HOMOGENEITY AND UNIVERSAL QUANTIFICATION IN EMBEDDED QUESTIONS

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Main claims Based on experiments in three different languages, we provide evidence for the claims the universal quantifier all 1) can be focussed and contributes at-issue content, and 2) functions as a homogeneity remover in embedded questions.

All in questions In Dutch, German, and the Ulster English dialect (spoken in Northern Ireland), all can occur in questions and force exhaustive readings (the forms being allemaal, alles, and all respectively):

(1) Q: Who all are the invited speakers at SuB? A: Lisa Bylinina and Ana Arregui.

There are two competing views on alles in German: Reis (1992) claims that it cannot be focussed and made at-issue, while Beck & Rullmann (1999) provide an account of alles as an overt truth-functional instantiation of their answer1 operator: it takes a Hamblin style question denotation as input and yields the maximally informative singleton set, yielding a weakly exhaustive reading. Furthermore, all has been claimed to remove homogeneity in embedded questions, said to behave akin to definite descriptions w.r.t. homogeneity (Križ, 2015).

Question embedding predicates Our study concerns embedded questions with the verbs know, forget, and surprise, which were chosen as they differ in entailment, distributivity, and factivity. Know is upward entailing, distributive, and factive. Forget is downward entailing, distributive, and factive. In addition, it adds the second presupposition that the subject knew something in the past. Surprise is non upward-entailing (Cremers, 2016), non-distributive (e.g., Lahiri, 2002), and factive.

Method We conducted the same experiment in three languages. Participants were asked whether sentences like (2)-(5) made sense or not with a forced binary choice ‘yes’ or ‘no’ answer. The design was a 2x2x3 Latin square, with the factors +/- all, NEG1/NEG2, and the three verbs (know/forget/surprise). Thus, there were four conditions for each verb, illustrated in (2)-(5). There were 16 items per verb (48 in total) and 48 fillers, which contained contradictory and non-contradictory controls. Items were presented without context following a practice round.

(2) [+all, NEG1, know] Lea does not know who all baked bread, but she knows that Sebastian baked bread.

(3) [+all, NEG2, forget] Ginny forgot who all fought in the battle, but she did not forget that Hermione fought in the battle.

(4) [-all, NEG1, surprise] Christian was not surprised at who made their own clothes, but he was surprised that Marius made his own clothes.

(5) [-all, NEG2, know] Janine knows who read a book, but she does not know that Nina read a book.

Predictions The null hypothesis is that alles cannot be made at-issue and can therefore not be targeted by negation. Therefore, the presence or absence of negation should give us a null result across manipulations. Predictions varied depending on the embedding predicate and their monotonicity and distributivity properties. We predicted that [+all, NEG1] would be better than [-all, NEG1] for know. For the downward entailing forget, [+all, NEG2] is predicted to be better than [+all, NEG1]. As surprise is not obligatorily distributive, we predicted that [+all NEG1] and [+all NEG2] would both be acceptable under different distributivity construals, and the [-all] condition should come out better than with know and forget.
Results The results were in line with our predictions in all three languages. This is exemplified for Dutch in Figure 1 below. Dutch For know, forget, and surprise there was a main effect for [+/- all] (p<.001) and for [NEG1/NEG2] (p<.001). For know and forget there was also a significant interaction (p<.001 for know, p=0.0180 for forget). For surprise there was no interaction (p=0.917). German For know, forget, and surprise there was a main effect for [+/- all] (p<.001) and for [NEG1/NEG2] (p<.001). For know and forget there was also a significant interaction (p<.001 for know, p=0.002 for forget). For surprise there was no interaction (p=0.44). English For know, forget, and surprise there was a main effect for [+/- all] (p<.001). There was also a main effect for [NEG1/NEG2] (p<.001 for know and forget, p<0.01 for surprise). For know and forget there was also a significant interaction (p<.001 for know, p=0.045 for forget). For surprise there was no interaction (p=0.47).

Discussion We can derive the following two main conclusions from the data: 1) all can be made at-issue and can be targeted by negation in all three languages (pace Reis, 1992, for German); 2) all functions as a homogeneity remover with distributive predicates (know, forget) (cf. Križ, 2015), as evidenced by a significantly higher proportion of yes responses in [+all, NEG2] for know and [+all, NEG1] for forget.