

## Contextual licensing of exclusivity in disjunction

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**1. Introduction** On a mainstream view the exclusive interpretation of ‘or’ is due to strengthening by a scalar implicature (SI). Defaultist approaches hold that SIs are generated automatically by default even in the absence of licensing context, while according to contextualist approaches SIs arise only when required by the context. There is by now a great amount of experimental research seeking to address the diverging psychopragmatic predictions of these two groups of accounts, but the basic debate has not yet been conclusively settled (see esp. Bezuidenhout & Cooper Cutting 2002; Feeney et al. 2004; Degen et al. 2009; Grodner et al. 2010; see also Zondervan’s [2010] and Hartshorne & Snedeker’s [submitted] methodological criticism). We argue here that much of the recent experimental literature on the exclusivity of ‘or’ is similarly inconclusive. We then go on to present two experiments tapping into whether and how context contributes to the licensing of exclusive interpretations. Experiment 1 examines the potential effect of context in general, based on a shallow processing paradigm, while Experiment 2 is a TJV study gauging the impact of focus.

**2. Previous results contested** With regard to the pragmatic strengthening of disjunction, Breheny et al. (2006) argued in favour of a contextualist approach based on their finding that the reading of disjoined NPs is slower in contexts that license the SI than in contexts that do not. Their comparison remains inconclusive, however, as it was unfortunately confounded with other factors (Hartshorne and Snedeker, submitted).

The strategy of Chevallier et al.’s (2008), Schwarz, Clifton & Frazier’s (in press), and Zondervan’s (2010) relevant experiments was to attempt to facilitate implicatures through adding focus/prominence. On contextualist grounds a facilitating effect of focus on scalar implicatures is expected, based on the assumption that focus makes alternatives contextually relevant (Rooth 1992, Krifka 2008). In Chevallier et al.’s and Schwarz et al.’s experiments, focus prominence was added to the disjunction itself. Their finding that this boosts exclusive interpretations is inconclusive, however, because focus comes with its *own* scalar implicature of excluding alternatives (in the case at hand, alternatives to ‘or’). The increase in the rate of exclusive readings is entirely independent of the exclusivity implicature of disjunction itself.

Zondervan’s experiments differ in that they involve focus on the disjoined NP ‘A or B’ rather than on the disjunction itself. Unfortunately, none of the experiments that found any effect directly compared a ‘focus condition’ with a disjoined NP functioning as a narrow focus to a ‘non-focus’ condition that *only* differed from this in having the disjoined NP in an information structurally neutral (all new) sentence. In the three crucial Truth Value Judgment experiments, sentences with a focused disjoined NP were compared to sentences in which the disjoined NP was in the background of another information focus (*PAULA took an apple or a pear*). Information focus presupposes an information question in discourse representation (Question Under Discussion, QUD; Roberts 1996), and exclusive interpretations of ‘or’ are known to be relatively weakly licensed in questions (“Who took an apple or a pear?”). In Zondervan’s ‘non-focused disjoined NP’ conditions it is arguably the low likelihood of the exclusive interpretation of disjoined NPs *in the presupposed QUD* that is responsible for the lower rate of exclusive interpretations in answers to that QUD (essentially, a priming effect).

Furthermore, a boosting effect of focusing ‘A or B’ may be expected only on the assumption that the set of focus-alternatives and the set of scalar alternatives both contain the conjoined counterpart of the disjoined NP. The correctness of that assumption is doubtful. Simplifying somewhat, if the semantic interpretation of a disjoined NP *A or B* corresponds to the set {A, B, A and B}, then ‘A and B’ cannot be among the alternatives that are *excluded* by exhaustification by focus. On these grounds focus on the disjoined NP is expected to have no significant effect on the rate of exclusivity implicatures associated with disjunction.

**3. Experiment 1** Experiment 1 employs a task that only requires ‘shallow’ processing, which is expected to block the influence of context as much as possible. We tested the processing of two connectives in Hungarian: *and* and *or*, in a sentence-picture verification task. Each picture was

preceded by a sentence describing a scenario with two objects, appearing as NPs conjoined either by *and* or by *or* (Connective Type), e.g., *John peeled the orange and/or the banana*. The state of the two objects either matched or mismatched (Congruence) the scenario explicitly described in the previous sentence. For example, in the mismatching condition of *and*-sentences only one of the two fruits was peeled (incongruently with *and*'s entailment). In the case of *or*-sentences, both objects were peeled in the mismatching condition (incongruently with *or*'s implicature, congruently with the unenriched, inclusive meaning of *or*), and exactly one of the two was peeled in the matching condition (congruently with *or*'s implicature). Participants' task was unrelated: they had to decide whether both of the two objects have been mentioned in the previous sentence (i.e., without considering the states of the objects depicted). Critical trials invariably required an affirmative response.

Pictures after *and*-sentences in the matching picture condition were verified significantly faster than mismatching pictures, but crucially, the same effect was not revealed in *or*-sentences. The lack of a slow-down after *or*-sentences is expected if the exclusive implicature of *or* was not generated. Pictures in the *and*-mismatch condition were reacted to significantly slower than those in the *or*-mismatch condition. This difference is straightforwardly explained if there was an actual mismatch between the picture stimulus and the interpretation assigned by the participants to the sentence only in the *and*-mismatch condition, but not in the *or*-mismatch condition. This is so if the exclusive implicature did not get generated in the *or*-mismatch condition. On defaultist approaches, according to which the exclusivity implicature must have been generated in the *or*-sentences, the longer RT associated with the *and*-mismatch condition than with the *or*-mismatch condition is difficult to account for. An alternative that assumes that the mismatch with the entailment of the conjunction *and* led to a stronger discrepancy than the implicature of the disjunction is dubious, since both entailments and scalar implicatures are part of truth conditions (see Carston 2004). Pictures in the *and*-match condition were reacted to faster than those in the *or*-match condition. We suggest that the *or*-match condition takes longer to verify due to the difference in complexity between the meanings of the conjunction *and* and the disjunction *or* (e.g., Zimmermann 2000, Simons 2005, Alonso-Ovalle 2006).

**4. Experiment 2** Our target sentences in Experiment 1 contained the conjoined/disjoined NP in a neutral (post-verbal) syntactic position. In Experiment 2, we carried out TVJ study, based on a 5-point Likert scale, in order to find out (i) whether in a neutral post-verbal position the disjunction is ordinarily associated with an exclusive interpretation at all, and (ii) whether placing the disjoined NP in a (pre-verbal) syntactic position where it is unambiguously in focus affects the ratings. The test sentences were presented as predictions made by somebody at a party, and pictures displayed what actually happened afterwards in reality. This task scenario circumvents a recurrent problem in TVJs on disjunctions, namely that of underinformativity from the perspective of a knowledgeable hearer.

We did not find a main effect of the disjoined NP's Focus Status (focused/neutral), however, we did find a strongly significant main effect of (exclusive/inclusive) Picture Type ( $p < 0.001$ ), without an interaction with Focus Status. The mean raw rating of inclusive pictures was about 3, while in the case of exclusive pictures it was close to ceiling.

**5. Conclusions** Experiment 1 revealed that the rate of exclusivity implicatures drops if the effect of contextual licensing is minimized. This is predicted on the contextualist view because the implicature was irrelevant to the task, while it is unexpected on defaultist approaches (either the mismatch with the picture, or both that and the generation of the implicature itself would be predicted to cause a slow-down). In addition to confirming that ordinarily the exclusivity implicature routinely obtains in broad focus sentences in Hungarian (such as the ones in Experiment 1), Experiment 2 demonstrates that, in line with our prediction, focusing of the disjoined NP does not affect the rate of exclusive interpretations of disjunction. This falls out from the assumption that 'A and B' is part of the semantics of *A or B*, therefore it is not among the excludable alternatives for exhaustification by focus.