Priming of implicatures within and between categories: The case of exclusive *or*

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Understanding language requires comprehenders to make inferences about a speaker's intended meaning. Scalar implicatures are one class of inferences which are argued to strengthen the basic semantic meaning of quantifiers like *some* ('some and possibly all') and numerals like *four* ('at least four'). Bott & Chemla (2016) found that pragmatically strengthened readings of *some* and numerals can be primed both within their category and also between these categories, suggesting a shared process between categories.

Another possible category for scalar implicature is the disjunction *or* which can have a weak inclusive reading ('A or B or A and B') or a strong exclusive reading ('A or B not A and B'). Like the strengthened meaning of *some*, exclusive *or* shows delays in processing (Schwarz, et al., 2008) and emerges later in acquisition (Chierchia, et al., 2001), suggesting that it may be derived by scalar implicature (Chevallier, et al., 2008). Alternative views argue that exclusive *or* is not derived by implicature (Chemla & Bott, 2014). This leaves open the question of whether exclusive *or* shares the same processes found in *some* and numerals.

To investigate whether exclusive *or* is derived by similar processes found in *some* and numerals, we adapted Bott & Chemla's (2016) priming paradigm with the quantifiers *some* and numeral *four* and attempted to extend the effect to the disjunction *or*.

216 items (72 per category) were constructed with two within-category prime types (STRONG vs. WEAK; Figure 1) and four between-category prime types (STRONG vs. WEAK between other 2 categories; Figure 2) for 6 prime-target combinations per implicature type (12 observations per condition). 36 filler trials were also included (12 per category). On each trial, participants were presented with two pictures and a sentence and asked to choose which picture better matched the sentence. Unlike Bott & Chemla, all pictures had nine symbols, requiring participants to identify the symbols to do the task accurately. On target trials, one of the two pictures was 'covered' by the phrase "Better Picture" while the other was only consistent with the basic weak semantic meaning. Choosing "Better Picture" on these target trials indicates participants had a pragmatically strong reading in mind. Targets were preceded by either two STRONG primes, which paired a picture consistent with a pragmatically strengthened meaning with a picture consistent with the basic weak semantic meaning, or two WEAK primes, which paired a picture inconsistent with the basic semantic meaning with a picture consistent with a semantically weak meaning.

If pragmatic strengthening can be primed, then at least within category, STRONG primes are predicted to increase the rate of "Better Picture" responses compared to WEAK primes. More importantly, if the mechanism deriving pragmatic strengthening of *some*, *four*, and *or* is shared, then STRONG primes should also increase the rate of "Better Picture" responses over WEAK primes between category type.

The results from 132 participants, recruited via Prolific Academic, are shown in Figure 3. A by-subjects analysis revealed that within-category targets showed a higher proportion of strong responses when primed with STRONG relative to WEAK primes (SOME: t=9.374, p<.001; NUMBER: t=4.407, p<.001; OR: t=10.277, p<.001). Between-category targets, however, either failed to show priming (SOME: t=1.237, p=.217; OR: t=0.608, p=.544) or revealed a reversal (NUMBER: t=-3.843, p<.001), contrary to prediction.

Our results replicated the within-category priming effect for scalar implicatures and extend it to *or* as well. However, we did not replicate the between-category priming effect across category types. Perhaps including nine symbols on each picture, requiring participants to identify the symbols, blocked priming based on visual characteristics between categories, such as proportion of symbols present in one picture over the other. We discuss the implications of these findings for models of shared pragmatic strengthening.
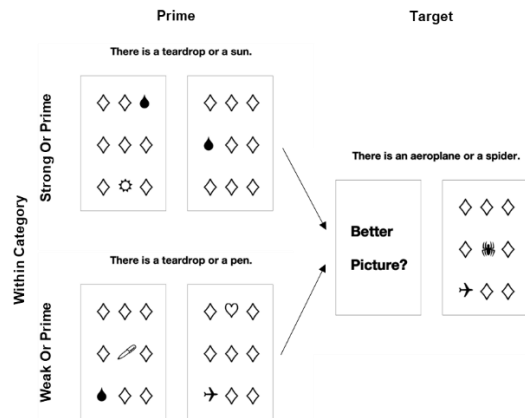
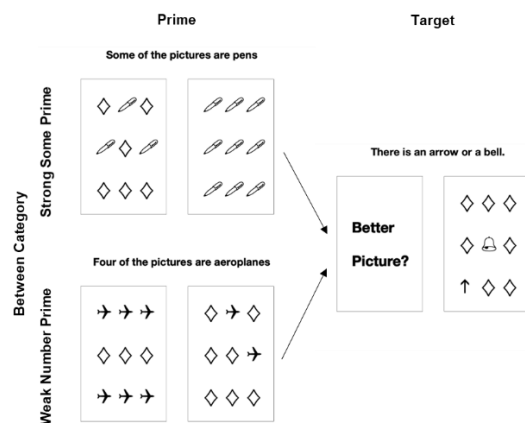**Figure 1**: Within prime and target trial for *or*-implicature.

Figure 2: Between prime and target trial for *or*-implicature.
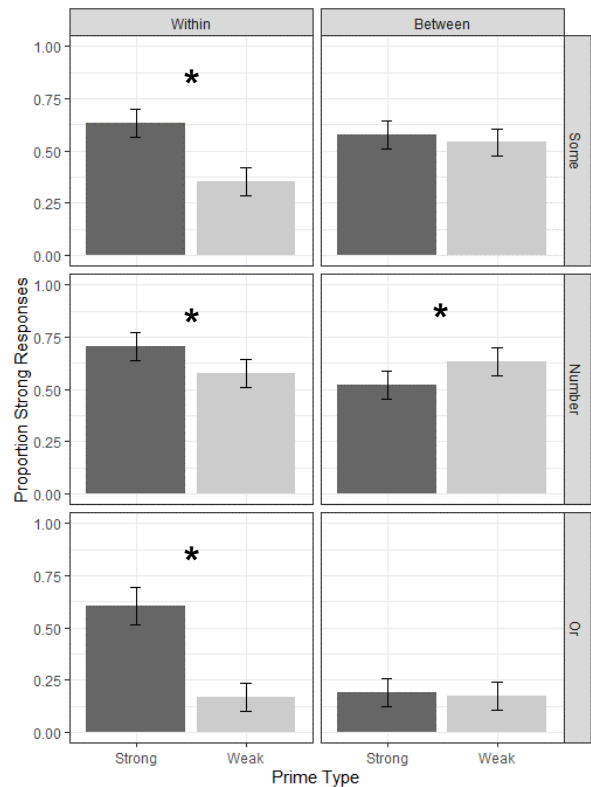

Figure 3: Proportion of strong ("better picture") responses by prime type (Strong vs. Weak) both Within and Between categories for Some, Number, and Or targets. Error bars represent 95% confidence intervals.

References

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