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# Presupposition: accepted information or embraced beliefs? The role of informative function and trigger type in separating two levels of accommodation

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**Abstract:** How the speaker presents information linguistically may impact the recipient's epistemic vigilance. For instance, information communicated through a presupposition suggests it does not warrant thorough scrutiny. Traditionally, presuppositions arise from the use of various linguistic triggers, but it has been suggested that a focal status can suspend the triggering of the presupposition. Using a mistake recognition task, we investigate whether the information structure of the utterance (specifically, topic-focus articulation) and different triggers (definite descriptions vs temporal clauses) influence presuppositions' persuasive potential, both immediately and after one week. Our findings suggest that while a focal status of the presupposition does not seem to affect immediate mistake recognition rates, it shapes memorial representation, but only for one of the tested triggers (definite descriptions). Thus, this study provides further support that presupposition serves as a persuasive strategy; specifically, it indicates that for memory formation, this is

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influenced by the interplay between the information structure of the utterance and the type of trigger.

**Keywords:** belief acceptance; conversational cooperation; presupposition accommodation; presupposition triggers; topic-focus

## 1 Introduction

Information can be linguistically presented in different ways, and these variations have been observed to influence people’s critical scrutiny of incoming information, i.e., their “epistemic vigilance” (Sperber et al. 2010). For example, a specific piece of content can be framed as a presupposition, signalling that it does not require extensive scrutiny, or as an assertion, prompting a thorough evaluation of such information (Ducrot 1972; Givón 1982; Lombardi Vallauri 2019; Macagno 2023; Pietrandrea 2020; Reboul 2017; Sbisà 2007, 2023). This paper explores the persuasive influence of presupposition, taking into account for the first time the roles of informative function (i.e., topic-focus articulation) and trigger type. Initially, we define the notion of presupposition and describe how the informative function can impact its triggering. Subsequently, we review the empirical data exploring presupposition’s persuasive effects in concealing false information and in memory creation. Following this, we describe an experimental investigation we conducted to examine participants’ ability to recognise false information immediately and after one week, depending on the manner in which the false content was originally linguistically presented. Finally, we discuss the implications of our findings for presupposition theories.

### 1.1 Presupposition

Presuppositions can be defined as information that is taken for granted by the interlocutors for the purposes of the conversation (Stalnaker 2002). For example, in uttering (1a), the speaker presupposes, i.e., asks the receiver to take for granted, that John arrived home. The remaining part (*it started to rain*) is asserted. Likewise, in (1b), the speaker presupposes that she has a dog, while the fact that it was barking is asserted.

- (1) a. *When John arrived home* [Presupposition], *it started to rain* [Assertion].
- b. *My dog* [Presupposition] *was barking* [Assertion].

Importantly, although presupposition marks certain information as taken-for-granted, this does not imply that presupposed information should always be

mutually known by the interlocutors. For example, the sentence in (2) carries the presupposition that the speaker has a cat, and it is felicitous even if the addressee(s) does not know it.

- (2) A: *I'm sorry I'm late, I had to take my cat to the vet.*  
(Schwarz 2016: 87)

In technical terms, presupposing unshared information determines the presupposition “failure” and asks the addressee to “accommodate” the presupposition (Abbott 2016; Heim 1982; Karttunen 1974; Lewis 1979; Stalnaker 2002). Crucially, according to Stalnaker (2002), to accommodate a presupposition, it is sufficient that the addressee accepts the presupposed information as true for the purpose of conversation, not that they start to believe it. But, as observed for instance by Lombardi Vallauri (2016a) and Macagno (2023), and as we will further show, this acceptance can have an effect on the reshaping of the addressees’ beliefs.

Classically, presuppositions are deemed to arise because of the employment of certain lexical or syntactical items,<sup>1</sup> i.e., the presupposition *triggers*, such as definite descriptions (as in [1a] and [2]), temporal clauses (as in [1b]), factives (e.g., the verb *regret*), and additive particles. As the variety in this non-exhaustive list of triggers already shows, presupposition triggers constitute a heterogeneous class, and this has repercussions on processing (Domaneschi 2017; Schwarz 2016). For example, it has been theoretically proposed and experimentally corroborated that certain triggers, such as the factives, are more cognitively demanding to process than others (see, e.g., Domaneschi et al. 2014).

However, there are cases where, even if the trigger is present, the presupposition does not seem to hold. Already Strawson (1964) and Dahl (1974) noticed that only in (3a) the definite description “the king of France” presupposes the existence of the monarch. More specifically, the utterance in (3a) is considered infelicitous because it presupposes the existence of a current king of France, whereas (3b) is regarded as false since this existence is not presupposed (or at least not with the same strength). Nevertheless, similar to (3a), (3b) would also be infelicitous if no exhibition had taken place.

- (3) a. *The king of France is bald.*  
b. *The Exhibition was visited by the king of France.*

A possible reason for this could be the information structure of the two sentences. Indeed, linguistic theory claims that a focal status can “suspend” the triggering of a presupposition, inducing the interlocutors to interpret the content as asserted, and consequently refraining from assuming its truth as presupposed (see Abrusán [2016];

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<sup>1</sup> For those presuppositions that are not triggered by linguistic items, see Simons (2005).

Beaver [2010]; for a different approach to the phenomenon of presupposition suspension, see Abusch [2002]; Chemla [2010]; Romoli [2015]; Simons [2001]). Alongside having a syntactic and semantic structure, most utterances can be broken up into two units depending on the informative function its parts perform. Traditionally, the *topic* (or theme) corresponds to what is being talked about in an utterance, while the *focus* (or rheme) constitutes what is being said about it and is typically marked by prosodic prominence (Mathesius [1939]; on the prosodic marking of focus, see Gundel [1985]; Selkirk [1984]). For example, in (4), the prosodic prominence (indicated by capitals) marks Mary as the sentence focus, while the remaining part (somebody ate all the biscuits) constitutes the topic.

(4) *MARY*<sub>[Focus]</sub> *ate all the biscuits* <sub>[Topic]</sub>.

In the paradigmatic case, presuppositions are background information and do not constitute the main point of an utterance, which is, in contrast, usually conveyed by assertions (Abbott [2000]; Stalnaker [1974]; on fore-fronted presuppositions, Mazzarella and Domaneschi [2018]; Simons [2005]).<sup>2</sup> According to Abrusán (2016: 171), the focal status turns the information that would normally be presupposed into a “secondary main point” and, thus, suspends the presupposition (see also Beaver [2010]). Therefore, the suspension of the presupposition in (3b) is likely due to the fact that, unlike (3a), in this instance, the noun phrase “the king of France” is in focus.

In this respect, it is worth observing that the possibility to focalise presupposed information is one of the dimensions of variety between triggers. Only some triggers allow to focalise and, thus, convert into a secondary main point, the presupposition they carry (see Abrusán [2016]). Among these, there are definite descriptions and temporal clauses (5–6).

- (5) a. *The Club's President had dinner with JOHN.*  
 b. *The Club's PRESIDENT had dinner with John.*
- (6) a. *When she was in middle school, Mary met her HUSBAND.*  
 b. *Mary met her husband when she was in middle SCHOOL.*

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<sup>2</sup> For the sake of brevity, we will not delve into the distinction between the concept of “main point” and related notions such as “at-issue” content or “Question Under Discussion” (QUD) (Roberts 2012 [1996]; Simons et al. 2010). These terms are often employed in the literature in a somewhat circular fashion to define one another. For a more detailed exploration of the differences between these terms, see Breheny (2019). Here, by “main point,” we refer to more intuitive layperson’s understanding of the expression.

In (5a) and (6a), the presupposed information (i.e., the existence of a Club's President or the fact that Mary was in middle school), being topical, is entirely in the background. In contrast, in (5b) and (6b), the same information rises to the status of a main point.

## 1.2 The misleading power of presupposition

As mentioned in the previous section, it's not necessary for presuppositions to be shared information. In fact, speakers can presuppose even debatable information: for example, in (7), Donald Trump's famous slogan presupposes that America was great in the past, and that it is no longer great at present.

(7) *Make America great again.*

Reasonably, the choice of conveying such questionable information by means of presuppositions is not accidental. Framing certain information linguistically as a presupposition suggests that such content does not require thorough critical evaluation, effectively circumventing the receivers' epistemic vigilance. By transmitting information stealthily, presuppositions emerge as powerful argumentative and even manipulative devices (Ducrot 1972; Givón 1982; Lombardi Vallauri 2019; Macagno 2023; Pietrandrea 2020; Reboul 2017; Sbisà 2007, 2023; Strawson 1964). Experimental evidence supports this idea by demonstrating that people are less likely to notice a mistake when it is presupposed rather than asserted (Bredart and Modolo 1988; Erickson and Mattson 1981; Hornby 1974). Erickson and Mattson's (1981) Moses Illusion is arguably the most famous experiment of this type. In this study, participants were presented with a question triggering a false presupposition, such as the following:

(8) *How many animals of each type did Moses take on the Ark?*

Participants were asked to read the sentence loud before answering to prevent the possibility that they may not read the word encoding the mistake. After that, they were presented with question assessing their knowledge with respect to the false information (e.g., Who was it that took the animals on the Ark?) to rule out the possibility that the non-recognition of the mistake depended on a lack of knowledge. Results indicated that, even if they knew the correct answer, people tended not to notice the mistake. For example, they more frequently responded "Two" to (8), without noticing that Moses had been mentioned instead of Noah as the patriarch who built the Ark. However, this study did not compare the mistake recognition rates between presupposing and asserting false information, thus not directly contrasting the two different types of encoding.

Building upon Erickson and Mattson's experiment, Bredart and Modolo (1988) compared people's responses to cleft sentences, such as (9). Their results revealed that subjects were more likely to notice a mistake in the case of (9a) than (9b).

- (9) a. *It was Moses who took two animals of each kind on the Ark.*  
 b. *It was two animals of each kind that Moses took on the Ark.*

Nevertheless, the status of clefts, such as the one used in (9a), has given rise to a debate. While some authors consider them presupposition triggers (see, for example, Delin and Oberlander [1995]; Prince [1986]), others rather see them as syntactic markers of the topic-focus structure (Cresti 1992). Advocates of the second perspective emphasise the distinction between presupposition and topic in terms of their prominence in the consciousness at the time of an utterance. While presuppositions represent information that is stored in the body of knowledge an individual possesses, topics are what the interlocutors are actively thinking about at that moment (see Chafe [1994]; Lombardi Vallauri [2009, 2016b, 2022]). For instance, an utterance like the one in (10) appears infelicitous unless it is situated within (or treated as though it is situated within) a context where the information "somebody travelled to Paris" is something the interlocutors are presently thinking of. Conversely, the same limitation does not seem to hold for the definite description "Mary." In that case, the addressees have to take for granted that Mary exists, but there is no necessity for that piece of information to be prominent in their consciousness at utterance time.

- (10) *It is Mary that travelled to Paris.*

Hornby (1974) also used cleft or pseudo-cleft sentences to compare participants' ability to detect false information without relying on their background knowledge. In a picture-selection task, participants were first presented with a cleft or pseudo-cleft sentence like "It is the girl that is riding the bicycle" and then either with a congruent picture (depicting a girl riding a bicycle), or an assertion-incongruent picture (depicting a boy riding a bicycle), or a presupposition-incongruent picture (depicting a girl riding a scooter). Results showed that when the incongruency was in the subordinate clause, participants were less likely to detect it. Thus, both Bredart and Modolo (1988) and Hornby (1974) did not, in fact, contrast mistake or incongruency recognition rates across presupposition and assertion but across different topic-focus articulations. Overall, what these two studies suggest is that topical mistakes or incongruencies are less easily spotted than focal ones.

Another important theme that emerged from experimental findings is that presupposition's "epistemic effects" (Müller 2024) might extend beyond merely the provisional acceptance of information for the ongoing communicative interaction. In an experiment described by Loftus (1975), participants were asked to watch a short

video and then answer questions about it. The target questions encoded the idea that something was present in the video (e.g., a school bus) which was in reality not in it. Half of the questions presupposed that idea (Did you see the children getting on the school bus?), and half of them asserted it (Did you see a school bus in the film?). One week later, without the possibility of watching the video again, all the participants were presented with the assertive version of the questions. Results indicate that a week later, the participants who had been exposed to the wrong presuppositions gave wrong answers to a greater extent than those exposed to wrong assertions. Thus, (definite description) presuppositions were more effective than assertions in shaping people's memorial representations of events. Besides providing insights into presupposition's manipulative power, such a result has repercussions on our understanding of the phenomenon of presupposition accommodation: it suggests that when accommodating definite description presuppositions, addressees not only accept the presupposed information as true for the purpose of the conversation, but also more strongly tend to start to believe it as true. However, the two versions of Loftus' questions are not exactly equivalent. While the presupposing question seeks information about the children, the assertive counterpart requests information on the bus. The mistake concerning the existence of a bus in the video is likely to be more easily detected when the question specifically concerns the bus (such as in the assertive version of the question) rather than when it focuses on the action performed by the children (such as in the presupposing version). Thus, recognising the mistake in the presupposition condition is likely to be more difficult independently from presupposition *per se*. Additionally, the observed asymmetry might stem from the differing question types to which the two groups were exposed: one group consistently received the same set of questions (the "assertive" questions), while the other group was initially presented with questions containing presuppositions, followed by a different set of questions (i.e., the assertive questions).

### 1.3 The present study

Although we already have considerable insights into the relationship between presupposition and epistemic vigilance, many questions remain unanswered.

First, if a focal status can turn the presupposed information into a secondary main point (Abrusán 2016), this could lower the capacity of presupposition to convey debatable notions under the critical 'radar' of the addressees. Furthermore, as previously discussed, experimental studies have provided evidence supporting the influence of topic-focus articulation on mistake recognition rates (Bredart and Modolo 1988; Hornby 1974). However, there has been no investigation into the effect of topic-focus articulation on the ability of presuppositions to transmit questionable

or even false content. Examining this aspect would also broaden our knowledge about the phenomenon of presupposition accommodation. Specifically, it would provide data on whether the utterance information structure is a factor impacting presupposition accommodation.

Second, based on the available literature, it is impossible to say whether the ‘memory shaping effect’ of presupposition found by Loftus (1975) is characteristic only of definite descriptions or is a property shared by the entire category of presupposition. Moreover, as mentioned, the stimuli used by Loftus are problematic, thus further investigation is needed. Again, inquiring about this topic can have important theoretical repercussions: it would provide insights on whether accommodating presupposition means accepting information *as if* it were true for the purpose of the conversation or whether it also influences one’s longer term beliefs, integrating that information into their body of knowledge in a way that persists even after the communicative interchange has concluded.

Finally, the effects of different presupposition triggers on epistemic vigilance – both in information acceptance and in the shaping of memories – are still unaddressed. Experimental literature indicates that trigger heterogeneity is reflected in processing (Domaneschi 2017; Schwarz 2016). Is this true also for the modulation of epistemic vigilance? Are some presupposition triggers more misleading than others?

This study’s main goal is to fill these gaps. To this end, building on Loftus (1975), we tested a group of Italian-speaking adults presenting them with a short video and then with a list of pre-recorded sentences that, in the target condition, convey a misrepresentation of the video. These target sentences were manipulated so that the same misrepresentation was encoded through (1) a topical presupposition, (2) a focal presupposition, or (3) an assertion. The sentence focus was indicated by prosody (see Gundel [1985]; Selkirk [1984]). Participants’ task was to say if the sentences were true, false, or they did not know. After one week, participants were tested again in the same modality but without watching the video again. Like in Loftus (1975), this time, the target sentences contained only assertions, which encoded the same misrepresentations as in the previous test session. Differently from Loftus (1975), we also gave participants the possibility to answer with ‘I don’t know’ because we wanted to provide them with an ‘escape route’ so that they would pick the true or false option only if they were sure that the sentence was congruent or incongruent with the video.

Two presupposition triggers were used: definite descriptions and temporal clauses. These triggers were selected because they syntactically allowed us to put presuppositions in the forefront by means of focusing constructions (see Section 1.1).



### 1.3.1 Predictions

Based on previous findings, we predicted that presupposition should have a misleading effect on people's answers, lowering the number of correct responses in both test sessions. Specifically, this effect should manifest in immediate responses with lower accuracy associated with presupposition-sentences (i.e., sentences containing a wrong presupposition) as compared to assertion-sentences (i.e., sentences containing a wrong assertion). A week later, this should be seen in lower accuracy in correspondence to those sentences that were presupposition-sentences during the first session.

Crucially, the response pattern could also be influenced by the focal or topical status of presupposition. Considering that focus can turn the presupposed information into a main point (Abrusán 2016), we expected the focus to have an enhancing effect on accuracy in both sessions. Again, in the second session, this would be seen in greater accuracy in correspondence to those sentences that were focal-presupposition-sentences during the first session compared to those that were topical-presupposition-sentences.

We did not have any a priori directional prediction regarding the effect of the trigger type, as this aspect of the study was intended to be more exploratory in nature.

## 2 Methods

### 2.1 Participants

Ninety Italian native speakers (female = 60,  $M_{\text{age}} = 28.6$  y/o, age range = 25–31 y/o) participated in the study. They were Master's students and PhD students with no background in Linguistics, coming from four different Italian Universities, who volunteered to participate. Four participants were excluded because they did not participate in the second session of the experiment or because they had already seen the video (accessible on YouTube). So, the data from 86 participants (female = 57,  $M_{\text{age}} = 29.6$  y/o) were analysed.

The experimental protocol was approved by the Ethical Committee of the University of Roma Tre, and informed consent was obtained from all participants. Participants received no remuneration for their time.

## 2.2 Materials

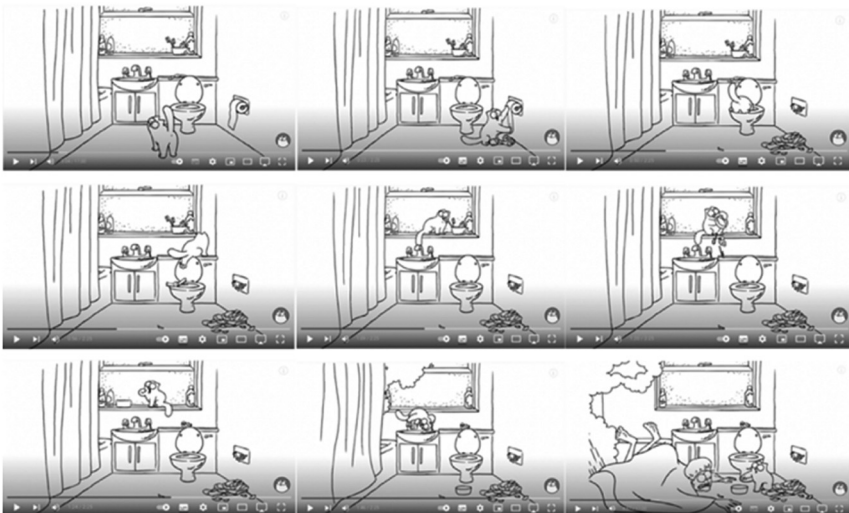
### 2.2.1 Video

The video is *Hot water* (duration: 02'25"), from *A Day in the Life of a Cat Owner* found in the *Simon's Cat* series. The video is on YouTube at the following link: <https://www.youtube.com/watch?app=desktop&v=fcjR93jin4Y&amp%3Bt=291s>.

The video has no dialogue and shows a cat entering the bathroom while its owner is having a shower. After unrolling the toilet paper, the cat drinks from the toilet. With its paw, it drops a watch into the toilet and flushes it. Next, the cat eats some toothbrushes, but, from its expression, it is clear it does not like them. Then, the cat makes the toothbrushes fall out of the bowl where they were, to use it as a cat bowl. While all this is happening, the owner continues having his shower without noticing anything. Afterwards, the cat turns on the sink tap to drink some water, and, consequently, some steam comes out of the shower. The cat realises that turning on the tap changes the water temperature in the shower, making it hot. So, it turns on the tap again, and its owner falls from the shower (as he reasonably attempts to avoid the hot water). In the last scene, the cat points to the bowl while the owner is on the ground. A selection of stills from the main events of the video is provided below (Figure 1).

### 2.2.2 Audio stimuli

Stimuli were composed of pre-recorded Italian sentences. All the sentences were uttered by a female native speaker of Italian with high competence in the relationship between prosody and topic-focus structure. Audio stimuli were



**Figure 1:** Selection of captures of the main events in the video.

preferred over possible written ones because prosody in audio allows for a more secure transmission of the topic/focus distribution.

### Week 1

On Week 1, target stimuli consisted of 6 triplets of sentences. For each triplet, one sentence conveyed a misrepresentation of the video through a topical presupposition (condition “topical presupposition”), one sentence conveyed the same misrepresentation through a focal presupposition (condition “focal presupposition”), and one sentence conveyed the same misrepresentation through an assertion (condition “assertion”) (see Table 1).

Half of the presuppositions were triggered by definite descriptions and half by temporal clauses. For the definite description presuppositions, the assertive counterparts were obtained by rephrasing them as indefinite phrases contained in presentative constructions (for ex., *Il gatto* “The cat” vs *C’era un gatto* “There was a cat”) or in possessive constructions (for ex., *Il collare del gatto* “the cat’s collar” vs *Il gatto ha un collare* “the cat has a collar”).<sup>3</sup> On the other hand, assertive versions of temporal clauses were created by turning them into main clauses (for ex. *Quando il gatto si gratta il musetto* “When the cat scratches its nose” vs *Il gatto si gratta il musetto* “The cat scratches its nose”).

A first block of filler stimuli consisted of 8 triplets of sentences that mimicked the target stimuli with the exception that this time no misrepresentation was present (see Table 1). Namely, for each triplet, one sentence conveyed certain content through a topical presupposition, one conveyed the same content through a focal presupposition, and one conveyed the same content through an assertion. As in the target stimuli, half of the presuppositions were triggered by definite descriptions and half by temporal clauses. The assertive counterparts were created following the same criteria as for the target stimuli. A second block of filler stimuli consisted of 4 sentences (2 misrepresenting the video, 2 without any misrepresentation) that did not mimic the target stimuli (see Table 2). Two familiarisation sentences (1 misrepresenting the video, 1 without any misrepresentation) were also created, with the aim to make participants familiarise with the task (see Table 2).

### Week 2

On Week 2, the targets ( $N = 6$  sentences) contained the same misrepresentations as in Week 1, but they were all in the assertion condition, i.e., contained the assertive

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<sup>3</sup> Since also indefinite descriptions can presuppose information under certain circumstances (Lombardi Vallauri et al. 2021), a presentative construction was preferred to the bare indefinite to make the stimulus more assertive.

**Table 1:** Examples of *Targets and First Block Fillers*. The presuppositional or assertive encoding is typed in bold. Capital letters indicate the main stress/focus. English translation is provided in brackets.

Sentence type	Trigger	Week 1		Week 2	Video
		Topical presupposition	Focal presupposition	Assertion	Assertion
Target	Definite description	<b>I pettini</b> non sono piaciuti al GATTO. (The CAT did not like <b>the combs</b> .)	Al gatto non sono piaciuti i <b>PETTINI</b> . (The cat did not like <b>the COMBS</b> .)	C'erano <b>dei PETTINI</b> , e non sono piaciuti al GATTO. (There were <b>COMBS</b> , and the cat didn't like <b>THEM</b> .)	C'erano <b>dei PETTINI</b> . (There were <b>COMBS</b> .) were present.
	Temporal clause	<b>Quando il gatto si gratta il musetto</b> , il padrone sta cantando sotto la doccia <b>quando il gatto si gratta il musetto</b> . ( <b>When the cat scratches its nose</b> , the master is singing in the shower <b>when the cat scratches its NOSE</b> .)	Il padrone sta cantando sotto la doccia <b>quando il gatto si gratta il musetto</b> . (The master is singing in the shower <b>when the cat scratches its NOSE</b> .)	<b>Il gatto si gratta il musetto</b> , e il padrone sta cantando sotto la DOCCIA. ( <b>The cat scratches its NOSE</b> , and the master is singing in the SHOWER.)	A un certo punto <b>il gatto si gratta il musetto</b> . (At some point <b>the cat scratches its NOSE</b> .) The cat did not scratch its nose.
First block filler (mimicking the targets)	Definite description	<b>La finestra</b> era sopra il LAVANDINO. ( <b>The window</b> was above the SINK.)	Sopra il lavandino c'era <b>la finestra</b> . (Above the sink was <b>the window</b> .)	C'era <b>una FINESTRA</b> , ed era sopra il LAVANDINO. ( <b>There was a WINDOW</b> , and it was above the SINK.)	There was a window above the sink. The cat flushed the toilet.
	Temporal clause	<b>Quando il gatto ha tirato lo sciacquone</b> , il padrone non si è accorto di <b>NULLA</b> . ( <b>When the cat flushed the toilet</b> , the master didn't notice <b>ANYTHING</b> .)	Il padrone non si è accorto di <b>NULLA</b> <b>quando il gatto ha tirato lo sciacquone</b> . (The master didn't notice anything <b>when the cat flushed the TOILET</b> .)	A un certo punto <b>il gatto ha tirato lo sciacquone</b> . (At some point <b>the cat flushed the TOILET</b> .)	The cat flushed the toilet.

**Table 2:** *Examples of Fillers from the Second Block and Familiarisation Sentences.* English translation is provided in brackets.

Type of sentence	Example	Video
Second block filler	Nel cartone, c'era un gatto che aveva due grossi occhi tondi. (In the cartoon, there was a cat with two big round eyes.)	In the cartoon, there was a cat with two big round eyes.
Familiarisation sentence	C'era un cane. (There was a dog.)	No dog was present.

counterparts of definite description-presuppositions (3 sentences) and temporal clause-presuppositions (3 sentences) (see Table 1). The first-block fillers ( $N = 8$  sentences), too, were all in the assertion condition and encoded the same correct information that in Week 1 was either asserted or presupposed (see Table 1). To make the sentences more natural, some target sentences and the first block fillers slightly differed from the Week 1 assertion condition sentences (see Table 1). For example, Week 2 sentences could start with *a un certo punto* (eng. at some point). However, what can be called the ‘region of interest’ (that is, the assertive encoding of certain information) was precisely the same in Week 1 and Week 2 assertion condition sentences.

The second-block fillers ( $N = 4$  sentences) and the two familiarisation sentences were identical to Week 1 (see Table 2).

### Measures on materials

Stimuli complexity was measured through a Gulpease calculation (Piemontese 1996). Results were analysed with a linear model, with Condition (Topical presupposition, Focal presupposition, Assertion) and Trigger (Definite description, Temporal clause) as predictors and interaction included. The analysis was carried out using R software (version 4.2.1) and the package *lme4*. No significance was found. This indicates that the stimuli are comparable in complexity in the different conditions and the two trigger types.

### 2.2.3 Answer sheet

Google Forms was used to collect participants’ responses. For each sentence, the three possible answers (*vero/true*, *non so/I don’t know*, *falso/false*) were written and presented as icons in the input field (Figure 2). The sentences were not transcribed on the form; only numbers referring to the order by which the sentences were played were present.



**Figure 2:** Icons (vero/true, non so/I don't know, falso/false).

## 2.3 Procedure

The experiment was carried out through Google Meet to allow the experimenter to have contact with the participants.<sup>4</sup>

The experimental procedure was the following: on Week 1, participants watched the video and then listened to 20 sentences about it. For each sentence, they had to select between three options on the screen to indicate whether the sentence was 'true', 'false', or they 'didn't know.' After the test, participants were asked if they had previously seen the video, and their answers were excluded if they had. A week later (Week 2), participants were once again asked in the same modality to indicate whether 20 sentences were 'true', 'false', or they 'didn't know' without having the possibility of rewatching the video. Again, the sentences were auditorily presented.

Participants had no time pressure while answering, because, in both test sessions, the following sentence was played when all participants had finished answering the former. Participants were tested from their homes. They were divided into different sessions according to their preference on when to take the test.

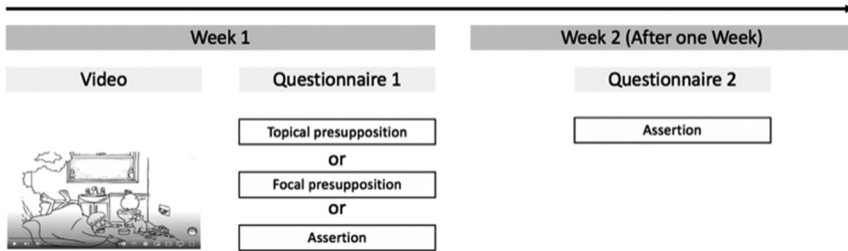
### 2.3.1 Presentation of the stimuli

In Week 1, the target stimuli and the first block of fillers were organised in three lists according to a Latin Square design, so that each participant was presented with each sentence in only one condition. Each list also included the second block of filler stimuli and the two familiarisation sentences. So, each list was composed of 20 sentences: 2 familiarisation sentences, 6 targets (1 definite description topical presupposition, 1 definite description focal presupposition, 1 definite description assertive counterpart, 1 temporal clause topical presupposition, 1 temporal clause focal presupposition, 1 temporal clause assertive counterpart), and 12 fillers. For each list, the order of the sentences was pseudo-randomised, and the familiarisation sentences were always played first. There were two pseudo-randomisations per list.

On Week 2, all the participants were presented with a list of 20 sentences, containing the familiarisation sentences ( $N = 2$ ), the target sentences ( $N = 6$ ), the first block of filler sentences ( $N = 8$ ), and the second block of filler sentences ( $N = 4$ ). Again,

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<sup>4</sup> The experiment was carried out during COVID lockdown, it was therefore necessary to run it online.



**Figure 3:** The pipeline of the Experiment.

the order of the sentences was pseudo-randomised, with familiarisation sentences always played first, and two different pseudo-randomisations were created (Figure 3).

## 2.4 Analysis

Accuracy in mistake recognition was coded 1 for correct responses, 0 for don't know responses and  $-1$  for incorrect responses, and it was analysed using linear mixed models statistics. The random structure included random intercepts for subjects and items. The fixed effects structure of the model included Condition (topical presupposition, focal presupposition, assertion), Trigger (definite description, temporal clause), and the resulting interaction.<sup>5</sup> All statistical analyses were carried out using R software (version 4.2.1). R Packages Matrix and lme4 were used.

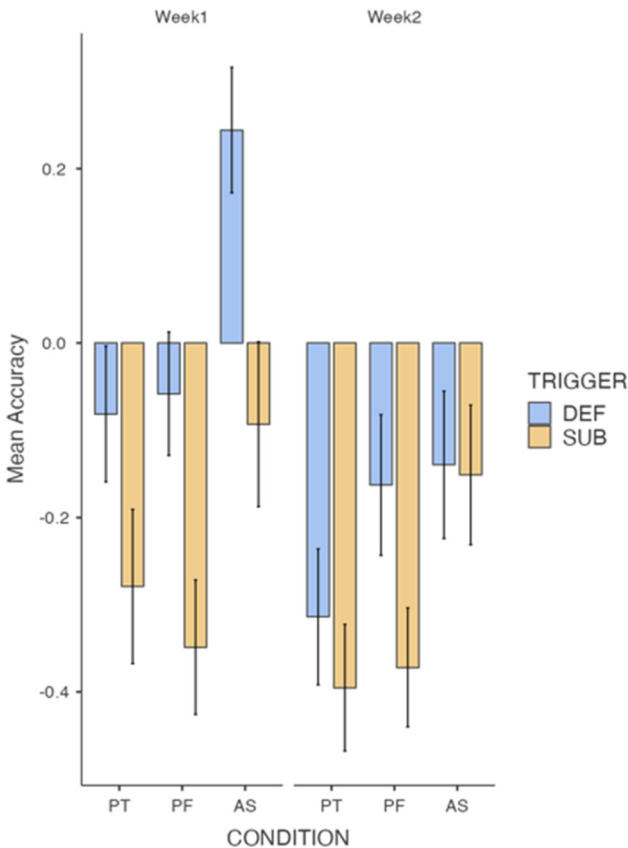
## 3 Results

Figure 4 reports the mean values of participants' responses in each condition (presupposition in topic, abbreviated as PT/ presupposition in focus, PF / assertion, AS) and in each trigger type (definite description, DEF / temporal clause, SUB). Please remember that, in Week 2, all the targets encoded the misrepresentation through an assertion. So, PT (topical presupposition), PF (focal presupposition), and AS (assertion) refer back to how the misrepresentations were conveyed in Week 1.

For Week 1, in the DEF subset, people were significantly less accurate in PT condition than in AS condition (*estimate* =  $-0.3253$ , *Std. Error* =  $0.1121$ , *df* =  $506.0247$ ,

<sup>5</sup> Formula:  $\text{ACCURACY} \sim \text{CONDITION} * \text{TRIGGER} + (1 | \text{SUBJ}) + (1 | \text{ITEM})$ . The null variance in the random intercept for subjects in Week 1 data necessitated simplifying the structure of the model for that dataset, considering only random intercept for items.

$t$  value =  $-2.903$ ,  $p = 0.00386$ ) and in PF condition than in AS condition ( $estimate = -0.3050$ ,  $Std. Error = 0.1121$ ,  $df = 506.0247$ ,  $t$  value =  $-2.722$ ,  $p = 0.00671$ ). Importantly, we can see that the coefficients for PT and PF are highly similar in value and the standard errors are equal, which reveals that they have similar effect sizes. In other words, taking assertion as the baseline level, the model predicts that a similar negative adjustment in estimated accuracy should be made for both kinds of presupposition, suggesting that topical and focal presupposition, when compared to assertion, have a similar lowering effect on accuracy. Moreover, the model revealed a trend for the comparison AS DEF versus AS SUB, with people being less accurate with AS SUB ( $estimate = -0.3372$ ,  $Std. Error = 0.1775$ ,  $df = 7.4128$ ,  $t$  value =  $-1.900$ ,  $p = 0.09680$ ). Neither an enhancing nor lowering effect was found to be added by



**Figure 4:** Accuracy in mistake recognition as a function of condition (PT, PF, AS) and trigger (DEF, SUB) in Weeks 1 and 2.



the interaction between condition and trigger (for ConPF:TrSUB, *estimate* = 0.0463, *Std. Error* = 0.1585, *df* = 506.0247, *t value* = 0.292, *p* = 0.77030; for ConPT:TrSUB, *estimate* = 0.1399, *Std. Error* = 0.1585, *df* = 506.0247, *t value* = 0.883, *p* = 0.37782). This indicates that once we account for the considerable difference in accuracy between the assertive versions of definite descriptions and temporal clauses, the adjustment required to estimate the accuracy linked with temporal clause-triggered presuppositions in comparison to those induced by definite descriptions is minimal. In other words, these data suggest that (a) compared to assertion, topical and focal presuppositions have a similar decreasing effect on accuracy, and (b) definite descriptions and subordinate clauses exhibit differing accuracy rates in both their presuppositional forms and their assertive counterparts.

A second model with the same structure was used to analyse Week 2 results.<sup>6</sup> In the DEF subset, a trend was found in the comparison between PT and AS, with people being less accurate in the presence of the presupposition (*estimate* = -0.17534, *Std. Error* = 0.10410, *df* = 421.01885, *t value* = -1.684, *p* = 0.0928). In contrast, no significance nor trend was found comparing PF and AS (*estimate* = -0.02191, *Std. Error* = 0.10410, *df* = 421.01885, *t value* = -0.210, *p* = 0.8334). No statistical significance was also found comparing PT and PF (*estimate* = 0.1534, *Std. Error* = 0.104, *df* = 421, *t value* = 1.474, *p* = 0.3045), although the average accuracy rates with PT and PF are quite different ( $M_{PT} = -0.31$ ,  $M_{PF} = -0.16$ ). One possibility is that the variability in the data, as indicated by the error bars in the graph, may have obscured the distinction between the two conditions. Increasing the sample size is expected to reduce this variability, potentially yielding clearer and more conclusive results. No significance was also found in the comparison between AS DEF and AS SUB (*estimate* = -0.01380, *Std. Error* = 0.17017, *df* = 7.09339, *t value* = -0.081, *p* = 0.9376). Thus, contrary to Week 1, providing accurate true-or-false judgments for assertions on simple entities does not seem easier than for assertions on complex events in Week 2. As for the interplay between condition and trigger, the coefficient for the interaction CONPT:TRSUB is small in value (*estimate* = -0.06448, *Std. Error* = 0.14721, *df* = 421.01885, *t value* = -0.438, *p* = 0.6616). Conversely, the coefficient for the interaction CONPF:TRSUB is notably high in absolute value if compared with the other ones provided by the model (*estimate* = -0.19646, *Std. Error* = 0.14721, *df* = 421.01885, *t value* = -1.334, *p* = 0.1828). Thus, to estimate accuracy when transitioning from PF in the DEF subset to PF in the SUB subset, one has to account for the difference in accuracy between the assertive counterparts of definite descriptions and temporal clauses, which is minimal, and then apply a substantial adjustment with a negative

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<sup>6</sup> Please remember that, in Week 2, all the targets encoded the misrepresentation through an assertion. So, PT (topical presupposition), PF (focal presupposition), and AS (assertion) refer back to how the misrepresentations were conveyed in Week 1.

value. This means that there is a strengthening of the misleading effect of focal presupposition in the SUB subset compared to the DEF subset. Indeed, if we take SUB as the reference value, and consider the SUB subset, we see that people were significantly less accurate in PT condition than in AS condition (*estimate* =  $-0.23982$ , *Std. Error* =  $0.10410$ , *df* =  $421.01885$ , *t value* =  $-2.304$ ,  $p = 0.0217$ ) and also in PF condition than in AS condition (*estimate* =  $-0.21836$ , *Std. Error* =  $0.10410$ , *df* =  $421.01885$ , *t value* =  $-2.098$ ,  $p = 0.0365$ ). It is worth noting that the coefficients for temporal clause presuppositions in topic and in focus are highly similar in value and the standard errors are identical, which implies that also the corresponding effect sizes are similar.

We also contrasted the accuracy associated with asserted mistakes in Week 1 with the accuracy in Week 2 corresponding to the items that were asserted mistakes one week earlier (i.e., AS in Week 1 and 2). Our analysis revealed a main effect of Week ( $p < 0.001$ ) and an interaction effect between Week and Trigger ( $p = 0.03$ ) (where “Trigger” here refers to the assertive versions at stake since no presupposition trigger was present). More specifically, accuracy decreases from Week 1 to Week 2, but only for the assertive versions of definite descriptions (for definite description assertive versions, *estimate* =  $0.3870$ , *Std. Error* =  $0.107$ , *df* =  $254$ ,  $p < 0.001$ ; for temporal clause assertive versions, *estimate* =  $0.0614$ , *Std. Error* =  $0.107$ , *df* =  $254$ ,  $p = 0.57$ ).

Overall, the results for Week 2 point to different effects of Condition depending on the presupposition trigger type of Week 1. Specifically, having been exposed (one week before) to topical or focal presuppositions has different decreasing effects on accuracy (one week later) when the presupposition was triggered by a definite description or a temporal clause. When the presupposition was triggered by a definite description, a significant accuracy lowering effect on Week 2 responses appears to be present only if the presupposition was topical in Week 1, while the accuracy lowering effect is observed for presuppositions of both topical and focal subordinate clauses.

## 4 Discussion

This study investigated the impact of presupposition on epistemic vigilance, considering both the trigger type and the topical or focal status of presupposition. Specifically, using two different trigger types (definite descriptions and temporal subordinate clauses), we tested people’s accuracy in misrepresentation recognition between different informational conditions (i.e., topical presupposition, focal presupposition, and assertion) twice: first, immediately (Week 1) and then after one week (Week 2).

Overall, these results confirm that informational conditions such as presupposing and asserting impact epistemic vigilance both in immediate mistake recognition rates and in memory creation. Four main patterns of results emerged. First, when immediate judgments are solicited (Week 1), presupposition proves more effective than assertion in diverting attention from a misrepresentation, irrespective of its topical or focal status. Second, always in immediate judgements (Week 1), truth assessments are more difficult on temporal clauses and their assertive counterparts than on definite descriptions and their corresponding assertions. Third, this difference seems to diminish when memory representations are concerned (Week 2). Fourth, information structure (i.e., topic-focus articulation) has different impacts on the creation of memorial representations in Week 2 depending on the presupposition trigger: with definite descriptions, only topical presuppositions are more misleading than assertions, while with subordinate clauses both topical and focal presuppositions are more misleading than assertions. We elaborate on these points in turn below.

### 1. Topic-focus status does not affect immediate information acceptance

In Week 1, people noticed misrepresentations to a significantly greater extent when they were asserted rather than presupposed. In contrast, the topical versus focal status of presupposition was not found to affect misrepresentation recognition rates. This aligns with theoretical literature acknowledging the distracting influence of presupposition in general, and with previous empirical findings indicating that wrong information is less easily noticeable when presupposed (Ducrot 1972; Erickson and Mattson 1981; Givón 1982; Loftus 1975; Lombardi Vallauri 2019; Macagno 2023; Pietrandrea 2020; Reboul 2017; Sbisà 2007, 2023; Schwarz 2015; see Section 1 above). However, it adds to the existing literature that the impact of informative status (i.e., topical vs focal) on the working of presuppositions (Dahl 1974; Lombardi Vallauri 2009; Strawson 1964) may not always be decisive. All in all, our data seem to indicate that in the immediate, the turning of the presupposed information into a “secondary main point” (Abrusán 2016) does not significantly raise people’s vigilance towards that piece of information. In other words, people tend to accommodate presupposed information quite independently from the information structure of the utterance.

It is also to underline that the misleading effect of presupposition was found even if the participants had the possibility of answering with “I don’t know”, indicating the robustness of the misrepresentation-concealing effect of presupposition.

### 2-3. When immediate judgments are solicited, complex events are more difficult to judge as compared to bare entities

Results indicate that in Week 1, definite descriptions and subordinate clauses display differing accuracy rates in both their presuppositive and assertive forms, with errors in subordinate clauses and their assertive counterparts proving more challenging to detect. A possible explanation for this pattern lies in the differing levels of complexity inherent in the information these linguistic structures encode. Evaluating subordinate clauses or their assertive versions requires making judgments about complex events, whereas assessing definite descriptions or their assertive versions involves judgments about the existence of entities in context. It is likely that making judgments about complex events is *in general* more difficult than making judgments of existence. Indeed, a difference in accuracy was also found for the assertive counterparts of presuppositions, i.e., for sentences where no presupposition was present.

Conversely, in Week 2, judging the truth or falseness of a sentence based on our memory of a complex event does not seem to be more difficult *per se* than judging the truth or falseness of a sentence based on what we recall about an entity. Also, the accuracy for the assertive versions of the stimuli decreases from Week 1 to Week 2, but only for the assertive versions of definite descriptions. Tentatively, both patterns could be put down to the fact that our cognitive system compresses representations when stocking data (Christiansen and Chater 2016). This compression likely reduces the distinction between recalling information about entities and events, contributing to the reduced differences between definite descriptions and their assertive counterparts, on one hand, and subordinate clauses and their assertive counterparts, on the other. Regarding the decreased accuracy for assertive versions of definite descriptions, asserted information in Week 1 likely benefited from its explicitness and semantic simplicity, making it easier to process and evaluate at the time of exposure. In contrast, presupposed information, being embedded within the structure of the statement and taken for granted, required greater inferential effort, likely making it less readily critically evaluable in Week 1. By Week 2, the task shifted to recalling and evaluating previously encoded information. Given the inherently imprecise nature of memory retrieval, distinctions between the explicitness of asserted information and the implicitness of presupposed information may have blurred. This “levelling effect” could have diminished the sharp distinction between the two types of information over time.

4. The belief-shaping power of presupposition appears affected by the interplay between trigger type and information status

In line with Loftus (1975), Week 2 results indicate that presuppositions have a greater effectiveness than assertions in the forming of wrong memorial representations. However, this time, both the focal versus topical status of presupposition and the trigger type play an important role. The fact that the

two presupposition triggers are associated with different response patterns in Week 2 indicates that the heterogeneity between triggers also reverberates on the presupposition's capacity to affect memory formation. Specifically, presuppositions presented in Week 1 with a temporal clause, no matter if topical or focal, have (as compared to assertions) a significantly stronger misleading effect on people's answers in Week 2. Thus, with temporal clauses, the presupposition versus assertion opposition seems to be the decisive condition that determines the formation of long-term memories. Conversely, definite description focal presupposition appears to leave traces in memory more similar to its assertive counterpart than to topical presupposition after one week. It is worth noting once more that this effect of presupposition on memory formation was found even if the participants had the option of answering with "I don't know", highlighting the robustness of the phenomenon.

We would like to explore a possible, though speculative, interpretation of the described pattern. Summarising, at the moment of their first presentation, presuppositions triggered by both definite descriptions and temporal clauses align together in being significantly more misleading than assertions, irrespective from their being topical or focal presuppositions. But one week later, a *split* has occurred in the mnemonic traces left by the same presuppositions: temporal clause presuppositions prove still more misleading than assertions both if they had been presented one week before in the topical or in the focal status, but definite description presuppositions keep their full misleading effect only if they had been presented as topical presuppositions, while focal ones rather align with the lower misleading effect of assertions. This split may reveal that presupposition accommodation is not a single, uniform process, but rather a dual mechanism, consisting in (1) a provisional *pragmatic acceptance* for the purposes of the ongoing communicative interaction, and (2) a *cognitive acceptance* for the purposes of one's belief updating.

Actually, these two possibly different processes have already been described separately as two possibly different *causes* leading to accommodation, i.e. to the acceptance of a presupposed content even if it is questionable. In our introduction above, we have recalled some literature<sup>7</sup> suggesting that framing a specific piece of content as a presupposition often signals that it does not require extensive scrutiny, possibly causing a cognitive bias, namely, lesser attention on its being questionable or false. On the other hand, it has been suggested several times in the literature that

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7 As already hinted at, arguments in favor of this assumption are both pragmatic/textual in nature (cf. e.g. Ducrot [1972]; Givón [1982]; Lombardi Vallauri [2016a], [2019]; Macagno [2023]; Pietrandrea [2020]; Reboul [2017]; Sbisà [2007], [2023]) and experimental (cf. e.g. Loftus [1975]; Erickson and Mattson [1981]; Schwarz [2015]).

there is another reason why accommodation happens, driven more by pragmatic cooperation than by a cognitive bias.<sup>8</sup> As Ducrot (1972: 91) puts it, presuppositions “set the price” for the conversation to continue. This is further clarified by Sbisà (2007), who says that refusing to accommodate a presupposition means delegitimising and, thus, marginalising from the conversation, the speaker who produced it. Consequently, addressees tend to accept presuppositions to maintain the communicative relationship. Macagno (2015) further observes that challenging a presupposition also comes with the price of being recognised as naive and unprepared. Finally, commenting on a possible joint effect of pragmatic cooperativity and cognitive bias for the persuasive impact of presuppositions, Lombardi Vallauri (2024) builds on the fact that, for the reasons just recalled, objecting to a presupposition is undesirable, and the behaviour we are by far most used to is to accommodate presuppositions, i.e., to treat them as if their content is true. When presuppositions appear, we prepare for accepting them without evaluating them in depth. Of course we could still cognitively evaluate and reject the content of a presupposition without telling the interlocutor. However, since we avoid to challenge presuppositions explicitly, questioning them interiorly is typically of too little use for the effort to be worth it. As a consequence, language users mostly do not challenge presuppositions at all, neither interiorly nor explicitly.

Now, if these two different biases both distinguish presuppositions from assertions, and if they result in two different processing mechanisms constituting what is usually just called “accommodation”, it is no wonder that under specific circumstances they can occasionally split. This may be what we observed in our data. In the case of definite descriptions, their being focused may not prevent the provisional pragmatic acceptance of the presupposed content for the purposes of the ongoing exchange, but it may selectively be able to prevent their referent from becoming permanently ingrained in the addressee’s set of beliefs, resulting in the observed difference between topical and focal definite description presupposition in Week 2. In contrast, when temporal clauses are concerned, focus status seems incapable of selectively hindering the belief-shaping effect of the presupposition: both with topical and focal presuppositions, the two accommodation processes run in parallel. A possible cause may be that, in the case of subordinate clauses, the increased complexity of the mental representation (as compared to – merely nominal – definite descriptions) could make the separate management of the two mental processes (provisional acceptance within the ongoing exchange vs. acceptance as a permanent

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<sup>8</sup> What we are saying here also parallels the difference between a concept of presupposition as information presented as belonging to the shared knowledge (proposed e.g. by P.F Strawson) and presupposition as a common ground which is just *treated as if* it is shared among the participants (proposed e.g. by R. Stalnaker).

belief) more difficult. Thus, the differences among the triggers appear to be related to the semantic complexity of the constructs they produce. In other words, reacting to presupposed information on two distinct tracks might be easier when dealing with simpler information, like in the case of definite descriptions, but it might become more difficult when more complex mental representations are concerned, such as in the case of temporal clauses. In other words, a lower cognitive load may allow for the diverging managements of two separate mental processes, while a higher cognitive load should lead to merging them into a single, more ‘opaque’ process. The latter would lead to the same accommodating behaviour for both the provisional pragmatic purposes of the exchange and the permanent cognitive purposes of belief formation, resulting in no difference between topical and focal temporal clause presupposition in Week 2.

If these hypotheses are true, they may represent an important and quite new issue for the theoretical inquiry on presupposition. Our data suggest that what is usually called “accommodation” not only has (at least) two different causes, but it may also encompass two corresponding separate mental processes. Furthermore, how these processes are engaged may depend on the concurrent cognitive load, i.e. on the processing effort associated with computing the content of the presupposition. Specifically, the two processes may be more easily separated when the cognitive load is lower, like in the case of simple-entity-encoding definite descriptions. Conversely, when the cognitive load increases, such as in the case of complex-event-encoding temporal clauses, distinguishing provisional, pragmatic acceptance from definitive cognitive refusal could become too demanding.

## 5 Conclusions and future lines of research

Overall, our results add further evidence to the claim that presupposition is linked to lower levels of epistemic vigilance as compared to assertion, in line with previous theoretical and experimental research (Ducrot 1972; Erickson and Mattson 1981; Givón 1982; Loftus 1975; Lombardi Vallauri 2019; Macagno 2023; Pietrandrea 2020; Reboul 2017; Sbisà 2007, 2023; Schwarz 2015). This is also reflected on the shaping of memories. However, this study enriches the literature by experimentally comparing different information statuses (topic or focus) of presuppositions and contrasting different triggers (definite descriptions and temporal clauses). While the turning of the presupposed information into a (secondary) main point when it is focused does not seem to affect mistake recognition rates straightaway, it has an impact on the long-term shaping of memorial representations, but only in the presence of a certain type of trigger (i.e., definite descriptions).

These findings suggest that accommodating presuppositions can encompass two different processes: provisionally accepting information for the sake of the conversational interchange, and forming one's beliefs. The data we collected suggest that these processes apply differently depending on the information structure of the utterance and the type of trigger involved. More specifically, we put forward the hypothesis that one of the two processes can be more easily inhibited separately from the other when the concurrent cognitive load is relatively low, while when the cognitive load increases, they tend to be managed jointly.

This hypothesis obviously needs further experimental investigation, specifically designed to verify it under varying cognitive load conditions. Valuable insights may also come from studying presupposition accommodation in development or late adulthood. These two populations are recognised to have lower cognitive abilities (e.g., in terms of working memory capacity) than young adults (Cappell et al. 2010; Reynolds et al. 2022). Hence, examining their (possibly lower) capacity to process the two mentioned accommodation components separately could provide data on the role played by cognitive load.

**Research ethics:** The experimental protocol received approval from the local Institutional Ethics Committee on April 17, 2020.

**Informed consent:** Informed consent was obtained from all individuals included in this study, or their legal guardians or wards.

**Author contributions:** All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

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