

Accounting for free choice: Revisiting the challenge for the implicature approach

Background: A sentence containing disjunction in the scope of a possibility modal, such as (1-a), gives rise to the FREE CHOICE inference in (1-b). This inference presents a well known puzzle in light of standard treatments of modals and disjunction (Kamp 1974 and much subsequent work). To complicate things further, FREE CHOICE tends to disappear under negation: (2-a) doesn't merely convey the negation of (1-a), but rather the stronger DOUBLE PROHIBITION reading in (2-b). A prominent approach to the FREE CHOICE-DOUBLE PROHIBITION pattern is based on a standard meaning of modals and disjunction and generates FREE CHOICE as an implicature (Fox 2007, Klinedinst 2007, Romoli & Santorio 2018, Bar-Lev 2018, a.o.). This approach successfully captures the basic pattern and a variety of more complex data points related to free choice, but has recently been challenged by experimental data presented in Tieu, Bill, and Romoli (2019) (hereafter 'TBR').

The challenge: To illustrate, consider a context like Fig.1, in which Sue is only allowed to buy the hamburger. In this context, the implicature approach predicts a difference in status across the two polarities: the positive (1-a) is literally true, but with a false implicature, while the negative (2-a) is plainly false. TBR investigated this prediction using a ternary judgment task (Katsos Bishop 2011). Participants were presented with sentences like (1-a) and (2-a) as uttered by a puppet and their task was to reward the puppet with a small, medium, or large strawberry, depending on whether the sentence was completely right, completely wrong, or neither. TBR reported that participants primarily selected the intermediate reward for both the positive (1-a) and negative (2-a) in the given context. In contrast, when presented with simple disjunctive sentences like the positive (3-a) and the negative (3-b) in a context where both disjuncts were true, participants exhibited the asymmetric pattern of responses expected on the implicature approach: a preference for the intermediate reward when the (positive) sentence was logically true but with a false implicature, and the minimal reward when the (negative) sentence was plainly false. TBR took the parallel responses to (1-a) and (2-a), combined with the divergent responses in the equivalent disjunction sentences, to pose a challenge for the implicature approach.

Potential confound: TBR's results, however, can also be explained as participants having chosen the intermediate reward in an attempt to be charitable to the puppet. The puppet mentioned two things (the hamburger and the carrot) and she turned out to be right about one of them. So while the sentence on its FC meaning is not compatible with the pictured context, there is a sense in which the puppet's guess was partially right, and this could underlie the reported intermediate responses.

Current study: We report on two experiments that build on TBR's study but which control for the potential confound mentioned above. In Exp.1, we tested TBR's free choice conditions against a corresponding baseline using simple conjunctions. The goal was to test the following prediction of the charitable strategy hypothesis: if the participants selected the intermediate reward in the FC conditions because the puppet was partially right (namely about one of the mentioned items), then given the context in Fig.1, we should observe the same kind of behaviour for simple conjunctions like (4-a) and (4-b). Here everyone agrees, at least for the positive case in (4-a), that the sentence is simply false in the given context. A choice of the intermediate reward, then, would be evidence for the charitable strategy, while a difference between the two conditions would corroborate the challenge for the implicature approach. We furthermore hypothesised that because the disjunctive statements explicitly mentioned two items, they might especially invite the charitable strategy to reward the puppet for getting one of the two things right. So, in Exp.2, we moved to a variant of free choice involving FC 'any', in order to avoid overt disjunctions that would explicitly mention specific items. It was not possible to compare FC 'any' against a 'some' baseline, given the latter's positive polarity properties would make it impossible to test the negative counterpart; hence we decided to compare FC 'any' to the indirect scalar implicature of negated 'every' (*not every but some*). This had two advantages: (i) for both conditions we could compare literally true sentences with false implicatures to literally



Figure 1: TBR's FC target image, paired with positive and negative FC ((1)-(2)) and CONJUNCTION ((4)) targets in our Exp.1.

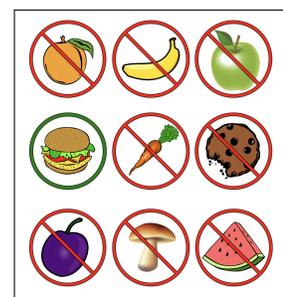


Figure 2: Exp.2 test image paired with positive and negative ANY targets in (5).

