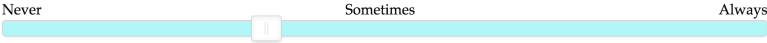# Underinformative event mentions trigger pragmatic inferences

Work in pragmatics shows that speakers typically avoid stating information already given in the discourse (Horn, 1984). However, it's unclear how listeners interpret utterances which assert material that can be inferred using prior knowledge. We argue that redundant event mentions can trigger context-dependent implicatures, which increase utterance utility in line with listener expectations (Atlas & Levinson, 1981; Horn, 1984). One way in which this may occur is through a listener interpreting an otherwise typical event as unusual.

In this study, we look at utterances that refer to event sequences describing common activities (*scripts*, such as *going to a restaurant*). Literature on processing of event sequences shows that people anticipate upcoming events or future states once a script is 'invoked' (Schütz-Bosbach & Prinz, 2007), and have faster reading times when information is consistent with previous script knowledge (Zwaan, Magliano, & Graesser, 1995). Further, upon recall listeners have difficulty distinguishing between script-relevant events that were, or were not overtly mentioned in a text (Bower, Black & Turner, 1979).

Design: 24 items, with a 2 (neutral vs. biasing context) x 2 (redundant vs. informative utterance) manipulation. Uninformative utterances (3a) were directly implied by the script, while informative utterances (3b) were not. Initial context was neutral (1a), or implied the 'uninformative' event was atypical (1b).

Neutral context	Biasing context
[1a] John often *goes to his local supermarket, as it's close by$_{neutral}$*.	[1b] John often ***doesn't pay at the local supermarket, as he's usually broke$_{biasing}$***.

[2] Today he entered the apartment with his shopping bags flowing over. He ran into Susan, his best friend, and talked to her about his trip. Susan then wandered over to Peter, their roommate, who was in a different room.

Q1: How often do you think John usually {*pays the cashier* | *gets apples*}, at the store?

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[3] She commented: "John went shopping. [4a/b] He {***paid the cashier$_{a\text{-}redundant}$*** | *got some apples$_{b\text{-}informative}$*!} [5] I just saw him in the living room."

Q2: Now how often do you think John usually {*pays the cashier* | *gets apples*}, at the store?

Never	Sometimes	Always

The dependent variable was the change in rating from Q1 (baseline) to Q2, given the information in (3-5).

Procedure: Each participant (n=200, via Mechanical Turk) was asked to read 4 of 24 stories, randomly selected. Each condition was presented once. Participants saw the first part of the story (1 & 2), Q1, and three distractor questions. The answers were then hidden, and the rest of the story (3-5) was presented, as well as another series of questions, which asked for updated ratings with respect to the same activities.

Results: A linear mixed effects model (with subjects and items as random effects) showed that speakers are more likely to interpret utterances in the 'underinformative' condition ($1a_{neutral}$-$4a_{redundant}$) as signifying that an activity is unusual, relative to other conditions (p<.001) (see Figures 1 and 2). The change in ratings, from Q1 to Q2, was more positive after the informative (4b) utterance, and in the biasing (1b) conditions (both p<.001). Ratings were decreased from Q1 to Q2 only in the 'underinformative' (1a-4a) condition.

Conclusion: This study shows that listeners assign underinformative event mentions an 'informative' pragmatic interpretation, in this case by interpreting an otherwise typical activity as unusual

in context (cf. Levinson's M-principle; Levinson, 2000). This suggests that, rather than mentions of highly inferable events simply being interpreted as a violation of conversational norms, they may be systematically reconciled with an assumption that a speaker is being informative (Atlas & Levinson, 1981; Horn, 1984). To our knowledge, this is the first experimental investigation of non-scalar implicatures triggered by utterances that are uninformative, given world knowledge.

These results may also have implications for processing of conceptually redundant material. It is sometimes argued that redundancy imposes no processing cost on the listener (Nadig & Sedivy, 2002). However, generation of context-dependent implicatures is assumed to be effortful, and assertion of what is easily inferred should be unpredictable. This predicts processing difficulty for underinformative utterances (Smith & Levy, 2013). Preliminary results from an eye-tracking study in fact show increased first-pass reading times immediately following the redundant utterance in the neutral contest (1a-4a), relative to the biasing context (1b-4a).
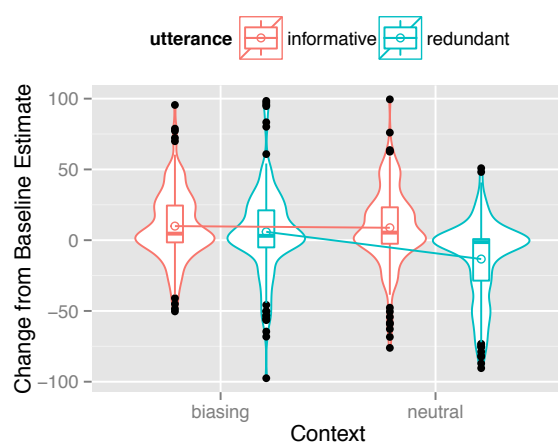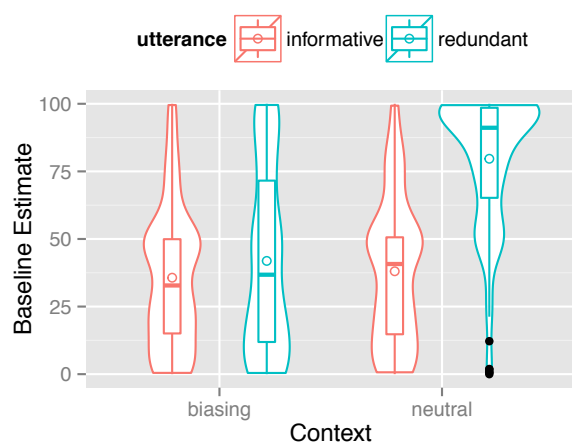

Figure 1: This plot shows the baseline frequency estimates for the relevant activities, on a scale of 0–100 (Never to Always). The violin plots show the distribution of estimates. The hollow circles represent mean values.

Figure 2: This plot shows the change from baseline estimates, following the *redundant*/*informative* utterances.

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