condition.

3.4.3 Response time

Response time data for critical conditions is illustrated by condition in Figure 5. Linear mixed effects models were run on log-transformed response times. P-values were derived using the *lmerTest* package in R.

The focus of our analyses here was parallel to that in the ratings analyses. First, the comparison between the Presupposition Open and the Presupposition Inconsistent conditions yields a significant effect of condition ($\beta = -0.43$, $SE = 0.06$, $t = -7.56$, $p < 0.001$), with faster responses in Presupposition Open. There was no significant effect of trigger type ($\beta = 0.20$, $SE = 0.16$, $t = 1.26$, $p = 0.216$) nor a significant interaction ($\beta = -0.18$, $SE = 0.12$, $t = -1.48$, $p = 0.139$). As in the case of the confidence rating results, the comparison between these two conditions is crucial for our main theoretical question: while the presupposition is not explicitly supported in either condition, they differ precisely in whether accommodating the presupposition is possible. In particular, Presupposition Open allows, but does not require, accommodation, whereas the presupposition necessarily has to be ignored for Presupposition Inconsistent. Given the difference in results, the presupposition does seem to get accommodated when possible, and moreover the processes involved seem to proceed with greater ease than when the presupposition conflicts with the information displayed in the Presupposition Inconsistent condition, as reflected in faster picture selections for Presupposition Open. Finally, the lack of a strong trigger effect speaks against positing

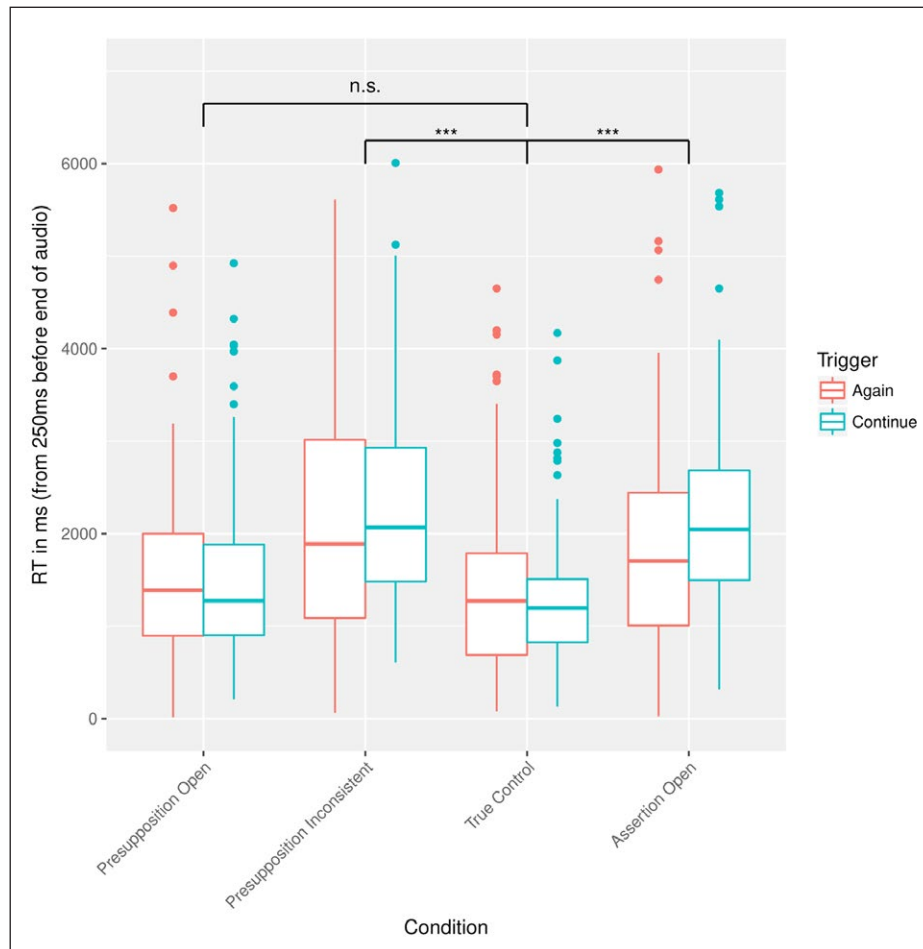


Figure 5: Boxplot of response times in all critical conditions.

any inherent differences between them with regards to the possibility of accommodation. This is exactly the opposite pattern of the predictions of accounts that assume presuppositions can be ignored in contexts that don't support them. But it is perfectly in line with the notion that the presuppositions of both triggers are always considered and accommodated when possible, while being forced to put the presuppositional information aside invokes greater effort.

Second, in comparing the Presupposition Open and Assertion Open conditions, there was a significant effect of condition ($\beta = -0.38$, $SE = 0.06$, $t = -6.62$, $p < 0.001$), with faster responses in Presupposition Open, suggesting that drawing inferences about days marked with question marks is more challenging when this relates to asserted content. There was no significant main effect of trigger type ($\beta = 0.18$, $SE = 0.16$, $t = 1.17$, $p = 0.249$) nor was there a significant interaction ($\beta = -0.14$, $SE = 0.12$, $t = -1.24$, $p = 0.217$).

Finally, the comparison between the Presupposition Open and the True Control conditions yielded no significant effects of condition ($\beta = 0.06$, $SE = 0.06$, $t = 1.01$, $p = 0.315$), trigger type ($\beta = 0.07$, $SE = 0.15$, $t = 0.45$, $p = 0.065$), nor of an interaction ($\beta = 0.08$, $SE = 0.12$, $t = 0.66$, $p = 0.512$). While one might have expected that dealing with the uncertainty introduced by the question mark in the Presupposition Open condition would give rise to a slow-down in picture selection, no such effects arose, which suggests that dealing with the unmet presupposition in this case does not come with any additional efforts that our methodology can detect.

4 Discussion: Presuppositions are not ignored

Overall, our results support the distinction of presupposed and asserted content at a cognitive level. Crucially for present purposes, they speak against seeing accommodation as a last resort strategy that is avoided if at all possible, as the presuppositions of both *continue* and *again* have a consistent impact on behavioral outcomes. This is so even though they play no crucial role for the task at hand, as the relevant conditions allow for selection of the Target picture based on the asserted content alone. These outcomes are incompatible with the weak vs. strong trigger distinction proposed by Glanzberg (2005) and empirically investigated by Domaneschi et al. (2014), as well as the related proposal by Tiemann et al. (2015). In this section, we spell out the argument for the conclusions above, and revisit the space of options for drawing a distinction between triggers in theoretical terms in line with experimental results to date.

Beginning with the most crucial point, let us expand on the discussion of the theoretical impact of the results for the Presupposition Open and Inconsistent conditions. Accounts allowing for the presupposition of *again*, but not *continue*, to be ignored, made two key predictions: first, the impact of encountering a picture explicitly inconsistent with the presupposition (Presupposition Inconsistent), as compared to one that is compatible with but not explicitly supporting the presupposition (Presupposition Open) should be smaller for *again*. In fact, on Tiemann's model and one construal of Domaneschi et al.'s account, there should be no impact at all, as the presupposition should be consistently ignored in both conditions. But even if ignoring the presupposition is merely an option that isn't instantiated all of the time, making use of that option should yield a smaller impact of the inconsistent version overall. Secondly, *again* should be better than *continue* in both conditions, given that the presupposition can (at least sometimes) be ignored. Our results are not in line with these predictions.

First, there was a main effect of condition in the response patterns, with lower Target selection rates in the Presupposition Inconsistent condition. Importantly, this effect seems to be primarily driven by *again*, whereas the proposals in question would expect this effect to only arise for *continue*.

Secondly, participants provided higher confidence ratings in the Presupposition Open condition. While this effect was significant for each trigger analysed individually, there also was a significant interaction, with a greater confidence gap for *continue*. While accounts allowing presuppositions to be ignored do predict an interaction reflecting a smaller impact of inconsistency on *again*, the specific nature of the interaction in our data is not in line with those accounts. In particular, it is primarily driven by higher confidence ratings for *continue* than *again* in the Presupposition Open condition, which directly contradicts the second prediction above.

Finally, there was also a main effect of condition in the response time data, with faster picture selections in the Presupposition Open condition for both triggers (and no differences between them). This, too, is inconsistent with the proposals under consideration, as the Target picture should be selected in the same manner in both conditions once the presupposition is ignored entirely. Instead, the difference in response times suggests that while accommodating the presupposition is relatively easy, selecting a Target picture that is explicitly inconsistent with the presupposition is challenging and takes more time, presumably because it is seen as a sub-optimal choice in light of the presupposed content.

The fact that participants consistently selected the Target in the Presupposition Inconsistent condition in the first place raises the question of whether ignoring the presupposition (albeit after initial consideration) constitutes a generally available interpretation strategy. Given the nature of the experimental forced choice task, we do not see any

grounds for this conclusion. Faced with the alternative of choosing the Distractor picture, which explicitly contradicted the asserted content and involved uncertainty with respect to the presupposition, or the Target, which matched the asserted content but was inconsistent with the presupposition, the latter likely presents itself as the lesser of two evils.

Indeed, the consistent preference for the Target provides a further indication of differences between asserted and presupposed content, specifically in terms of giving priority to asserted content in the task at hand. While the comparison is not optimal for making the point, given the uncertainty about the presupposed content being met in the Distractor, it seems unlikely to us that much would change if the Distractor explicitly supported the presupposition. In any case, the relatively low confidence ratings in the Presupposition Inconsistent condition further indicate that even in the given task, ignoring the presupposition comes at a cost, suggesting that ignoring the presupposition is not a strategy that would be adopted outside of circumstances such as the present experimental task, where the Presupposition Inconsistent condition leaves no better alternative options.

Another relevant point arises from the comparison of the True Control and Presupposition Open conditions. If the presupposition of *again* were ignored entirely, then no behavioral differences are expected here, as the asserted content is equally matched in both. However, confidence ratings are significantly higher in the True Control condition for both triggers, with no significant differences between *continue* and *again*. This suggests that the Presupposition Open condition does involve consideration of the presupposed content, and specifically accommodation, for both triggers. Interestingly, while accommodation comes with a decrease in confidence, it is not associated with any response time effects, suggesting that drawing the accommodation inference does not incur any processing cost that is detectable with the present methodology.

Turning to the comparison between the Presupposition Open and Assertion Open conditions, which varied whether asserted or presupposed content was explicitly met or involved uncertainty due to the use of a question mark on the relevant day, these yielded differences both in terms of confidence ratings and response times: participants were more confident and faster in selecting the target when the uncertainty concerned the presupposition than in the case of the assertion, suggesting that accommodating a presupposition is seen as less problematic than having to make a parallel inference about the asserted content being met in a picture.

With regards to the question of whether the presupposition of *again* is treated differently from that of *continue*, a first point to note is that the Presupposition Open vs. Presupposition Inconsistent comparison yielded an interaction with type of trigger in terms of confidence ratings, based on the increase in confidence in the Presupposition Open condition being greater for *continue* (this was paralleled by a marginally significant interaction in the Presupposition Open vs. Assertion Open analysis). This is the exact opposite of what would be expected if the presupposition of *again* could be ignored entirely when the context does not explicitly support it. Thus, this result provides a further indication that the presupposition of *again* is not ignored but rather accommodated, although accommodation is done more reluctantly than in the case of *continue*, leading to a decrease in confidence in the result of accommodation.

Taken together, our results provide strong evidence against proposals that the presupposition of triggers like *again* can be ignored altogether when uttered in a context that fails to support it: we find consistent evidence that the presupposition of *again* IS considered not only in contexts that fail to support it, but also in ones that are explicitly inconsistent with it. In the former, this leads to accommodation, while in the latter, choosing a Target picture that is inconsistent with the presupposition likely is only possible given a

task-specific strategy in situations where the available alternative choices are even worse. However, while we do not find the differences between *again* and *continue* that such proposals predict, we did find that participants are more reluctant to accommodate *again* in comparison to *continue*.

To sum up the key empirical results for the present discussion, our data revealed that participants are somewhat less likely to accept a Target picture that is explicitly inconsistent with the presupposition of *again* compared to that of *continue*. Furthermore, a similar difference emerged in confidence ratings, where accommodation of the presupposition of *continue* in the Presupposition Open condition seemed to be associated with greater confidence, compared to that of *again*. In addition, previous studies showed that participants are less accurate in answering later questions about triggers like *again* (specifically the prefix *re-*; Domaneschi et al. 2014) and also that direct questions about the number of events (such as getting a pink lamp) commonly are answered without taking the presupposition of *again* about a previous event of the same kind into account (Tiemann 2014).

In contrast to accounts that assume (certain) presuppositions can be ignored, the two alternative approaches we discussed in section 2.3 are consistent with all of the data under consideration. One key difference they posit between *again* and *continue* is that the latter is easier to accommodate, either because of entailment of the presupposition for *continue* or because of the anaphoric nature of *again*. Both of these accounts predicted that *again* should be harder to accommodate than *continue* and that this difficulty in accommodation should be reflected in lower acceptance of the Target picture and lower confidence ratings for *again* in comparison to *continue* in the Presupposition Open condition. It's also natural that Presupposition Inconsistent would involve more time on this account, and that Presupposition Open yields smaller confidence ratings than True Control. While the details of these types of approaches need to be spelled out in future work, for present purposes we content ourselves in highlighting that there are plausible alternative proposals that can capture both the data from previous experiments (as discussed above) and the present results, including the evidence for some differences between the two types of triggers investigated. Crucially, they do not assume that presuppositions can generally be ignored when the context does not support them.

5 Conclusion

The main purpose of the present investigation has been to test whether presuppositions of triggers such as *again* and *continue* respectively differ in how they are considered in online processing, and to what extent their presupposed content can be put aside altogether in specific circumstances. Concretely, we aimed to test the predictions of recent accounts based on the idea that presuppositions of triggers like *again* can be ignored entirely, or alternatively that accommodation is avoided for them whenever possible. Our results are incompatible with these accounts, in that they provide clear evidence that the presuppositions of both *again* and *continue* are considered even in an experimental setting where they do not play any crucial role for the task at hand. They thus suggest that the presupposed content is fully considered for all triggers across contexts, and furthermore that accommodation even takes place when not strictly necessary. Finally, we find some interesting other differences between triggers, and we briefly considered two possible approaches that can account both for our and relevant previous results. The question of just what a full theoretical account of the distinctions between triggers should look like continues to be central in this area, and while we are in no position to fully resolve this, our data help to further refine just what the challenge of doing so consists of.

Additional File

The additional file for this article can be found as follows:

- **Figure 6.** Examples of filler & control items: Ethan came to town for the first time on Monday. On Thursday, he went to the bakery. DOI: <https://doi.org/10.5334/gjgl.402.s1>

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Competing Interests

The authors have no competing interests to declare.

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