**Quantifier spreading and domain restrictions on event quantification**

**Background:** A large body of previous experimental work (Philip 1995, Crain et al. 1996, Drozd 2001, Smits 2009) has documented a phenomenon where children "spread" a universal quantifier by additionally associating it with a DP other than the restrictor. Roeper, Strauss, and Pearson (2004) extended these findings by showing that some children additionally associate the quantifier with the event described by the sentence. That is, children will interpret "Every monkey is eating a banana" as "Every eating event is an event of a monkey eating a banana". This talk presents the preliminary results of a study showing that some children spread quantifiers even to events other than the one denoted by the verb. That is, they are interpreting "Every monkey is eating a banana" as "Every event is an event of a monkey eating a banana."

**Participants and materials**: Participants to date are 21 English-speaking 4- to 8-year-olds recruited from an elementary school in Sunderland, Mass. (mean age 6;6). Materials consisted of 68 pictures paired with a universally quantified sentence. Children were tested over two sessions. Each child saw both sessions. Testing dates ranged from 7 to 27 days apart, with an average of 20 days apart. Each session consisted of 16 test items, 9 control-yes items, 9 control-no items, and 4 training items (for which no data was recorded). The study was a truth-value judgment task that tested 8 unique conditions in which quantifier spreading could occur, with 4 test items per condition. The study used Linger to present test and filler items to the children and record results. The experiment was presented to the child as a game where a puppet describes pictures on the computer screen and the child's role is to tell the puppet whether he is right or wrong. The sentences describing the test and control items were all of the format "Every **x** is *verb*ing **y**." When children responded with "wrong," they were asked to explain their reasoning. Audio recordings were made of each session to record these answers and gain further insight into the child's reasoning during quantifier spreading.

**Results:** In the control condition, as well as the 2 conditions with an adult "no" response, children's accuracy was at or near 100% (see table 1). In the conditions with the potential for quantifier-spreading, children's accuracy was at near-chance levels for all conditions (see table 2). We thus replicate the findings of previous studies, and crucially show that quantifier-spreading extends to scenarios where the extra item matches neither the subject, nor the object, nor the verb.

Additionally, for four of our quantifier-spreading conditions (4,6,7,8), we fit a mixed logit model predicting response accuracy from verb match (2 levels, sum-coded), object match (2 levels, sum-coded), age (centered), and their interactions. The model included random intercepts for subject and item, as well as random slopes for verb, object match, and their interaction (grouped by subject) and age (grouped by item; maximal random effects structure). We find a main effect of verb match: accuracy is significantly greater when the verb matches than when it does not ($\beta$ =5.18, $z$=2.64, $p$<.01).

We find a significant interaction between verb match and object match, such that the difference between object match and mismatch is greater when the verb matches than when it mismatches ($\beta$=-8.43, $z$=-2.16, $p$<.05). Finally, we find a significant interaction

between object match and age, such that the difference between object match and mismatch is greater for younger children ($\beta$ =-0.12, $z$=-2.3, $p$<.05).

**Table 1**

| 1 Extra item: same subject, no object | 97.6% |
|---|---|
| 2 Extra item: same subject, different object | 100% |
| **Control condition** | 91.4% |

**Table 2**

| 3 Verb is intransitive, extra item is different from subject | 48.4% |
|---|---|
| 4 Extra item: same object, no subject | 50.0% |
| 5 Extra item: matches neither subject nor object | 48.4% |
| 6 Extra item: different subject, different obj., different verb | 46.8% |
| 7 Extra item: different subject | 57.1% |
| 8 Extra item: different subject, different obj., same verb | 46.8% |

Condition 4: "Every man is throwing a ball."
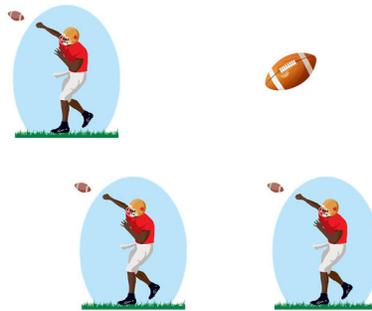


Condition 6: "Every man is kicking a ball."

Condition 7: "Every boy is reading a book."
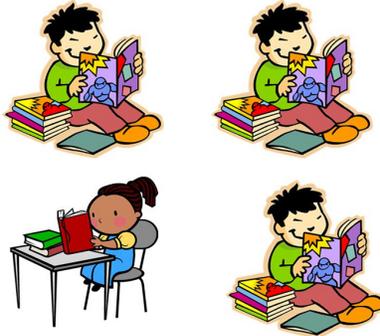


Condition 8: "Every dog is chewing a bone."