Not all uses of quantifiers are literal. A great deal of research has focused on the pragmatic enrichment of “some” to more specific interpretations such as “some but not all” (cite). What is less well studied, however, is the fact that the universal quantifier “all” can be pragmatically relaxed to produce nonliteral interpretations as well. For example, “All of the leaves are turning red” means that a lot (but not all) of the leaves are turning red, and “Bob took all of the credit” means that Bob took more credit than he deserves, and the speaker feels upset about it. Since the literal meanings of these utterances are false, a pragmatic listener needs to incorporate linguistic information, background knowledge, and the speaker’s communicative goal in order to recover the speaker’s intended meaning. Recent work has shown that modeling language understanding as recursive social reasoning between speaker and listener can produce hyperbolic interpretations of utterances and explain the affect often conveyed in nonliteral language (cite). Here we explore people’s interpretations of “some” and “all” and present a computational model that predicts literal, loose, and hyperbolic interpretations as well as associated affective subtexts.

We conducted Experiment 1 to examine interpretations of “all” and “some” in various contexts. 40 participants on Amazon’s Mechanical Turk read scenarios in which Alice brought 10 M&M’s, cookies, or pies to a party. After the party, Alice said to a friend, “Bob ate {some, all} of the {M&M’s cookies, pies}!” Participants then rated how likely it is that Bob ate a certain amount of the food items. If participants interpret Alice’s utterances literally, they would rate Bob as very likely to have eaten all 10 of the food items when Alice says “all.” However, participants’ endorsement of the literal interpretation of “all” varied significantly based on the type of food item, as shown in Figure 1.

Experiment 1a: Prior elicitation

We asked X participants on Amazon's Mechanical Turk to rate the probability of someone eating certain amounts of different items.

Experiment 1b: Affect prior elicitation

Experiment 2: Sentence interpretation

Given that someone said...

Experiment 3: Affect judgments

Results:

People's interpretation of "all" differs based on the prior. People also infer stronger negative affect from the speaker given a hyperbolic "all."

Model