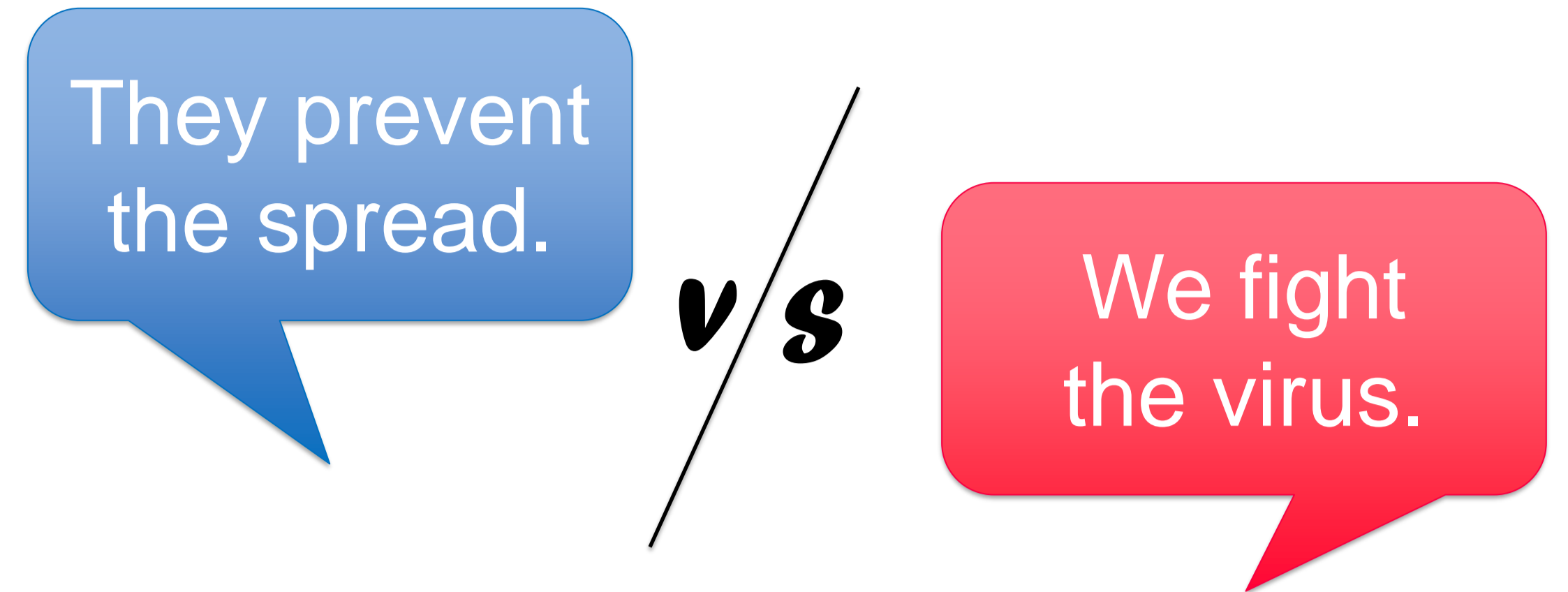


Computational Framing Analysis in Online Media

The framing of content in online media, e.g., regarding moral values or told narratives, influences the perception of their messages. Recent computational approaches from natural language understanding allow for embedding- and graph-based frame extraction and analysis.

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Motivation: what is framing and why is it relevant?

- Formulation of statements influences the perception of their content¹
- Can be a driver in polarizing discussions (e.g., on COVID-19)
- Manifestation in frames (e.g., prevent the spread vs fight the virus)
- Computational semantic text methods to capture differences in the formulation (i.e., beyond word-level analysis)
- Details on two distinct methods for framing analysis on two distinct online media types
- Comparative analysis between groups to provide explanations

Moral framing with word embeddings in political tweets²

- Focus on moral dimensions³
- FrameAxis method⁴
- Embedding-based** analysis of non-contextualized words
- Extraction of **continuous** information
- Tweets associated with politicians
- Differences between parties

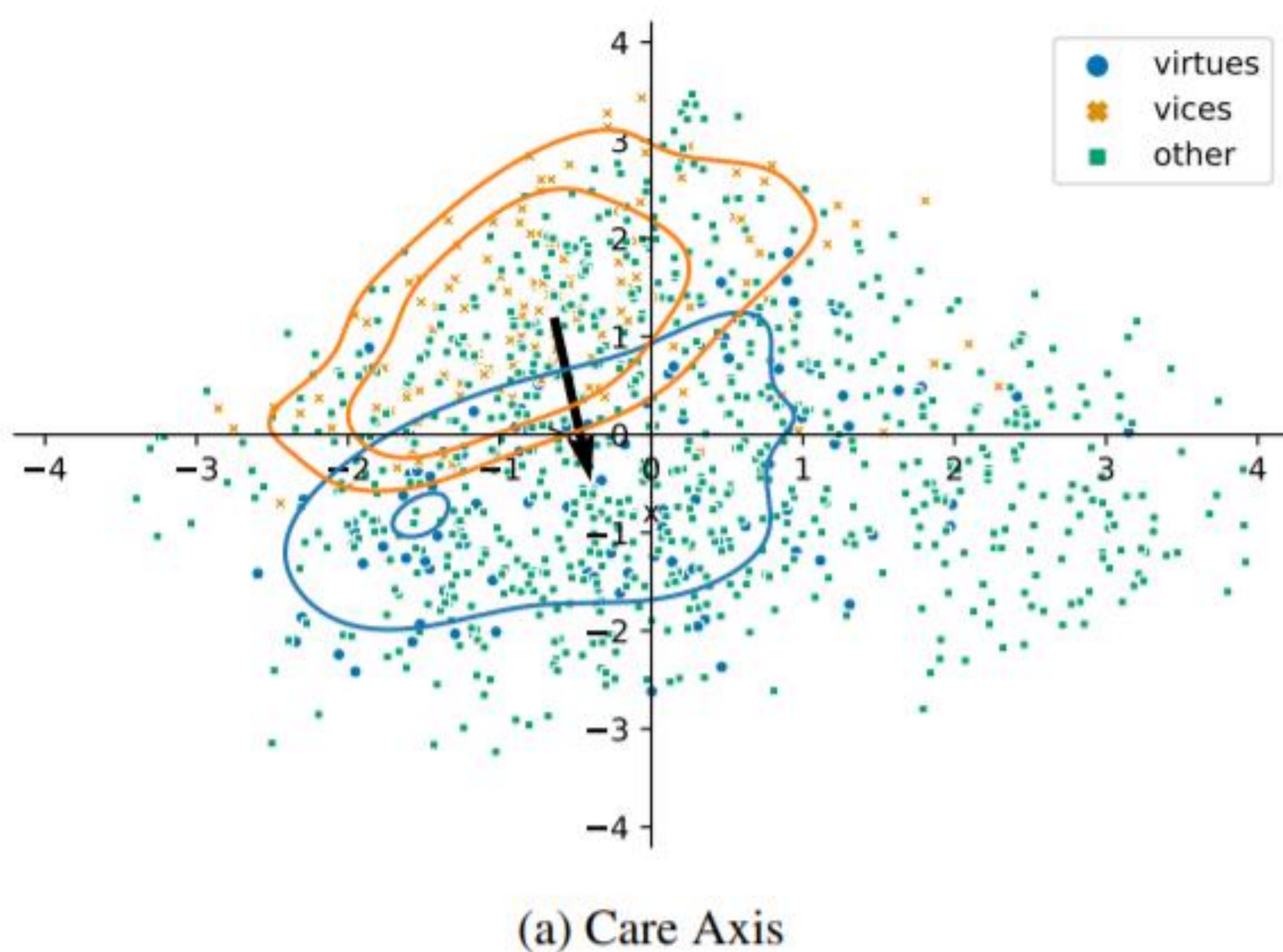


Fig. 1) 2-D projection of word embeddings related to the care/harm axis. Vector projection allows for estimating the leaning (bias) of words.

Narrative framing with AMR graphs in online news⁵

- Focus on narratives⁶
- Abstract Meaning Representation⁷
- Graph-based** analysis on edge-level
- Extraction of **discrete** information
- Online websites as data source
- Contrast conspiracy vs mainstream

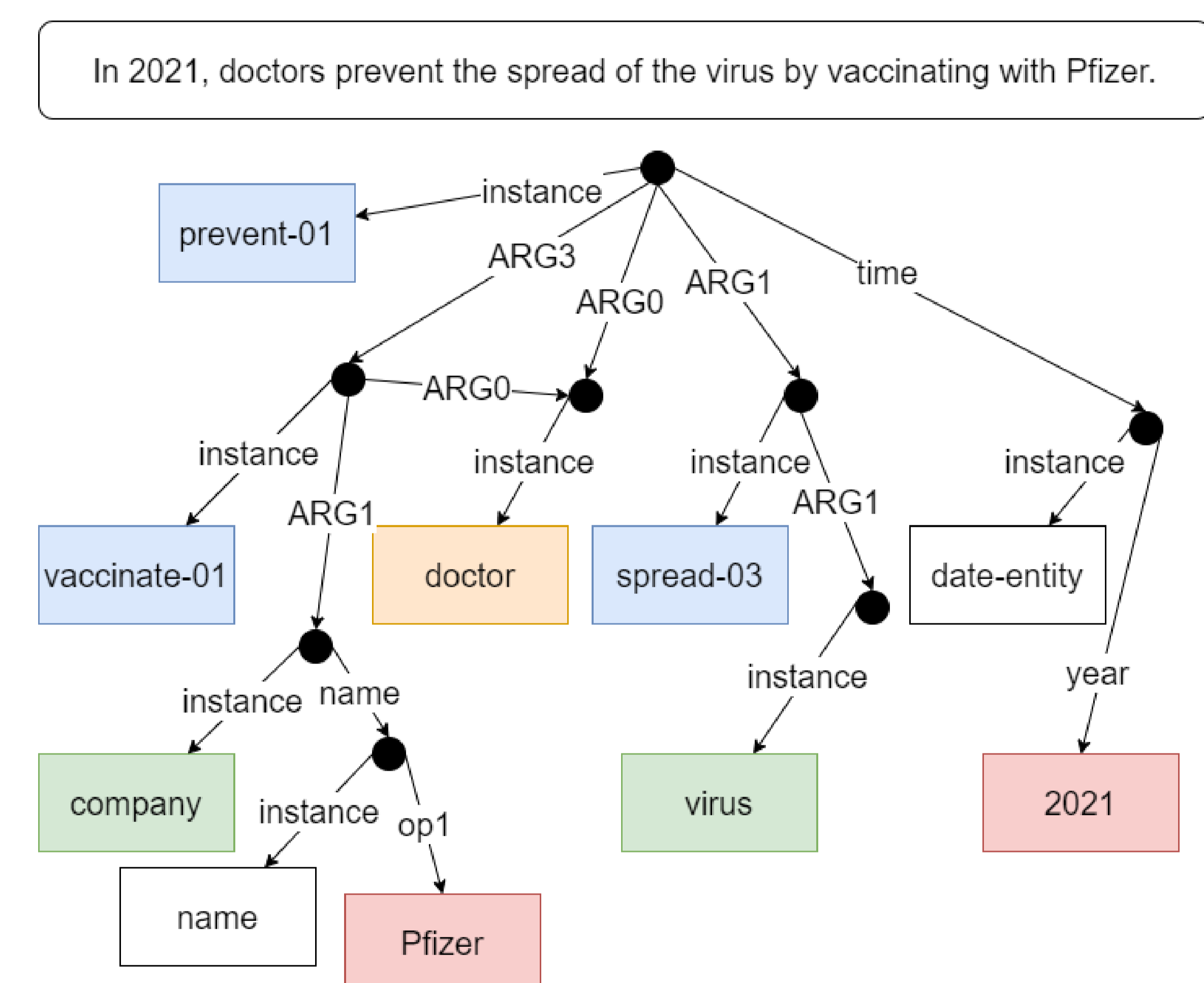


Fig. 2) AMR graph representation of the given sentence. Edge traversal allows retrieving concepts and frames (e.g., ARG1 for patients = green).

Findings of group comparison

- Both methods allow for frame extraction
- Usage of pretrained models for intermediate representation
- Enable explainable visualizations⁸

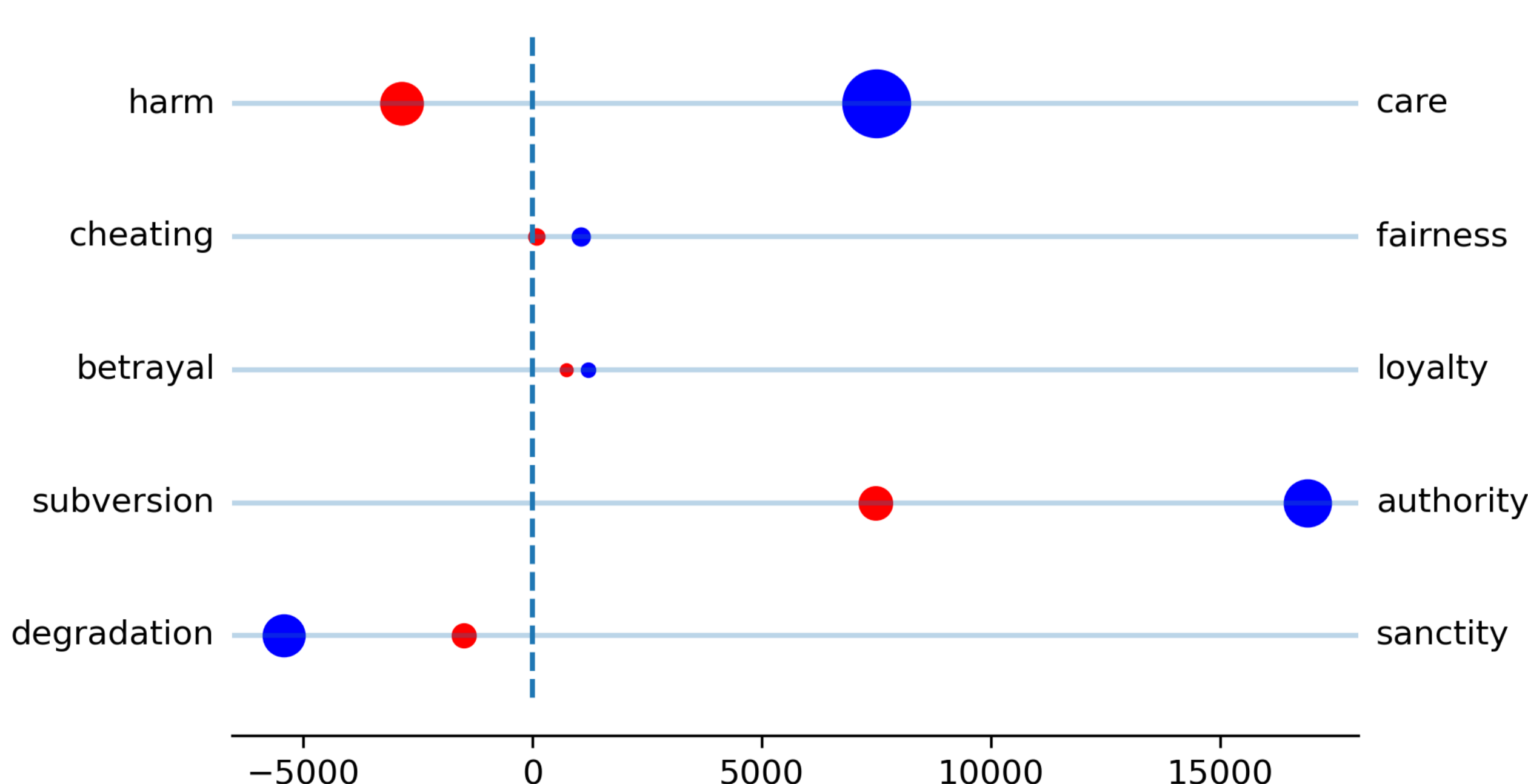


Fig. 3) Comparative visualization of moral dimension between two groups.

Outlook on promising research direction

- Contextualized Embeddings (e.g., BERT-based)
- Graph-level methods (e.g., graph neural networks)
- Combine both (e.g., embeddings of leave nodes)
- Manifestation of polarization (e.g., measurement)

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