Negated evaluative adjective sentences: What projects, and why?

Simons et al. (2010, to appear) motivate the hypothesis that the projectivity of some utterance implications depends on the Question Under Discussion (QUD; Roberts 2012). This paper provides evidence for this hypothesis from the interpretation of negated evaluative adjective sentences (NEAS), e.g. (1). The positive variant in (2) implies that Sue watched the movie (‘VP implication’) and that watching the movie was smart for Sue (‘evaluative implication’). Under a ‘factive’ interpretation, the NEAS in (1) implies that Sue watched the movie (i.e. the VP implication projects over negation) and that she wasn’t smart to do so (cf. e.g. Norrick 1978, Barker 2002, Kertz 2010).

(1) Sue wasn’t smart to watch the movie. (2) Sue was smart to watch the movie.

Recently, Karttunen et al. (2014) showed, based on corpus examples and an experiment, that NEAS may also receive an ‘implicative’ interpretation according to which the evaluative implication projects over negation: (1) then implies that Sue did not watch the movie (i.e. the VP implication is targeted by negation and does not project) and that watching the movie would have been smart for Sue. Karttunen et al. assume two lexical entries for evaluative adjectives, a factive and an implicative one, which are taken to belong to different dialects, with about 75% of the population speaking the factive dialect, and 25% the implicative one. (The distributions of judgments by participants in our experiments was not bi-modal and hence did not support the dialect claim.)

Under our QUD-based analysis, evaluative adjectives have a single lexical entry and denote a conjunction of the VP and evaluative implications. The QUD determines whether the VP implication projects over negation: if the QUD is addressed by the evaluative implication, the VP implication is not at-issue (NAI) and projects (qud-NAI); if the QUD is addressed by the VP implication, it is at-issue (AI) and does not project (qud-AI); here the evaluative implication projects. When the QUD is implicit, the context, information structure and content of the NEAS jointly constrain the QUD (e.g. Rooth 1992, Abusch 2010, Beaver 2010) and hence the interpretation of the NEAS.

Exp 1 provides evidence for the QUD-based analysis by showing that the VP implication projects if and only if it does not address the QUD. Exps 2 and 3 deepen our understanding of factors relevant for the interpretation of NEAS. Exp 2 shows that the implicative interpretation was generally judged to be acceptable but also reveals substantial speaker variation. Exp 3 shows that the lexical meaning of the evaluative adjective biases towards a factive interpretation. Participants were recruited on Amazon’s Mechanical Turk platform and randomly assigned to lists; each list was (pseudo-)randomized and did not repeat adjectives within a task. Responses were given on a 7-point Likert scale labeled at four points: No/1, Possibly no/3, Possibly yes/5, Yes/7. Ten adjectives were studied: brave, foolish, fortunate, lucky, mean, polite, rude, smart, stupid and wise.

Exp 1 (n = 134): Minimal pairs of target stimuli consisted of a context sentence and a NEAS: in the context condition (3), the context of the NEAS varied; in the VP content condition (4), the VP content of the NEAS varied. In each condition, the two members of a minimal pair varied in whether the evaluative implication was taken to be true (as established by a norming study): if the evaluative implication was taken to be true, a qud-AI was more likely for the NEAS since one does not question an implication taken to be true; if the evaluative implication was not taken to be true, a qud-NAI was more likely for the NEAS since negation can then target the evaluative implication.

(3) Context 1: Jane’s neighbor complained about the loud music. [context condition] Context 2: Jane’s father couldn’t hear the TV. NEAS: She wasn’t smart to turn up the volume. (qud-NAI in Cont. 1 / qud-AI in Cont. 2)
(4) Context: Jane was baby-sitting for her sister.

NEAS 1: She wasn’t smart to leave the baby unattended. (qud-nai in Context)
NEAS 2: She wasn’t smart to keep an eye on the baby at all times. (qud-ai in Context)

For each adjective, there were 3 pairs of two-sentence target stimuli in each condition, for a total of 120 target stimuli. Participants were presented with 10 target stimuli (and 6 control stimuli) and asked whether the subject (e.g. Jane) VPed (e.g. turned up the volume).

Results: Ordinal mixed-effects models on response with by-participant and by-item random intercepts and random slopes for qud-nai revealed significant differences between qud-nai and qud-ai in the context (β = 2.1, SE = 0.37, z = 5.72, p < .001) and the VP content (β = 3.28, SE = 0.35, z = 9.5, p < .001) conditions. As predicted by the QUD-based analysis, responses were higher (indicating projection of the VP implication) for qud-nai than qud-ai discourses.

Exp 2 (n = 94): Target stimuli consisted of 60 three-sentence discourses, as in (5): the first and third sentences were identical to the qud-ai stimuli from Exp 1, i.e. compatible with implicative interpretations. The second sentence contradicted the VP implication of the NEAS: consequently, the NEAS was acceptable as part of the discourse only under an implicative interpretation. The experiment also included 60 minimal variants with enough in the NEAS (hypothesized to be acceptable) and eight control stimuli in which the last sentence was not acceptable. Participants read 18 discourses and were asked whether the last sentence sounded good as part of the discourse.

(5) Jane was baby-sitting for her sister. She left the baby unattended. She wasn’t smart to keep an eye on the baby at all times.

Results: An ordinal mixed-effects model on response with by-participant and by-item random intercepts revealed significant differences between the target stimuli and both the enough-variants (β = 1.82, SE = 0.23, z = 8.03, p < .001) and the controls (β = -5.68, SE = 0.46, z = -12.38, p < .001). Utterances of NEAS with an implicative interpretation (mean rating: 4.24) are degraded compared to the fully acceptable enough-variants (mean: 5.86) but acceptable compared to the unacceptable control stimuli (mean: 1.09). Speaker variation was substantial: target stimuli were judged to be unacceptable (mean < 4) by 36% of participants and fully acceptable (mean > 5.5) by 28%.

Exp 3 (n = 82): Target stimuli consisted of the 30 NEAS from the context condition of Exp 1, which were shown there to be compatible with both factive and implicative interpretations. The target stimuli were presented in a minimal, non-biasing context: participants were asked to imagine that they overhear Debby utter the NEAS (e.g. Jane wasn’t smart to turn up the volume) and responded to the question of whether Debby thinks that the subject (e.g. Jane) VPed (e.g. turned up the volume). In a separate task (parallel to Exp 2), each participant judged the acceptability of NEAS in discourses that only permitted either factive or implicative interpretations.

Results: The ordinal responses were coded for whether they indicate a factive interpretation (5-7) or not (1-3). A mixed-effects logistic regression model predicting a factive interpretation from random by-participant and by-item intercepts revealed a significant intercept (β = 1.81, SE = 0.36, z = 5, p < .001), as well as significant main effects of the mean acceptability rating for each participant on the factive (β = 0.95, SE = 0.16, z = 5.81, p < .001) and implicative (β = -0.77, SE = 0.14, z = -5.49, p < .001) items. NEAS with non-biasing VP contents uttered in a non-biasing context are more likely to receive a factive interpretation, even when speaker variation in the acceptability of the factive and implicative interpretations is taken into account, suggesting that the interpretation of the evaluative adjectives biases NEAS towards a factive interpretation.

Conclusions: Projective implications of NEAS need not be lexically specified (e.g. Heim 1983, van der Sandt 1992) but depend on the QUD, the interlocutor and the evaluative adjective meaning.