Aiming high: children’s knowledge of absolute and relative readings of superlatives

Summary: Sentences containing superlative expressions like “the tallest tree” are ambiguous between an *absolute* reading and a *relative* reading. Corpus studies reveal that children’s and their caregivers’ production of superlatives involve the *absolute* interpretation. Previous experimental studies suggest children have difficulty accessing the *relative* reading. We present novel experimental evidence that despite the lack of evidence for a *relative* reading in their input, children as young as 3 access the relative reading, once the relevant comparison set is made sufficiently salient.

Background: Corpus studies reveal that productive superlative morphology emerges around 4-5 years of age and is generally error-free (Hohaus & Tiemann 2009). But few studies have examined children’s interpretations of adjectival superlatives. A sentence like (1) has two possible readings: an *absolute* reading (1a), made true in Figure 1, where the relevant comparison set contains five trees; and a *relative* reading (1b), made true in Figure 2, where the comparison set contains three climbers. Tieu & Shen (2015) report that children’s and caregivers’ spontaneous productions of superlatives (Brown corpus, Brown 1973; CHILDES, MacWhinney 2000) are restricted to instances of the *absolute* reading. This state of affairs could be consistent with absolute readings emerging prior to relative readings. Indeed Arii (2011) reports that Japanese-speaking 6-year-olds struggle with the relative reading, rejecting (1) as a description of Figure 3. Importantly, the children often justified their rejections by pointing out, e.g., that Donkey had not climbed the tallest tree in the picture – evidently accessing the *absolute* reading, disregarding the contextually provided comparison set of climbers (see Tieu & Shen 2015 for similar data from English-speaking 4-year-olds).

Experiment: We designed a Truth Value Judgment Task “guessing game” to test for *absolute* and *relative* readings in contexts that would make the relevant comparison sets highly salient. 20 adults and 20 children (3;02–6;01, M=4;05) participated in the experiment. Participants saw 2 practice trials, followed by 16 test trials: 3 Absolute-True targets and 3 Absolute-False targets (e.g., the question-answer pair in (2) paired with Figure 1 and Figure 4, respectively); 3 Relative-True and 3 Relative-False targets (e.g., (3) paired with Figure 2); 2 comparative controls (e.g., (4) paired with Figure 5); and 2 basic adjectival controls (e.g., (5) paired with Figure 6). We varied climbers and objects (e.g., trees, mountains, mushrooms) across trials. To circumvent children’s apparently strong preference to immediately identify the *absolute* tallest/biggest object in the picture: (i) the puppet uttered the test sentence before the outcome picture was shown; (ii) the test sentences were uttered in response to explicit questions that would highlight the relevant comparison set; (iii) when the target sentence was uttered, only the alternatives relevant to the target reading were visible on the screen; for example, on the *relative* targets, only the three climbers were visible when the puppet made her guess; (iv) the outcome pictures on the relative targets always included two absolute ‘largest’ objects and two absolute ‘smallest’ objects, in order to decrease the saliency of any one object; (v) the relative and absolute trials were blocked (with relative presented first).

Results: All 40 participants correctly answered at least 3/4 unambiguous control trials and were included in the analysis. Results from the targets are presented in Figure 7. Mixed effect logistic regression models were fitted to the Absolute responses, and to the Relative responses, with Group, Target Truth Value, and their interaction as fixed effects, and random by-participant intercepts. Model comparisons revealed a significant effect of Target Truth Value (Abs: χ² = 249, Rel: χ² = 274, both p < .001), but no effect of Group or interaction (both p > .05) in either case.

Conclusion: The present study provides the first experimental evidence, to our knowledge, that children as young as 3 can access both *absolute* and *relative* readings of superlative expressions, once the relevant comparison classes are made salient. Children’s success in spite of the absence of evidence for the *relative* reading in their input, suggests that the mechanism that generates the relative reading (cf. Heim 1999) is likely already in place once the *absolute* reading is detectable.
Examples & Figures

(1) Donkey climbed the tallest tree.
   a. *Donkey climbed a tree that was taller than the other trees.*
   b. *Donkey climbed a taller tree than the other climbers.*

(2) a. *Absolute target question:* Which tree will Donkey climb?
   b. *Puppet’s sentence:* Donkey will climb the tallest tree.

(3) a. *Relative target question:* Who will climb the tallest tree?
   b. *Puppet’s sentence (True target):* Donkey will climb the tallest tree.
   c. *Puppet’s sentence (False target):* Zebra will climb the tallest tree.

(4) Chicken will climb a taller tree than Panda. / Panda will climb a taller tree than Chicken.

(5) Frog will climb the tall tree.

![Figure 1: Absolute-True image.](image1)
![Figure 2: Relative-True image.](image2)
![Figure 3: (Adapted) Relative-True image from Arii (2011).](image3)

![Figure 4: Absolute-False image.](image4)
![Figure 5: Comparative control.](image5)
![Figure 6: (True) adjective control.](image6)

![Figure 7: Proportion of yes-responses to Absolute and Relative targets.](image7)