

Does interpretation of quantified sentences minimize complexity of the verification algorithm, and maximize speed? Or does it maximize accuracy, at the risk of requiring a more complex verification algorithm? Though the expressions 'All the girls are math students' and 'Only the math students are girls' are logically equivalent, and therefore seem like they should be represented in the same way, it's often argued that 'only' should not be assimilated to generalized quantifier theory due to its non-conservativity: the 'only' sentence above does not mean 'Only the math students are math students who are girls'. The current study looks at comprehenders' strategies for verifying or falsifying sentences with Only and All given an evaluation context, with respect to general biases in interpreting sentence meanings. Based on three experiments, I argue that while mental discourse models constructed by comprehenders typically show a strong bias toward incremental interpretation, lexical knowledge about non-conservative determiners like 'only' can override general quantifier processing strategies; the effect is that such atypical cases are rescued from situations where the typical incremental strategy would require costly reanalysis.

Two general processing preferences that have been argued for in various forms are (1) a preference for strict incrementality in interpretation (Sedivy, et al 1999), and (2) a preference for mental representations that are 'efficient' (no more complex than necessary) (Johnson-Laird 1983). What do such biases predict for verifying 'All A are B' and 'Only B are A'? If representational efficiency is a priority, the simplest representation of both sentences expresses that A is a subset of B. Neither sentence type should be more complex. Suppose we understand 'incrementality' as a tendency to restrict the domain (of individuals) under consideration as quickly as possible--for 'all', this means find the set of As, then check each member for property B. For 'only', looking at the Bs is the wrong strategy--getting to the right answer from there requires either considering the complement set of B and checking that it contains no As, or 'revising' your strategy to look for the As (both strategies more complex than for 'all'). Experiments 1-2 finds sentences like 'Only the boys have kites' take longer to verify than their 'All/Every' counterparts (both experiments: False $p < .001$, True $p < .001$), suggesting that comprehenders opt to restrict domains even when this leads them into an inefficient interpretation strategy.

However, Experiment 3 suggests that despite a general preference for strongly incremental interpretation, lexical information about how 'only' combines with its arguments can influence strategies we use to verify sentences like 'Only circles are red'. Visual popout was used to manipulate whether the 'predicate' set (set of red things), the 'complement' set (set of non-circles), or the 'restrictor' set (set of circles) was easiest to visually identify. While the 'all' sentences show an expected benefit for cases where the restrictor set pops out, 'only' is verified most quickly when the predicate set pops out, suggesting that subjects delay visual domain restriction to avoid future reanalysis.