

Why 'at most three beers' is not the same as 'fewer than four beers'

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While it may seem obvious that (1a) is true under exactly the same circumstances as (1b), and that (2a) is true just when (2b) is true, there are subtle differences between superlative modifiers ('at least', 'at most') and comparative modifiers ('more than', 'fewer than').

(1a) Berta had more than 3 beers.

(1b) Berta had at most 4 beers.

(2a) Berta had fewer than 4 beers.

(2b) Berta had at most 3 beers.

For example, previous experiments have shown that while nearly everyone judges (3a) to be a valid inference, while (3b) is judged to be a valid inference only half of the time.

(3a) Berta had 3 beers. Therefore, Berta had more than 2 beers.

(3b) Berta had 3 beers. Therefore, Berta had at least 3 beers.

Two competing theories have been proposed to account for this. This talk presents new experimental results using a true-or-false judgment task, which help to decide between these theories, and also show that validity judgments can give different results from judgments of truth or falsity in a scenario. However, the new experiments also reveal a curious difference between "at least" and "at most", which no previous theory of superlative and comparative modifiers can explain.