Norms of Valence, Arousal, and Dominance for 20,000 English Words

- Has fine-grained real-valued scores for V, A, and D (core dimensions of meaning)
- We show that the annotations are reliable (high split-half reliability scores)
- Has applications in NLP, psychology, digital humanities, etc.
- We show that demographic attributes impact how we view the world

Core Dimensions of Connotative Meaning

- valence (V): positive/pleasure – negative/displeasure
- arousal (A): active/stimulated – sluggish/bored
- dominance (D): powerful/strong – powerless/weak

Thus, we can compare words on the V, A, D dimensions:

- banquet indicates more positiveness than funeral
- nervous indicates more arousal than lazy
- queen indicates more dominance than delicate

Existing VAD Lexicons Created using Rating Scales

ANEW (Bradley and Lang, 1999), ~1,000 words

Warriner et al. Norms (2013), ~14,000 words

- fixed granularity; scale region bias
- poor consistency (intra- and inter-annotators)

Comparative Annotations: Best–Worst Scaling (BWS)

- The annotator is presented with four words and asked:
  - which word is associated with the most/highest X (happiness / activeness / powerfulness)
  - which word is associated with the least/lowest X
- Five out of the six inequalities are:
  - if A is highest and D is lowest, then:
    - A > B, A > C, A > D, B > D, C > D
- Real-valued scores (Orme, 2009):
  - score(w) = %best(w) - %worst(w) (transformed to a 0 to 1 range)

Advantages:

- preserves the comparative nature
- keeps the number of annotations down to about 2N
- leads to more reliable, less biased, more discriminating annotations (Kitschkenko and Mohammad, 2017)

Reliability (Reproducibility) of the VAD Annotations

Average split-half reliability (SHR): approach to determine consistency (Kuder and Richardson, 1937; Cronbach, 1946)

Our Lexicons

The NRC Valence, Arousal, and Dominance Lexicon

- ratings of V, A, D for ~20,000 words

The NRC Emotion Lexicon

- associations for ~14,000 words with eight emotions

The NRC Emotion Intensity Lexicon

- intensity scores for ~6000 words with anger, fear, joy, sadness
- http://saifmohammad.com/WebPages/AffectIntensity.htm

The NRC Word–Colour Association Lexicon

- associations for ~14,000 words with 11 common colours
- http://saifmohammad.com/WebPages/languages.html

Shared Understanding of VAD Judgments by Demographic and Personality Trait Groups

- women: higher shared understanding of A of terms
- men and those that are secure: higher shared V and D
- over 35 years: higher shared V and A
- extroverts and open to experiences: higher shared V, A, D

This study was approved by the NRC Research Ethics Board (NRC-REB) under protocol number 2017-08. REB review seeks to ensure that research projects involving humans as participants meet Canadian standards of ethics.