

How rapidly are pragmatic inferences calculated? Evidence is mixed. Using eyetracking, Sedivy et al.¹ find listeners rapidly infer that an item labeled with *big* implies existence of a smaller item of the same type, while Huang & Snedeker¹ find a marked delay in recognizing that *the girl with some X* implies the existence of another character with some X. Whether this difference would appear in the same experiment is unknown. Grodner et al.³ find rapid interpretation of *some*. They argue that *some* was slow to process in Huang & Snedeker because it was rendered infelicitous by the use of numerals in filler trials. Alternatively, Grodner et al.'s use of scalar quantifiers in most trials may have helped participants anticipate how objects would be labeled, speeding processing.⁴

We varied label predictability across two experiments involving both size adjectives and scalar quantifiers. Participants viewed displays (Figures 1-3) and listened to recorded instructions (*click on the boy/girl who has _some of/all of/the yellow/the big_ blicket(s)*). Both objects⁵ and their names were novel. In the *semantic* conditions (*yellow, all*), reference could be disambiguated semantically (e.g., only one girl had a yellow object or all of anything; note while Sedivy et al. also investigated pragmatic inferences based on color, our color trials were unambiguous semantic control trials). In the *pragmatic* conditions (*big, some*), disambiguation required an additional pragmatic inference – that *big* was being used contrastively or that *some* means *some-but-not-all*.

In Exp. 1, on every trial only the relevant contrast (size, quantity) was depicted, so each display-type exactly predicted the type of modifier: only the *big* trials used displays with a salient size contrast (Figure 1), whereas only the *some* and *all* trials used displays with salient some/all contrasts (Figure 2), and filler *color* trials involved objects that contrasted in color, but not size or numerosity (not shown). In contrast, in Exp. 2 each display (Figure 3) was rotated through conditions and could be used with any of the modifiers (an additional *small* condition also increased label diversity).

Table 1 shows the percentage of off-line target responses and the first time window in which eye movements indicated a preference for the target character (*ps*<.05) in both experiments. Because of baseline looking preferences, we split the eyetracking data based on whether, at modifier onset, participants were looking at the target or competitor (e.g. the other girl). A reliable target preference was established when participants were more likely to switch *to* the target character than *away* from it. Although participants chose the target at roughly equal rates in both experiments, eye movements were delayed in Exp. 2, particularly for the *pragmatic* conditions.

We confirmed rapid pragmatic interpretation of *big* relative to *some*, but found that *both* pragmatic inferences but not semantic interpretation were affected by label predictability – either because listeners can quickly extract display-type/label-type correlations or because displays with single, salient contrasts induce spontaneous encoding of the objects according to the contrast (*big, some, etc.*).

| Condition | Experiment 1 (N=12) | | Experiment 2 (N=17) | | Experiments 1 vs. 2 1 st Window w/Sig. Interaction |
|-----------|---------------------|---------------------------------|---------------------|---------------------------------|--|
| | % "correct" | 1 st Reliable Window | % "correct" | 1 st Reliable Window | |
| Some | 75% | 800-1000ms | 76% | 3000-3200ms | 1000-1200ms |
| All | 81% | 800-1000ms | 89% | 1200-1400ms | none |
| Color | 100% | 400-600ms | 100% | 400-600ms | none |
| Big | 83% | 400-600ms | 75% | 1000-1200ms | 800-1000ms |

Table 1.

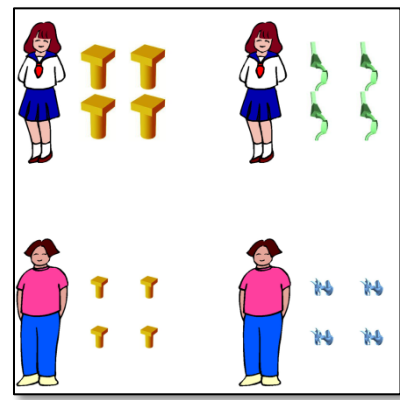
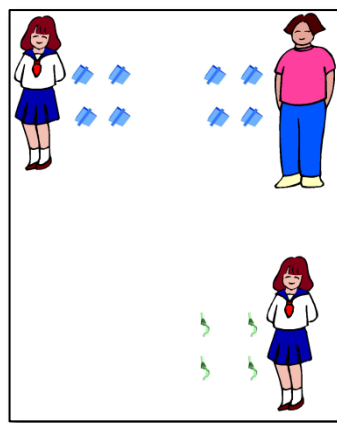
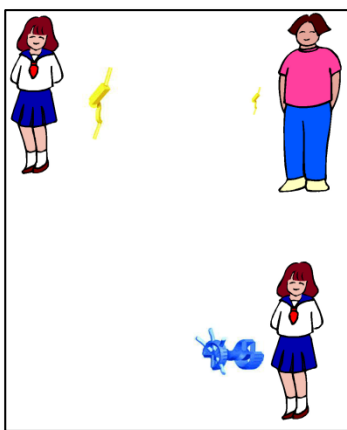


Figure 1

Figure 2

Figure 3

Sedivy, J.C., Tanenhaus, M.K., Chambers, C.G., & Carlson, G.N. (1999) Achieving incremental semantic interpretation through contextual representation. *Cognition*, 71, 109-147.

2. Huang, Y.T. & Snedeker, J. (2009). Online interpretation of scalar quantifiers: Insight into the semantics-pragmatics interface. *Cognitive Psychology*, 58, 376-415.

3. Grodner, D.J., Klein, N.M., Carbary, K.M., & Tanenhaus, M.K. (in press). "Some," and possibly all, scalar inferences are not delayed: Evidence for immediate pragmatic enrichment. *Cognition*.

4. Huang, Y. & Snedeker, J. (2009). Some questions are still unresolved: Prosody, predictability, and speed of scalar implicatures. ExPrag 2009, Lyon, France.

5. Michael Tarr, used with permission.