Ordering is not ranking: A study of ordinals vs. degree modifiers in nested definites

This study probes how the semantics of ordinals relates to the semantics of comparatives and superlatives. We examine this question with the help of a picture task in which participants are asked to locate objects described by nested descriptions like *the candle on the first/closer/closest table*, with an ordinal, comparative or superlative modifier in the inner noun phrase. We show that ordinals systematically lack the 'relative readings' (as we call them) first observed by Haddock (1987) for unmodified nested descriptions like *the rabbit in the hat*, in which the inner definite is understood with enriched content, as in *the rabbit in the hat <u>with a rabbit in it</u>*. As Bumford (2017) observes and explains via scope movement, nested descriptions with superlatives like *the rabbit in the <u>biggest</u> hat* have relative readings too, in this case paraphrasable as *the rabbit in the biggest hat <u>with a rabbit in it</u>*. This present study shows that superlatives and ordinals differ in their propensity to give rise to such readings (and comparatives easily allow them).

The differences we observe are in line with prior work showing differences between ordinals and superlatives (Bylinina et al., 2014). However, the results present difficulties for accounts of the semantics of ordinals on which they are entirely parallel to (Bhatt, 2006) or contain superlatives (Alstott, 2023). Such accounts would predict relative readings with both ordinals and superlatives in nested descriptions, *contra* what we found in the experiments we will report. We discuss two strategies for explaining the contrast, one building on Bylinina et al.'s idea that ordinals do not undergo scope movement, and another building on the idea that ordinals depend on a contextually salient linear ordering with a basis that is preferably iconic to the natural numbers.

In both of our experiments, participants were presented with displays involving objects placed on a sequence of locations. In Experiment 1 this was a series of tables (see Figure 1); in Experiment 2 it was a series of stairs (Figure 2). Relative to the same display throughout the experiment, participants were asked a series of questions like *What's next to the cat on the <u>closest</u> table?* Participants were instructed to write "doesn't make sense" if the question does not make sense. All target trials were set up so that a relative reading would be the only one available, given the display. Rejection ("doesn't make sense") thus signalled the absence of a relative reading.

Prompts varied in the **number of objects** described by the relevant noun (e.g *cat*): 2 or 3. The **type of modifier** could be either ORDINAL (e.g. *first*) or DEGREE (comparative like *closer* or superlative like *closest*). In the DEGREE condition, the modifier was comparative in the case of two objects, and superlative in the case of three objects, as comparatives are more felicitous than superlatives with comparison classes of size 2. Our main focus is on nested descriptions containing modifiers in the EMBEDDED noun phrase, as in *What's next to the cat on the <u>closest</u> table?* but as a control, we included **construction**s where the modifier appears in the MATRIX position within the noun phrase, as in *What's on the closest table with a cat on it*, where the complement of the adjective is explicitly restricted by information from the noun. Two items were constructed for each of the 8 conditions, and participants saw all 16 items. Order w.r.t. both modifier type and sentence type was counterbalanced across lists, and fillers were evenly interspersed with target trials. For both experiments, 40 native speakers of English were recruited via Prolific (different groups of 40).
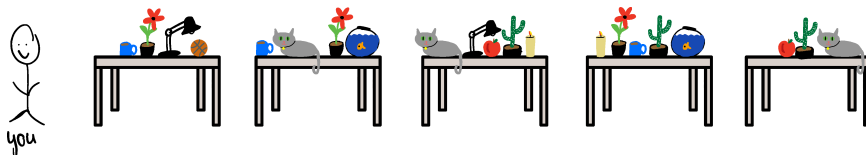

Figure 1: Exp. 1 display

The results of Experiments 1 and 2 are shown in Figure 3. We found the same pattern in both experiments. With the modifier in MATRIX position (*first table with a cat*), there was almost no rejection. A strong majority of respondents rejected relative readings for nested descriptions with ORDINAL modifiers in the EMBEDDED position (*cat on the first table*), as shown in Figure 3. Relative readings for nested descriptions containing DEGREE modifiers were sometimes rejected, but significantly less often than with ORDINALs. Interestingly, rejection was significantly more common with superlatives than with comparatives; we suspect that this is due to the absence of a competing absolute reading with comparatives.

We conclude that ordinals are substantially less susceptible to relative readings than degree modifiers, in nested descriptions. One strategy for explaining this result is to adopt Bylinina et al.'s stipulation that ordinals cannot undergo scope movement, made in order to explain the absence of 'upstairs *de dicto*' readings with ordinals. This assumption alone does not suffice to block relative readings, though, because in order to generate focus-related relative readings of ordinals as in Bhatt's (2006) *John$_F$ gave the first telescope to Mary*, Bylinina et al. assume that ordinals expect an implicit comparison class. So one would need a theory of why the comparison class argument of *first* in *the cat on the first table* cannot be set to 'with a cat on it'.

Our explanation relies on the familiar idea that an ordinal expects an ordering that can be provided by context. The ordering is a function f from a 'basis' to satisfiers of the modified predicate. The basis is a linearly ordered set like a sequence of times (as in *second train*) or locations (*second stair*). The *nth table* is the nth object in a sequence $\langle f(i_1), f(i_2), f(i_3), \ldots \rangle$. We posit further that the more iconic a sequence is to the natural numbers, the more accessible it is as a basis for the ordering. The more evenly spread out a sequence is, as measured by a perceptually salient distance metric, the more iconic it is to the natural numbers. In our experiments, the sequence of locations corresponding to the full set of tables is more iconic to the natural numbers than the sequence over the subset containing cats. The highly iconic basis fixes the reading of an embedded ordinal to be absolute (low scope), even on pain of global reference failure. Superlatives do not rely on a linear ordering and therefore have a more flexible range of scope options.
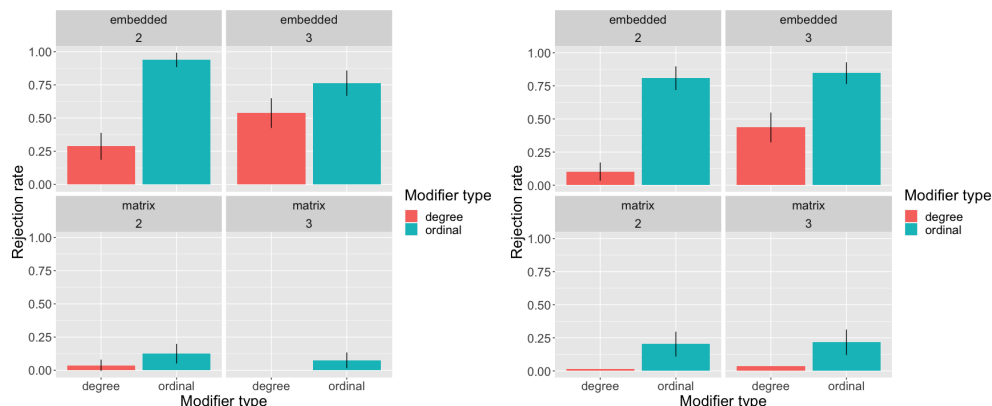

Figure 2: Exp. 2 display

Figure 3: Results of Experiments 1 (left) and 2 (right). Error bars show 95% CI.

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