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Measuring Ambiguity in Cultural Meaning

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Extended Abstract

In this work, I present a new method of cultural meaning measurement that enables more accurate computational models of communication. Clear, shared definitions of culturally relevant concepts allow people to create coherent interactions [3]. Lack of consistency in meaning, by contrast–disagreement between people or ambiguity within a person–makes interaction more difficult and more likely to lead to conflict [4]. Understanding effects of variation in concept meaning is particularly important for understanding communication dynamics in contexts where cross-cultural interactions are common and meanings for new concepts are constructed, such as social media and other digital spaces.

Bayesian representations of meaning [8, 6], in which concepts are represented by distributions in spaces defined by common dimensions of cultural meaning, yield two ways in which meanings can be considered to vary. First, people can have different ideas of what the typical member of a category is like–in Bayesian terms, meaning distributions with different means. These prototypes people have for culturally significant concepts tend to be largely consistent within cultures [5, 2], although there are some systematic intra-cultural differences along sociodemographic lines [1] as well as differences between cultures. I refer to this kind of variation as *disagreement*. Second, people may have different conceptions of where category boundaries lie–meaning distributions with different variances. This kind of variation in meaning, which I refer to as *ambiguity*, has received limited attention in the social sciences despite potential implications for interactional processes, particularly in digital spaces. Here, I propose a new way to empirically measure ambiguity consistent with Bayesian meaning representations.

I consider concepts to reside in a space of affective cultural meaning defined by three dimensions used by affect control theorists [5]: evaluation, or how good or bad the concept is; potency, or how powerful or weak it is; and activity, or how lively or inactive it is. Consistent with new Bayesian approaches to meaning [8], I operationalize meanings as three-dimensional distributions in this space. To measure the parameters of these meaning distributions, I adapt a method developed by Manski [7] for eliciting probability distributions from lay respondents. My adaptation takes the form of a two-part question implemented using a custom-coded Qualtrics module which will be publicly released at paper publication. Respondents first provide their rating of the "typical" instance of a concept–their distribution mean–then lower and upper bounds of the range in which they believe most category members fall–proportional to the width of their meaning distribution and ambiguity of the concept. This is repeated on each of the three meaning dimensions. See Figure 1 for an illustration.

To investigate relationships between ambiguity, disagreement, term features, and respondent demographics, I surveyed 446 English-speaking Americans on the Prolific platform to obtain meaning measurements for 28 identity and behavior terms. This data collection was intended as a pilot for a larger study to be fielded in April of 2023.

Estimated coefficients for a model predicting ambiguity interval width are shown in Figure 2. These results show that several term features, including term type, mean prototype rating, and cultural meaning dimension pattern ambiguity. Notably, however, level of term disagreement in the sample does *not* predict ambiguity, holding other term characteristics constant.

This result establishes ambiguity as a concept that is empirically distinct from disagreement, meaning that in order to effectively use Bayesian representations of meaning to model interaction in an empirically grounded way, we will need to collect more data on term ambiguity to supplement already-existing data on disagreement.

In addition, several respondent sociodemographic characteristics are statistically significant predictors of ambiguity. However, in analysis not presented here, I find that including respondent characteristics does not improve model fit when compared to a model including only term characteristics. This suggests that ambiguity varies in ways similar to disagreement: although there are systematic differences along sociodemographic lines within cultures, broadly, differences are patterned much more strongly by terms than by respondents.

This work makes both methodological and substantive contributions to the study of cultural meaning. I present a new way to measure ambiguity–intra-personal uncertainty about the meaning of concepts–in a way informed theoretically by recent Bayesian operationalizations of cultural meanings as distributions with both centers and spreads. My results establish ambiguity as a concept empirically distinct from inter-personal disagreement about category prototypes. I argue this implies that in order to make full use of Bayesian cultural meaning representations for modeling social interaction, particularly in digital spaces where cross-cultural interaction and meaning construction processes lead levels of disagreement and ambiguity to be particularly high, we need to measure both types of variation. The ambiguity measurement strategy detailed here lays the groundwork for future research on processes of meaning construction and consequences of ambiguity for interactional outcomes.

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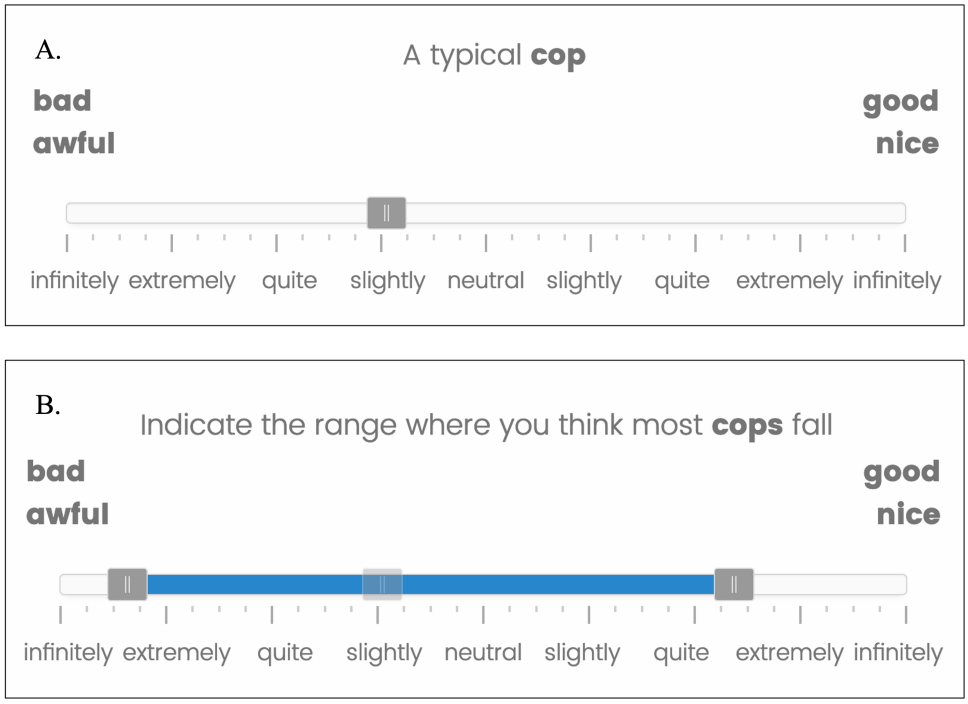

Figure 1: Qualtrics instrument developed to measure ambiguity. The question shown in Panel A measures prototype meaning, which defines the center of the meaning distribution. Panel B, displayed to respondents on a new page, measures meaning ambiguity, defining the spread of the meaning distribution. Handles in Panel B may only be placed on either side of the midpoint provided in Panel A (shown to respondents as a greyed-out, immovable handle).

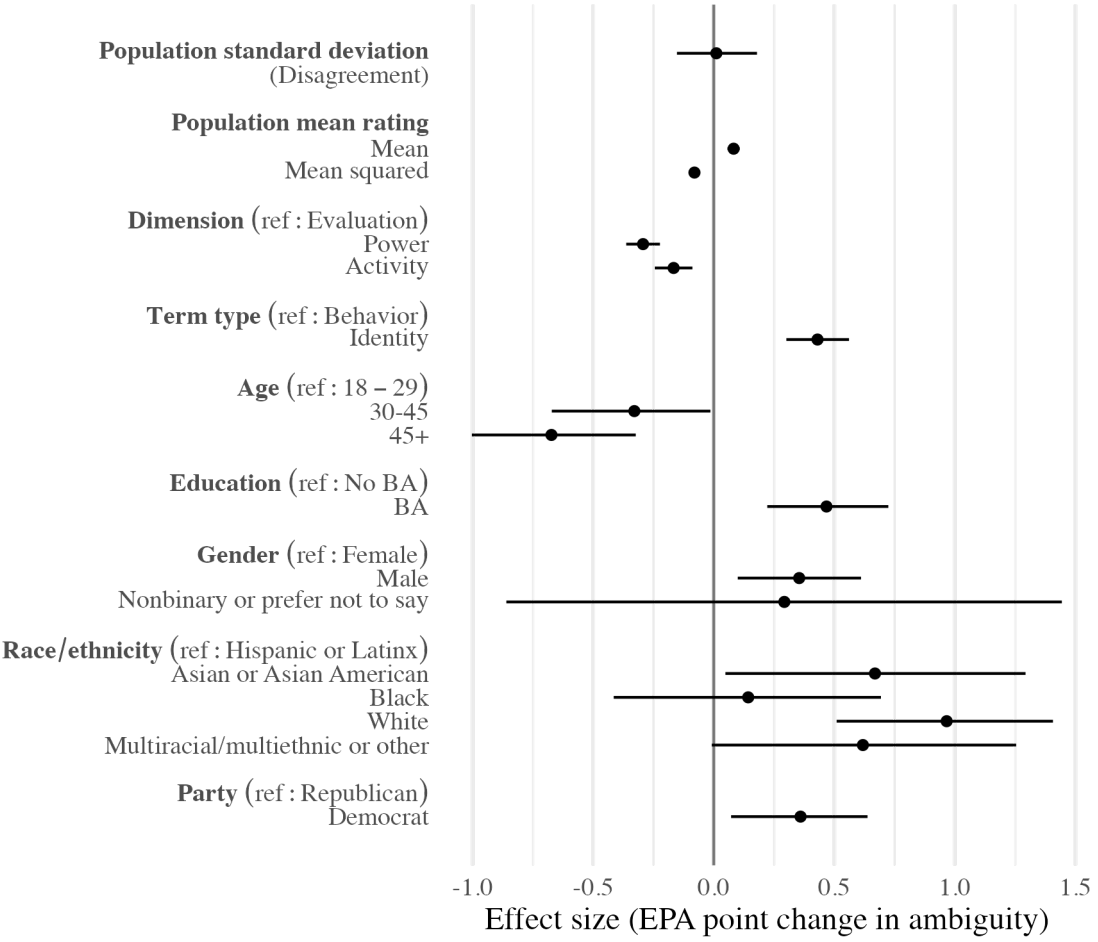

Figure 2: Coefficient estimates for a multilevel model predicting term ambiguity interval width. The model included random intercepts for individuals and terms.