

Crosslinguistic individuation ratings: Interaction between entity type and number system

BACKGROUND AND AIMS: It is generally acknowledged that the grammatical count–mass distinction does not always map neatly with the object–substance distinction in the real world.^[1,2] The concept of individuation, defined by Grimm as “the propensity for an entity to be construed as an independent individual”,^[3] has been proposed as a middle course steering between ontological and grammatical accounts.^[3,4,5] More specifically, a scale of individuation has been introduced, with liquids/substances on one end and individuals on the other end.^[3] Yet, the individuation scale has not been empirically tested. Against this background, we conducted parallel lexical rating tasks on individuation degrees across three languages—English and Dutch, which are number-marking languages, as well as Mandarin Chinese, a numeral classifier language without number marking (henceforth abbreviated as EN, NL, and CN, respectively). Our study has two aims: first, to provide norms of individuation degrees as a lexical-semantic parameter; second, to examine how individuation interacts with entity types, and how crosslinguistic variation in number systems influences individuation ratings.

MATERIAL AND METHODS: We constructed a list of 400-item nominal concepts, which was then converted to a 400-item word list in each language. EN and NL count nouns were presented in plural forms to avoid singular reference. The 400 nominal concepts were categorized into 15 entity types, modified and expanded from those discussed in the literature.^[3] We adopted a novel Best–Worst Scaling (BWS) method to collect individuation ratings.^[6,7,8] Participants were presented with sets of 4 words and instructed to choose the most and the least individuated word from each set. In total, the stimuli consisted of 800 unique 4-tuples, split into 8 lists. Each participant was assigned 1 of the 8 lists and rated 100 4-tuples. Participants were recruited from Prolific (EN, n=59; NL, n=50; CN, n=50). Each list was rated at least six times.^[7]

DATA ANALYSIS: Individuation scores were derived using a Value Learning (VL) model applied to Best–Worst Scaling data, which estimated latent item-level preferences from participants’ choices.^[8] To enable crosslinguistic comparison, VL scores were z-normalized within each language. Entity-type–level scores were computed by aggregating across items within each category for each language. Statistical comparisons were conducted using linear mixed-effects models with language and entity type as fixed factors and item and participant as random effects, followed by emmeans pairwise contrasts (Holm correction).

RESULTS AND DISCUSSION: The results of the data analysis are presented in Figure 1, which allows us to evaluate (1) the global gradient of individuation across entity types and languages, and (2) language-specific deviations within certain entity types. As expected, individuation degrees show a broadly convergent gradient across languages: concepts denoting natural phenomena and substance-like categories consistently fall on the low end of the scale, whereas individuals (animals, humans, and inanimate artefacts) cluster at the high end. However, despite this shared global structure, several category-specific deviations emerge, with CN in particular diverging from EN/NL. For instance, concepts denoting insects, animals, vegetation/fruits/plants were rated significantly more individuated in CN than in EN/NL. Conversely, entity types of regions/areas and super-ordinates were rated significantly lower in CN than in EN/NL.

To further test the interaction between number marking and individuation, we examined categories in which EN and NL exhibit considerable within-language count–mass variation (granular aggregates, foodstuffs, superordinates, and vegetation/fruits/plants), by separating the count terms from the mass terms and comparing them with the CN counterparts. The results are presented in Figure 2. Across all 4 categories, EN/NL count terms were rated higher than mass terms (though the differences are not always significant), whereas the position of CN ratings varies per category. For granular aggregates and vegetation/fruits/plants, CN differs significantly from EN/NL mass terms (e.g., *rice*, *ginger*, *bamboo*) and patterns closer to EN/NL count terms, suggesting more object-like conceptualization across the board. For foodstuffs, on the other hand,

CN patterns closer to EN/NL mass terms. Somewhat surprisingly, CN superordinates were rated even lower than EN/NL mass terms—an observation that warrants further investigation. Lastly, we tested a small number of pairs where EN and NL differ in their number marking (e.g., EN *furniture* vs. NL *meubel-s*, EN *toy-s* vs. NL *speelgoed*, $n=5$). The results show that given the same concept, the presence of number marking is significantly correlated with higher individuation ($p < 0.001$), also suggesting individuation being “boosted” by the presence of number marking.^[9]

CONCLUSION The present study provides the first empirical evidence for a scale of individuation. The results suggest that this scale reflects an overall shared conceptual organization of entity types across languages, especially on the two ends of the scale. Number marking was shown to interact with individuation, with the presence of number marking correlated with higher individuation.

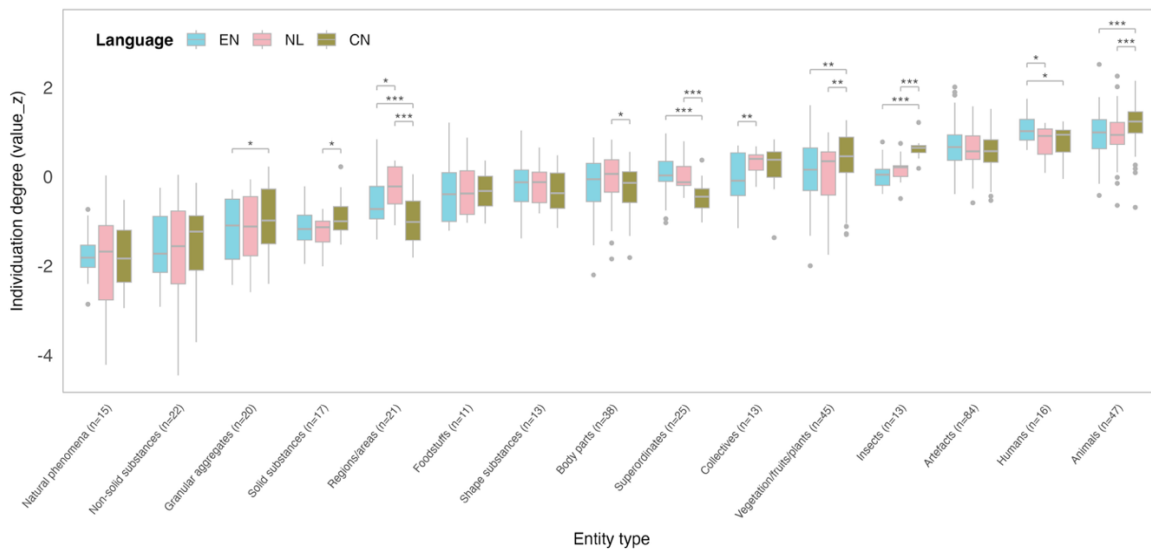


Figure 1. Crosslinguistic individuation degree (value-learning score z-normalized within language) across 15 entity types. X-axis labels show entity types followed by the number of items, ordered from lower to higher overall individuation. Horizontal brackets above the boxes indicate significant pairwise differences between languages within a category ($p < .05$ *, $p < .01$ **, $p < .001$ ***).

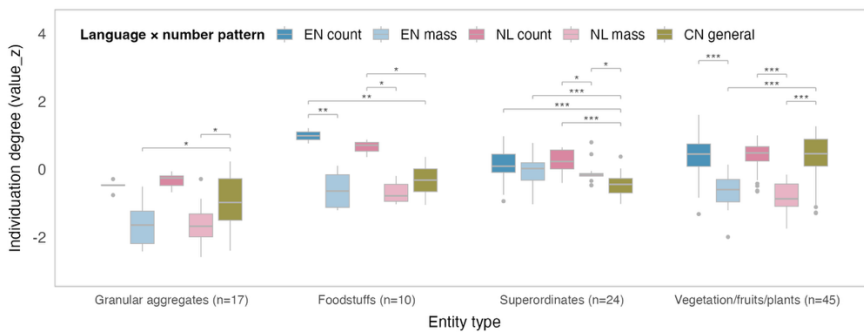


Figure 2. Crosslinguistic individuation degree for 4 categories that show internal count–mass variation in EN and NL.

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