



Accommodation to an unlikely episodic state



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ABSTRACT

Mini-discourses like (ia) seem slightly odd compared to their counterparts containing a conjunction (ib).

(i)	a.	Speaker A:	John or Bill left.
		Speaker B:	Sam did too.
b.		Speaker A:	John and Bill left.
		Speaker B:	Sam did too.

One possibility is that *or* in Speaker A's utterance in (ia) raises the potential Question Under Discussion (QUD) whether it was John or Bill who left and Speaker B's reply fails to address this QUD. A different possibility is that the epistemic state of the speaker of (ia) is somewhat unlikely or uneven: the speaker knows that someone left, and that it was John or Bill, but doesn't know which one. The results of four acceptability judgment studies confirmed that (ia) is less good or coherent than (ib) (Experiment 1), but not due to failure to address the QUD implicitly introduced by the disjunction because the penalty for disjunction persisted even in the presence of a different overt QUD (Experiment 2) and even when there was no reply to Speaker A (Experiment 3). The hypothesis that accommodating an unusual epistemic state might underlie the lower acceptability of disjunction was supported by the fact that the disjunction penalty is larger in past tense discourses than in future discourses, where partial knowledge of events is the norm (Experiment 4). The results of an eye tracking study revealed a penalty for disjunction relative to conjunction that was significantly smaller when a lead in (*I wonder if it was...*) explicitly introduced the disjunction. This interaction (connective X lead in) appeared in early measures on the disjunctive phrase itself, suggesting that the input is related to an inferred epistemic state of the speaker in a rapid and ongoing fashion.

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Introduction

It has long been established that a sentence seems most natural, and is most easily comprehended, when it meshes easily with the current shared model of the discourse in

which it occurs (Bock & Mazzella, 1983; Clark & Haviland, 1977; Haviland & Clark, 1974; Schwarz, 2015a). Sometimes a sentence requires that the discourse model must be adjusted to make sense of the sentence. In such a case, 'accommodation' is said to take place. Presupposition accommodation is one much-studied instance of accommodation where comprehenders add relevant information to the common ground even though it is only presupposed and not asserted. For instance, hearing *John's*

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son goes to UMass might lead a comprehender to add the previously unknown information that John has a son of college age, or at least accept that the speaker is speaking as if John has a son (Beaver & Zeevat, 2007; Lewis, 1979; Schwarz, 2015b).

Beyond presupposition accommodation, there are other instances of accommodation where comprehension depends on developing a context shared between speaker and hearer that extends beyond explicitly conveyed information. In this paper, we consider two such instances. The first assumes that the goal of a sentence or discourse is to work toward an answer of a question, explicit or implicit, potentially as broad as “what is the state of things?” (Roberts, 2012/1996). A sentence that addresses a question that differs from the question suggested by the preceding discourse may be difficult to integrate with the discourse; accommodation to a new set of speaker’s goals may be required. We discuss this “Question Under Discussion” (QUD) suggestion below. The second kind of accommodation comes about when a sentence seems to clash with the state of knowledge that the speaker or writer is likely to be in. We term this suggestion the “epistemic state” hypothesis, and discuss it further below. Following a brief description of one line of psycholinguistic research on the processing costs of accommodation, we describe these two kinds of accommodation in more detail, reviewing evidence for their effects. We then turn to a novel phenomenon, difficulty of processing disjunctive vs. conjunctive noun phrases, and explore in a series of experiment whether one or both of these kinds of accommodation is responsible for the phenomenon.

Perhaps the most-studied (Clifton, 2013; Frazier, 2006; Garrod & Sanford, 1982; Haviland & Clark, 1974; Singh, Fedorenko, Mahowald, & Gibson, in press) instance of accommodation to the epistemic state of the speaker involves comprehension of sentences with definite vs indefinite articles. Use of *the* presupposes that the speaker has in mind a specific or a familiar referent; use of *a* presupposes that this is not the case, and that there are possibly multiple possible referents (see Hawkins, 1978, for discussion). When the discourse context does not support the familiarity presupposition, a reader or listener must accommodate it, at some cost in comprehension ease. Clifton (2013) showed that there was a processing cost when the presupposition of either the definite or the indefinite was made unlikely by the content of a sentence (e.g., reading was slowed in *In the kitchen, Jason checked out a stove*, compared to . . . *the stove*). Singh et al. (in press) went further and showed that accommodating a presupposition in a context that made it implausible was even more costly than reading an assertion of the same content.

Despite such demonstrations of the cognitive cost of having to accommodate a difficult presupposition, a surprising fact about language is that the acceptability of sentences or mini-discourses is sometimes improved, not degraded, when accommodation is necessary. We suggest that it is more felicitous to say *John’s wife is a chemist* than *John has a wife. She’s a chemist* (a judgment that has received some support in informal discussions). This is presumably true only if it is easy for the comprehender to imagine the situation or epistemic state of the speaker that

is implied, and it suggests that such well-supported accommodation facilitates communication (see Piantadosi, Tily, & Gibson, 2012, for related discussion).

The QUD

We now turn to a discussion of the first type of accommodation we introduced above, accommodation to the apparent communicative goals of a speaker or writer, or alternatively, accommodation of a changed QUD. The basic idea is that discourse is structured as a series of explicit or implicit questions followed by answers or comments on the current question. The notion of Question Under Discussion (QUD) has played an important role in a variety of areas in linguistics (Beaver & Clark, 2008; Ginzburg, 2012; Roberts, 2012/1996). For instance, influential proposals cash out the notion ‘discourse topic’ in terms of the current QUD (van Kuppevelt, 1996).

Formal semantic theories of questions treat a question as the set of its possible or true answers (Hamblin, 1973; Karttunen, 1977). This semantic analysis of questions makes it clear how questions can play a powerful role in organizing discourse. A coherent discourse progresses by supporting the choice of one or more propositions from the set of alternatives that are introduced by an implicit or explicit question (the QUD). A focused constituent can be viewed as selecting from among a set of alternatives (Rooth, 1985, 1992) and thus answering a QUD. Sometimes the QUD can be identified only after-the-fact, but sometimes a discourse introduces a QUD that can guide the analysis of upcoming material.

A variety of experimental demonstrations suggest that processing of a discourse is facilitated when material addresses a likely QUD, and impaired when material requires that the comprehender replace the likely QUD (an instance of accommodation, in present terms). For instance, Grant, Clifton, and Frazier (2012) showed that elliptical sentences which they viewed as ungrammatical, such as *The information was released but Gorbachev didn’t*, were judged to be less unacceptable if they contained a modal (e.g., *The information needed to be released, but Gorbachev didn’t*). They argued that this modal raised a question like “Was it or wasn’t it?” which the reader could take as the QUD, which would facilitate comprehension of the following elliptical phrase. (See Clifton & Frazier, 2012, Experiments 2 and 3, for similar evidence using eyetracking while reading.) Tian, Breheny, and Ferguson (2010) explicitly used the notion of QUD to account for a very different phenomenon. They measured the time to decide whether or not a pictured object had been mentioned in a previously read sentence, and found that decision times were faster when the state of the pictured object was congruent with the state implied by the apparent QUD of the sentence. For instance, subjects were faster to say ‘yes’ to a picture of a pile of uncooked spaghetti than to a pile of cooked spaghetti after hearing *It was Jane who didn’t cook the spaghetti*, a sentence that presumably suggested the implicit QUD “Who didn’t cook the spaghetti?”

Zondervan, Meroni, and Gualmini (2008) studied the effects of an explicit QUD. They showed that the scope ambiguity of *All the pizzas were not delivered* was resolved

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