Prosodic Effects on Factive Presupposition Projection
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Background. Building on a proposal developed in Beaver (2010) and Simons et al. (2015), Tonhauser (2016) argues that whether or not the content of the complement of an utterance with a factive matrix predicate projects depends on the current question (CQ), which in turn is mediated by the information structure of the utterance; i.e. whether narrow focus is on the matrix predicate (Pred-Foc: 1a), or on content in the embedded clause (Sbj-Foc: 1b).

(1) a. Sarah: Perhaps John discovered that Jane left town. Pred-Foc
b. Sarah: Perhaps John discovered that Jane left town. Sbj-Foc

Specifically, according to Beaver and Simons et al., narrow focus in the embedded clause (Sbj-Foc) forces the hearer to construe a focus alternatives set (FAS) of the form \{p: for some entity \(a\), John discovered that \(a\) left town\}; with the consequence that the CQ for the utterance does not entail \(p\). Hence, the embedded clause will fail to project. Focus in the main clause (Pred-Foc), conversely, will give rise to a FAS of the form \{p: for some relation \(R\), John R that Jane left town\}. To the extent that the relations in the FAS are all veridical, the CQ will entail \(p\), and the utterance will consequently project. Tonhauser (2016) presents experimental results to support this claim. However, the contrast that she finds between the Pred-Foc and the Sbj-Foc conditions is fairly small; with Sbj-Foc receiving lower ratings than Pred-Foc, with \(\beta = -0.68\) (\(p<.05\)). Furthermore, she doesn’t include a baseline for non-projection, which makes it difficult to evaluate the contrast that she finds. The current study replicates that in Tonhauser (2016). However, we crucially also include a non-factive control condition, to provide a baseline for non-projection, as well as a condition to serve as a baseline for projection (unembedded propositions). Crucially, we find that the rates of projection in the Sbj-Foc condition (predicted not to project at all) are much closer to the unembedded controls than to the non-factives.

Experimental Design. As in the original study, we diagnosed projection as the speaker’s commitment to \(p\). Following Tonhauser (2016), subjects were told to imagine overhearing sentences (2) at a party spoken by a woman, Sarah. They were then told to rate the answer to questions (3) from 1 (“No, not certain”) to 7 (“Yes, certain”). Higher ratings indicate that the subjects interpreted the embedding predicate as projecting a factive presupposition past might. (Tonhauser used perhaps as the entailment cancelling operator; however, we opted for might, since perhaps also has a function as a discourse marker.) We included eight different conditions (4 embedding predicates x 2 stress patterns). As discussed above, stress on the predicate is predicted by Tonhauser et. al. to generate higher ratings than stress on the embedded subject. Our study builds on Tonhauser et. al.’s results in an additional way. We explicitly included both cognitive and emotive factives in order to see whether the prosodic response was mediated by the cognitive/emotive difference—hypothesized to correspond to the distinction between ‘soft’ and ‘hard’ triggers (Abrusán, 2011; Abrusán, 2016). As mentioned, we also included an unembedded and a non-factive condition in order to generate upper and lower bounds for certainty ratings. For the non-factive, emotive and cognitive conditions, we included six different predicates of each type (3 verbal; 3 adjectival). Each subject heard 48 sentences.
(2) Example Conditions:
   a. Unembedded, Subject Stress: Anna left town.
   b. Unembedded, Predicate Stress: Anna left town.
   c. Cognitive, Subject Stress: John might’ve discovered that Anna left town.
   d. Cognitive, Predicate Stress: John might’ve DISCOVERED that Anna left town.
   e. Emotive, Subject Stress: John might’ve regretted that Anna left town.
   f. Emotive, Predicate Stress: John might’ve REGRETTED that Anna left town.
   g. Non-Factive, Subject Stress: John might’ve believed that Anna left town.
   h. Non-Factive, Predicate Stress: John might’ve BELIEVED that Anna left town.

(3) Example Question: Is Sarah certain that Anna left town?

Results. We collected results from 57 undergraduate students. We used Conditional Inference Trees (Hothorn and Zeileis, 2015; Hothorn et al., 2006) to cluster conditions based on embedding predicate and stress pattern. The clustering analysis found significant differences between factives (clusters 3, 4, and 5) and non-factives (clusters 1, 2 and 6). The following list gives the different clusters (mean rating given after colon):

1. Non-factives (Believed, hoped, said); Subject: 2.84; Predicate: 2.36
2. Non-factive (Be hopeful): 3.23
3. Factive (Be worried): 4.06
4. Factive (Be concerned, be informed): 4.49
5. Factivs (Be aware, be conscious, be disappointed, be happy, be upset, discovered, loved, noticed, realized, regretted, resented); Subject: 5.25; Predicate: 5.50
6. Unembedded; Subject Stress: 5.25; Predicate Stress: 6.51

Emotive and cognitive factives patterned together (cluster 5). A mixed-effects models with the following levels: factive (collapsing emotive and cognitive), non-factive and unembedded, found that factives showed a significant effect of stress type (p=0.03). Predicate stress produced ratings higher than subject stress (β = 0.17). However, this pragmatic difference within factives was substantially smaller than the lexical difference between factives and both non-factives (β = -1.87) and unembedded (β = 0.73) clauses.

Discussion. An interesting question that these results highlight is how information structure interacts with projection. Tonhauser takes her results to undermine ‘classical’ analyses of projection (Heim, 1983; van der Sandt, 1992), according to which projection is lexically specified. On these views, non-projecting readings are the result of local accommodation, whereby the presupposition, as a last resort strategy, is accommodated into the local context of the entailment cancelling operator. Our results showed a substantial difference between non-factive, factive and unembedded structures when it came to estimations of speaker certainty of the “embedded” proposition. The large difference between factive and non-factive predicates, compared to the relatively weak effect of the prosodic manipulation, suggests that pragmatics merely influences the impact of lexically determined presuppositions, rather than being the source of presuppositionality.
References


