

JUDGING PARADIGMATIC RELATIONS: A COLLECTION OF RATINGS FOR ENGLISH

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1. Goal and Motivation. We introduce a collection of semantically related English word pairs, rated for the strength of the semantic relation holding between them. Our collection presents several elements of novelty with respect to comparable datasets such as WS353 (Finkelstein et al. 2002) and RG65 (Rubenstein and Goodenough, 1965).

- While other datasets focus on similarity (RG65) or similarity/relatedness (WS353), we tackle three different paradigmatic relations, namely **synonymy, antonymy, hypernymy**.
- While other datasets (WS353 and RG65) only contain ratings for nouns, we collected ratings for **three different parts of speech**: nouns, verbs, adjectives. The comparison across parts of speech is expected to highlight conceptual differences of the three relations across word classes. For example, the concept of hypernymy has been widely investigated with respect to nouns, but little attention has been devoted to its application to verbs.
- While other datasets (WS353 and RG65) do not consider gradedness in similarity, we collected ratings at **three different degrees of relatedness**: strongly, weakly and negatively related. Examples of related words for the target *artist* in the synonymy relation, are: *painter* (strongly related), *creator* (weakly related), *scientist* (negatively related). As negatively related, we chose antonyms for synonyms and hypernyms, synonyms for antonyms.
- While other datasets (WS353 and RG65) collect ratings uni-directionally, we introduce **directionality** as a parameter in the collection of the ratings. For every $\langle \text{target}, \text{relation}, \text{relatum} \rangle$ triple, we collected forward and backward ratings (e.g., *artist-synonym-painter* vs. *painter-synonym-artist*). The question at issue is to which extent asymmetry affects relations (e.g., synonyms vs. antonyms) with regard to parts of speech (verbs/adjectives vs. nouns).

2. Target selection & Collection features. The target selection was conducted in a **two-step process**. First, a generation experiment asked native speakers to generate related words (synonyms, antonyms and hypernyms) for 99 English targets per part-of-speech. The targets for this generation experiment were chosen using the stratified sampling technique by Scheible and Schulte im Walde (2014), that relies on a random selection from WordNet balanced for a) target frequency classes, b) polysemy classes, and c) the WordNet semantic class. The generation experiment was carried out by Giulia Benotto and Alessandro Lenci at the Computational Linguistics Lab, University of Pisa. Second, from the generated word pairs, we selected the $\langle \text{target}, \text{relation}, \text{relatum} \rangle$ triples to be rated. We identified $\langle \text{target}, \text{relation} \rangle$ pairs (e.g, $\langle \text{artist}, \text{synonym} \rangle$) such that a) at least 2 different relata had been produced in the generation experiment; b) the strongly related word (e.g, *painter*) had been produced at least 4 times; c) the weakly related word (e.g., *creator*) had been produced twice (preferred) or once; d) the negatively related word had been produced at least twice for the opposing relation (e.g., $\langle \text{painter}, \text{antonym}, \text{scientist} \rangle$). In total, we selected **284 targets** and collected ratings for **1,704 target / relation / related word / direction combinations**, on a scale from 0 (not related) to 5 (fully related). Ratings were collected using Amazon Mechanical Turk. Every $\langle \text{target}, \text{relation}, \text{relatum} \rangle$ triple was rated by 10 subjects for each direction.

3. What we will present. In the presentation, we will a) provide more details of the selection procedure; b) report on quantitative and qualitative analyses of the collection; c) describe corpus-based modeling of the ratings.

Silke Scheible and Sabine Schulte im Walde (2014). A Database of Paradigmatic Semantic Relation Pairs for German Nouns, Verbs, and Adjectives In: Proceedings of the COLING Workshop on Lexical and Grammatical Resources for Language Processing. Dublin, Ireland, August 2014.