

# Alternative estimates of category exemplar typicality across adulthood

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## Abstract

- One way to investigate semantic categories is by estimating the *typicality* of each member, or how frequently an item is associated with a given category.
- Previous category exemplar norms use *free-response* methods to estimate normative typicality (Van Overschelde et al., 2004; Castro et al., 2021), where typicality is scaled as the mean response frequency for a given exemplar.
- These methods have traditionally ignored age and cohort effects.
- Free-response methods may also underestimate typicality for less common exemplars, particularly for older adults (Troyer, 2000).
- We present a category norming task using alternative response methods (i.e. Likert ratings and rank-ordering) that account for historical time and chronological age and compare the alternative typicality estimates to previous free-response estimates.

## Methods

- We recruited 143 young (ages 18-39), 133 middle-aged (ages 40-59), and 171 older (ages 60+) adults using Amazon's Mechanical Turk (MTurk) platform.
- Participants were shown labels and members of 70 taxonomic categories and asked to give **Likert ratings** for each exemplar and to **rank-order** the exemplars within each category. All responses were collected using Qualtrics.
- Categories and exemplars were selected from the Castro et al. (2021) norms. Only exemplars that were reported 5% of the time were used in the study.
- Normative typicality was computed as the average Likert rating or rank-order for each exemplar within a given category.
- To help understand differences between high- and low-typicality items, we split each group of exemplars by their median typicality.

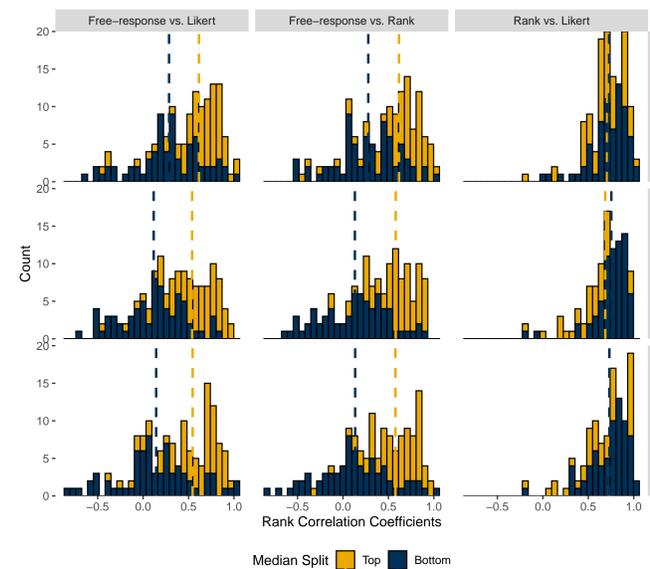
### LIKERT RATING

"Rate each item from 1 (very atypical) to 10 (very typical) for the category label shown."

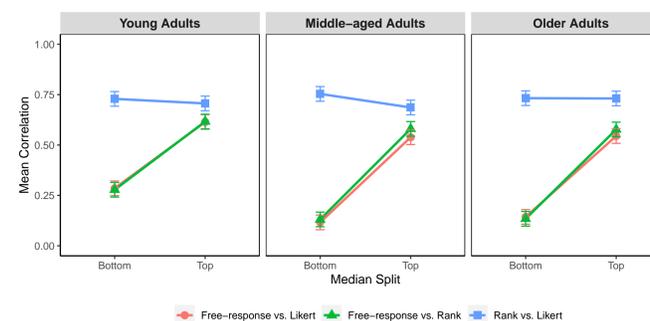
### RANK-ORDER

"Order each item from the most typical to the least typical for the category label shown."

## Results



- Free response typicalities have low average correlations with Likert ( $r = 0.37$ ) and rank-order ( $r = 0.39$ ) response methods.
- The new response methods correlate highly with each other ( $r = 0.72$ ), however.
- Correlations for items below the median split ( $r = 0.74$ ) are virtually the same as correlations above the median split ( $r = 0.71$ ).
- This is especially pronounced for items with below-median typicalities compared to above-median typicalities.



- Linear contrasts indicate that the correlations between response methods are significantly lower for middle-aged and older adults compared to young adults.
- Average correlations between Likert and free-response methods are significantly greater than comparisons to free-response methods.
- Correlations between Likert and free-response methods do not significantly differ as a function of age or median split.
- This is particularly true when comparing typicalities from free response and alternative methods for items below the median typicality value.

## Conclusions

- Traditional free-response methods do not capture reliable estimates of typicality, particularly for exemplars that are less-typical in a given category.
- Free-response estimates for low-typicality items show less stability for middle-aged and older adults compared to young adults.
- Alternative estimates derived from Likert ratings and rank-order methods, however, show high stability, regardless of age group or typicality of a given exemplar.
- The new methods introduced here provide more stable age-graded estimates of category typicality compared to previous norms based on free-response methods.

## References

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## More Information

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