Understanding Ideological Scales: Research Practices and Knowledge Accumulation in American Public Opinion Research

Philip Warncke [1] Flavio Azevedo [2]

[1]University of North Carolina at Chapel Hill; pwarncke@live.unc.edu [2]University of Cambridge; fa441@cam.ac.uk

Abstract

Ideological summary scales built from policy position items provide the backbone of many studies of American public opinion. When constructing such scales, however, scholars rarely discuss why they include particular issue items over others. They also seldom investigate how many latent attitude dimensions (and hence scales) best summarize a given set of policy attitudes taken from nationally representative surveys. Across 52 high-quality research publications, we find little agreement about the optimal number of policy position items to select and how many separate factors (i.e. ideological dimensions) to extract from these. Our systematic literature analysis further reveals that scholars are more likely to impose lower dimensional solutions when relying on smaller pools of issue items, and higher dimensional solutions when selecting larger sets. Our statistical simulation analysis using all available policy position items from the 2000 ANES confirms that the dimensionality of the American attitude space grows without bound as more issue items are added to the pool. The simple matter of selecting how many policy attitudes to include thus likely affects researchers' decisions as to how many latent attitude factors to utilize in their research. Finally, our replication and extension of an important research paper on mass ideology illustrates how mis-specifications of the ideological space can substantially alter published research findings. Aside from the dual perils of over- and underfitting models to empirical data, we show that almost all regression coefficients can either gain or lose statistical significance under the inclusion of alternative - but equally reasonable - survey item pools. At the same time, some empirical regularities appear astonishingly robust even under vastly different assumptions about the nature of the American ideological space.

Literature analysis

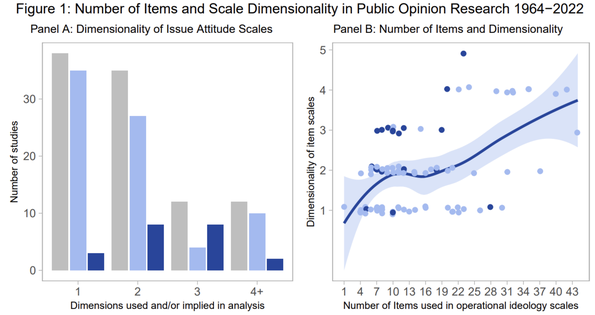
A plethora of American public opinion research relies on ideological summary scales designed to capture respondents' overall political orientations. Typically constructed from survey items covering a variety of public policy issues, such scales enable researchers to locate respondents in a more parsimonious attitude space such as the liberal-conservative spectrum.

Despite their ubiquity, ideological summary scales are themselves rarely the subject scrutiny. However, we argue that the way in which these scales are constructed deserves more careful and critical attention. By analyzing ideological scales embedded within 52 peer-reviewed journal articles relying on nationally representative US data, we find that only a minority (22%) of papers assess elementary statistical properties such as internal reliability and valid dimensional structure. We also found little consensus across studies in terms of the appropriate number of policy items to be included in these scales. Among studies relying on American National Elections Studies (ANES), we found examples ranging from single-item scales at one and 43 items at the other extreme. With a median number of 11 items per study, the estimated standard deviation of 7.5 items suggests an extraordinary degree of variability in previous research practice.

There is also little consensus about the optimal number of dimensions characterizing Americans' policy attitudes. While a plurality of studies (40%) relies on the classic, uni-dimensional left-right (or liberal-conservative) continuum, almost as many (36%) employ bi-dimensional summary scales, typically differentiating between economic and social dimensions of ideology (see Panel A in Figure 1). We also found that a full 12% of articles suggest various three-dimensional solutions, while another 13% even higher (4+) dimensions to be necessary to adequately capture Americans' policy attitudes.

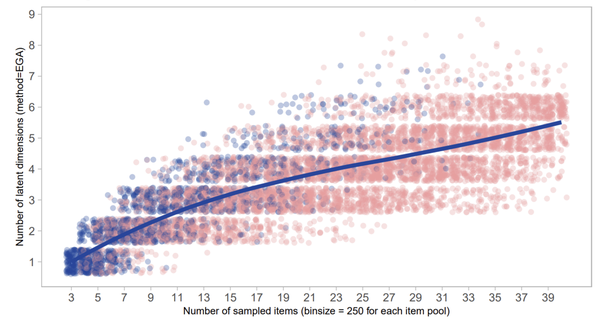
Curiously, we find studies which rely on larger pools of issue items to be far more likely to use multidimensional summary scales (see Panel B in Figure 1). In other words, authors who select more policy position items tend to construct separate scales capturing different dimensions of mass ideology (e.g. distinct scales for social, economic, or racial ideology). This suggests that the simple matter of selecting more or fewer policy items — rather than substantive or theoretical concerns — is in part driving researchers' decisions about how many distinct ideological summary scales to construct from pre-selected item pools.

Figure 1: Number of Items and Scale Dimensionality in Public Opinion Research 1964–2022



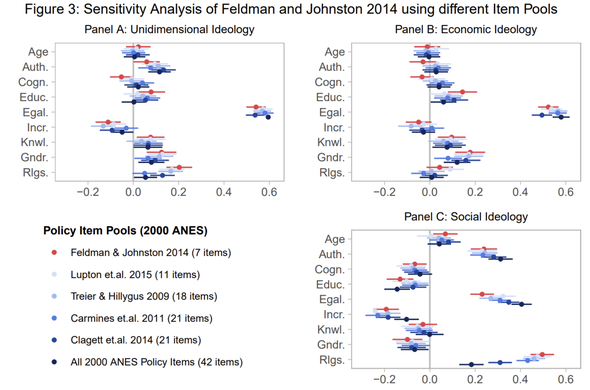
Panel B: Line fitted with LOESS algorithm. A small amount of random jitter was added to both axis. Pearson correlation = 0.5

Figure 2: Number of Items and Estimated Dimensionality in the 2000 ANES



Line fitted with LOESS algorithm. A small amount of random jitter was added to both axis. Pearson correlation = 0.8

Figure 3: Sensitivity Analysis of Feldman and Johnston 2014 using different Item Pools



Note: X−Axis measures the size of standardized regression coefficients predicting latent ideology

Statistical simulation

Our simulation analysis investigates potential causes for the correlation between policy item buckets sizes and the number of latent attitude dimensions observed among published research. Using the 2000 ANES, we simulated 10,000 latent ideology models with item sets ranging from 3 to 40, using iterative process of item selection, dimensionality estimation, and scale construction.

The results in Figure 2 confirm the key pattern found among published papers: a greater number of distinct policy attitudes requires additional ideological dimensions to adequately capture the Americans attitude space. Figure 2 further suggests that model fit is more sensitive when flagging over-fitted models in higher dimensions. However, model fit indices are no universal failsafe: Among the models suggesting that American's policy attitudes are best explained along seven(!) distinct ideological dimensions, a full 12.6% fit the data extremely well. This suggests that ANES data does not always well-constrain researchers in specifying an appropriate model for the dimensionality of mass attitudes.

Sensitivity analysis

Do variations in item composition, item pool size, or latent dimensionality affect our ability to find regularities in empirical data? We performed a sensitivity analysis on Feldman and Johnston's 2014 paper to investigate the extent to which variability in item selection can affect substantive conclusions presented in high-quality, widely-cited scholarly publications. Feldman and Johnston (2014) show that unidimensional liberal-conservative scale is statistically significantly and positively related with authoritarianism, education, income, religiosity, anti-egalitarianism, and political sophistication, while being negatively associated with need for cognition and incrementalism.

The original estimates appear in the form of red point-estimates with 95% confidence intervals in Panel A of Figure 3. For our sensitivity analysis, we selected four additional research papers which also rely on data from the 2000 ANES. Crucially, these studies employ larger and more diverse pools of issue items when constructing ideological summary scales. We also added estimates derived from all 42 unique policy position items available in the 2000 ANES.

We find that the effects of religiosity, political sophistication, and incrementalism are no longer statistically significant in at least two out of five alternative configurations. The effects of education and need for cognition are even more strongly affected and are no longer significant under any of the alternative item pools. However, we also find very consistent estimates for the authoritarianism and anti-egalitarianism factors which show substantially larger effects than those estimated by Feldman and Johnston in all but one of the alternative item pools. This suggests that it is both possible for researchers to overestimate and underestimate effects when different attitude scales are used to estimate the same empirical relationships.

Panels B and C in Figure 3 extend the analysis to separate social and economic attitude dimensions. Here, differences in coefficient sizes for incrementalism and religiosity appear particularly noteworthy. Again however, egalitarianism shows a particularly consistent and forceful association with latent ideology across different item selections. We believe that investigation like these can bring us closer to empirically separate fluctuating from persistent aspects of political attitude structure in the US.

References

[1] Carmines et.al. Issue preferences, civic engagement, and the transformation of american politics. *Facing the Challenge of Democracy: Explorations in the Analysis of Public Opinion and Political Participation*, page 329–354, 2011.

[2] Claggett et.al. The evolution of mass ideologies in modern american politics. *The Forum*, 12(2), 2014.

[3] Lupton et.al. Political sophistication and the dimensionality of elite and mass attitudes, 1980–2004. *The Journal of Politics*, 77(2):368–80, 2015.

[4] Feldman and Johnston. Understanding the determinants of political ideology: Implications of structural complexity. *Political Psychology*, 35(3):337–58, 2014.

[5] Treier and Hillygus. The nature of political ideology in the contemporary electorate. *Public Opinion Quarterly*, 73(4):679–703, 2009.