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Between Identity and Ideology: An Exploratory Factor Analysis of Individual Political Preferences

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POP77054 Dimensionality Reduction

Introduction

The United States' two-party system has shaped its political structure, however, the past decade has heightened partisan polarisation. Even before this period, American politics were marked by partisan identity divisions along geographic and demographic lines between Democratic and Republican bases. Conventional wisdom holds that individuals choose party alliances, often shaped by personal background or familial influence, and maintain loyalty throughout their electoral lives. Motivated by growing polarisation and increased discussion of voting for 'country over party,' or prioritising personal beliefs over political affiliation, this research aims to study how much party affiliation shapes individuals' thoughts, and whether voters still align with party platforms when asked questions based on personal convictions.

While Democrats and Republicans compose the main party focus, the distinction of Independents, a third party, serves as a general representation of those who express dissatisfaction with two-party uniformity. This research examines whether individuals' views on notable policy issues align with their overall party-affiliated views before the 2020 election. Exploratory Factor Analysis (EFA) is used to uncover latent ideological dimensions and assess the positioning of individuals and affiliations to find potential challenges to the assumption of ideological consistency within party lines.

Despite substantial literature on party identification, issue-based voting, and polarisation, there is a limited focus on individual ideological variation within and across party lines. Much of the existing research relies on group-level generalisations, leading to normative assumptions instead of data-based validation. Political beliefs are inherently multidimensional; reducing them to party labels oversimplifies their complexity and diversity. This study aims to uncover underlying dimensions to unpack complex attitudinal landscapes through EFA, enabling a deeper analysis of the relationship between individuals' stances and party identity. By examining pre-2020 election attitudes, the study offers insight into ideological alignment during a period of division.

Literature Review

Political scientists have studied party identification and its impact on political perception for decades. *The American Voter* (Campbell et al., 1960) introduced what is now known as 'The Michigan Model,' a foundational framework for understanding individuals' connections to political parties. According to this model, one's voting behaviour is psychologically attached to their affiliated political party. *The New American Voter* (Miller & Shanks, 1997) reexamines this in the context of the late 1990s, confirming the model's persistence through generational replacement and the continued psychological cycle of partisan loyalty. Weinschenk (2010) extends this model into the 21st Century, emphasising elite influence and key political events that have reinforced partisan attachment among the electorate. Together, these studies support the notion that individuals are often 'supporters for life,' shaped by long-term influences that reinforce habitual partisan voting. Party identification acts as a lens through which people interpret political information, prioritise issues, and evaluate candidates. As a result, it significantly shapes individual civic attitudes and voting behaviour.

Issue-based voting presents an alternative form of electoral decision-making, where voters prioritise personal positions on key issues over party affiliation. While party identification is a strong predictor of individual political behaviour, issue-based behaviour suggests that there is a threshold that results in individual departure from party lines when affiliation competes with core beliefs. Rooted in rational choice theory, 'The Rochester Model' frames voting as deliberate and interest-driven, where candidates or initiatives are chosen based on personal beliefs (Amadae & Bueno de Mesquite, 1999). Fiorina (1976)

creates the foundational distinction between expressive and instrumental voting, arguing that voters are often motivated by concrete policy. Jenke and Huettel (2016) extend this argument through modern cognitive evidence that voters can suppress partisan bias for issue-based reasoning, especially when individuals have strong personal ties. Furthermore, the Democracy Fund Voter Study Group (2019) also finds that most of the electorate prioritise issue alignment over party loyalty in elections. These works suggest that issue-based voting can serve to meaningfully shape political outcomes, particularly when dominant issues disrupt traditional partisan divides. This contrast in affiliation or issue-based motivations emphasises the need to investigate how and when policy priorities override partisan loyalty to shape individual voting.

The growing ideological divide between the two parties could account for both the increase in identification and breakaway from affiliation, as partisan identities have become more socially and ideologically entrenched. As politics becomes more integrated into everyday life, individuals may respond by increasing their attachment to party platforms by greater adoption or becoming disillusioned as personal beliefs diverge from party identification narratives (Iyengar et al., 2019). Lachat (2018) shows that as party platforms become more ideologically distinct, polarisation further intensifies alignment and potential alienation, reinforcing issue-based departures for those who feel unrepresented. Regardless, Mason (2018) finds that partisan identity can persist even when there is divergence in issue position, underscoring the emotional and social dimensions of political affiliation. This study aims to explore this complex dynamic between party loyalty and personal beliefs, raising important questions about the basis for splitting from affiliation on issues.

Data and Operationalisation

The American National Election Studies (ANES) are widely used academic surveys conducted before and after major elections in the United States. This study uses data from the 2020-2022 Social Media Study, a two-year survey of a probability-based online panel that took place in three waves: pre-2020, post-2020, and post-2022 elections. Although the questionnaire included participant-linked Facebook data, it was excluded from this study due to privacy restrictions and lack of relevance. This survey was selected for its Likert-scale variables and detailed, pre-categorised questions, minimising the need for subjective processing that could impact interpretation. Only the pre-2020 election wave was studied, as it captured public opinion at a pivotal point when divisions were high and party loyalty was tested ahead of the eventual power shift.

Questions were chosen based on their Likert-scale format, relevance to current political discourse, and suitability for factor analysis. EFA was applied to these responses to identify the latent dimensions of political thought and evaluate how they align or diverge from declared party affiliation. This framework provides a comprehensive view of alignment to better understand the complexities of political identity.

Party affiliation, the main independent variable, was operationalised as a categorical variable from the raw variables of 'pid1d' and 'pid1r', giving self-identified party affiliation of Democrat, Republican, Independent, or Other. Responses listed as 'Other' were filtered out, as they were inconsistent fill-in results. For remaining participants, the strength of party identification was calculated using 'pidstr' (for partisans) and 'pidlean' (for independents). These variables were combined to create a granular 'type' variable representing a 7-point party identification scale: Strong Democrat/Republican, Not Strong Democrat/Republican, Lean Democrat/Republican, and Pure Independent, capturing partisan direction

and intensity. This variable was used as the primary grouping variable for EFA, which allowed comparisons of latent political attitudes across the subgroups.

Methods

Exploratory Factor Analysis (EFA) was used for this analysis to uncover latent ideological dimensions in individual policy preferences. This method is well-suited for revealing patterns in political issue responses, particularly when multidimensional interpretation is required. Reducing over ten policy items into a smaller set of factors enables clearer comparison across dimensions. Factor scores provide a continuous measure that quantifies a respondent’s position and can be compared to party affiliation, lean and strength. Unlike Principal Component Analysis (PCA), EFA assumes that latent constructs underlie observed variables, allowing for potential patterns or clusters.

Table 1: Bartlett’s Test of Sphericity

Test Statistic (χ^2)	8202.17
Degrees of Freedom (df)	21
p-value	< 0.001

Table 2: Kaiser-Meyer-Olkin Measure of Sampling Adequacy

Item	MSA
hp_you	0.83
gundiff	0.84
c_self	0.85
rr1	0.81
rr2	0.81
immpol	0.81
trustvote	0.83
Overall MSA	0.82

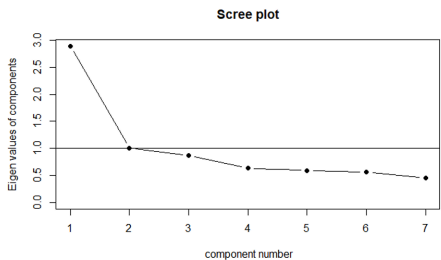


Figure 1: Scree Plot for EFA

To ensure the data was suitable for EFA, Bartlett’s Test of Sphericity (Table 1) and the KMO Measure of Sampling Adequacy (Table 2) were conducted. Bartlett’s Test evaluates whether the correlation matrix significantly differs from an identity matrix, indicating whether the variables are sufficiently correlated to form factors. A p-value < 0.001 confirmed factorability. The KMO Measure evaluates sampling adequacy by assessing whether variables share enough common variance to justify factor extraction. With an overall MSA of 0.82 and individual Measures all above 0.80, this sample is well-suited for EFA. Following this, a Scree Plot (Figure 1) was examined to determine the optimal number of factors to use. While the first factor had a clear, dominant eigenvalue (above 2), the second factor’s eigenvalue was near 1, leading to a two-factor solution that balances model fit with theoretical interest in both partisan alignment and issue-based divergence. This approach allows for the thematic separation of latent dimensions and a deeper interpretation of data.

Given the anticipated correlation between factors, an oblique rotation method was applied. Principal axis factoring was specified to prioritise shared variance over total variance. The model demonstrated strong fit (Table 3), indicating high reliability, acceptable residual fitting, and a decent RMSEA, supporting the two-factor solution. However, factor loadings carry the most meaningful insights by providing a substantive interpretation of the two dimensions.

Table 3: Exploratory Factor Analysis (2-Factor Solution, PA method)

	Factor 1	Factor 2
SS Loadings	1.75	0.92
Proportion Variance	0.25	0.13
Cumulative Variance	0.25	0.38
Proportion Explained	0.65	0.35
Cumulative Proportion	0.65	1.00
Factor Correlations		
PA1-PA2	-0.59	
Model Fit		
RMSR	0.02	
RMSR (df-corrected)	0.04	
Tucker-Lewis Index	0.951	
RMSEA (90% CI)	0.057 (0.05, 0.065)	
BIC	90.37	
Chi-Square Tests		
Null Model χ^2 (df = 21)	8202.17	
EFA Model χ^2 (df = 8)	159.63, $p < 0.001$	
Empirical χ^2	120.87, $p < 0.001$	
Factor Score Adequacy		
Correlation (regression scores w/ factors)	0.88	0.80
Multiple R^2 of scores	0.77	0.64
Minimum correlation of factor scores	0.54	0.29

Results

Factor loadings (Table 4) identify relationships between policy issues and underlying dimensions extracted from EFA. The two reduced factors capture the two theoretical sides, with Factor 1 showcasing the traditional divide of partisan alignment, while Factor 2 represents the issue-based variation where personal beliefs surpass affiliation. Additionally, communalities and explained variance demonstrate the fit of each variable into the two factors; ‘trustvote’ had low communalities and weak loading on factors and was excluded from further analysis. Higher positive loadings signal stronger associations between variables and their dimension.

Table 4: Standardized Pattern Coefficients and Communalities

Item	PA1	PA2	h^2 (Communality)	u^2 (Uniqueness)
hp_you	0.69	0.04	0.439	0.561
gundiff	0.65	0.04	0.390	0.610
c_self	-0.35	0.33	0.372	0.628
rr1	-0.35	0.42	0.481	0.519
rr2	0.69	-0.05	0.515	0.485
immpol	0.06	0.67	0.404	0.596
trustvote	-0.05	0.23	0.069	0.931

Factor 1 (PA1) appears to represent the traditional partisan divide with high loading variables of ‘hp_you’, ‘gundiff’, and ‘rr2’, and low loading variables of ‘rr1’ and ‘c_self’. Positive loadings indicate alignment with Democratic policy positioning, while negative loadings associate with Republican stances. For example, Democrats would prefer government-run healthcare and stricter gun buying laws, while Republicans prefer the current private system and relaxed access to firearms. These ideas represent well-known divisions of progressive versus conservative views between the two parties. Factor 2 (PA2) highlights policy issues of individual variation that do not follow the traditional divide; ‘immpol’, ‘rr1’, and

`c_self`. Unauthorised immigration policy is the highest loading variable, indicating that immigration opinions may vary independently of party lines. Their presence of `rr1` and `c_self` in both factors reflects the nuanced role these issues play, aligning with partisan identity for some and individualisation for others. These two variables can be highly polarising, depending on how they are framed, and can be interpreted through generational, moral, or personal lenses that influence perspectives beyond traditional party lines.

Visualisations using estimated factor scores help to contextualise how party alignment and individual variation intersect with political beliefs. The box plots below showcase Factor score (PA1 or PA2) on the y-axis, and party affiliations on the x-axis.

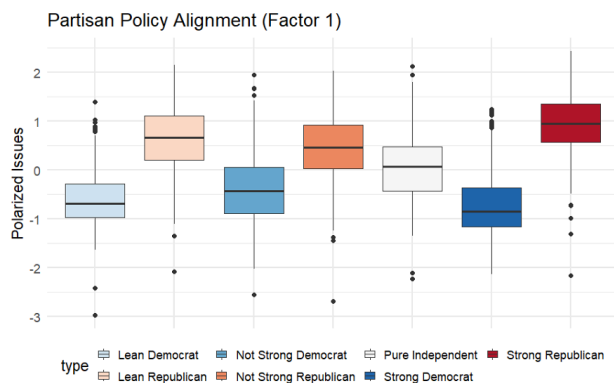


Figure 2: Boxplot of Factor 1 (PA1)

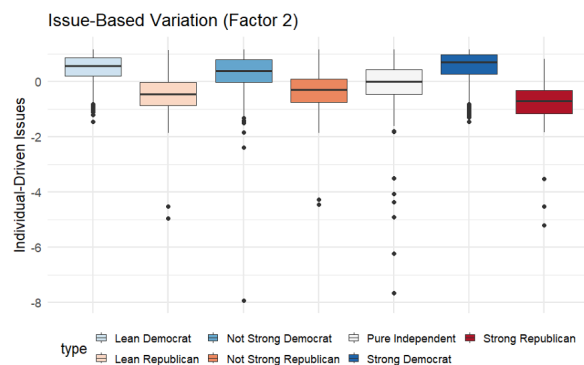


Figure 3: Box Plot of Factor 2 (PA2)

Figure 2 shows the traditional left-right ideological divide captured by Factor 1. Strong Republicans have low scores, reflecting greater alignment with conservative stances, while Democrats score higher overall, representing their progressive positions. Independents span the middle, showing a broader range of beliefs consistent with their lack of association with specific parties due to varied stances. The scatter of outliers for all affiliations shows some individuals differ from the norm of party positions, highlighting the need for an additional factor to try and capture this view. Figure 3 aligns with the issue-based variation captured in Factor 2. The differences between party groups are smaller, however, the spread is greater. Independents showcase the widest spread among the three main parties, reflecting the individualised nature of their views. Republicans showcase more internal consistency with less deviation from party lines, while Democrats exhibit greater variability, suggesting broader issue-level diversity.

Figure 4 creates a combined political space that contrasts partisan policy alignment (PA1) with issue-based variation (PA2) to understand if affiliation is stronger than issue. There is clear partisan clustering along the x-axis with strong Democrats to the left, strong Republicans to the right, and leaning/not-strong individuals falling in between to form a smooth ideological gradient, confirming Factor 1's relation to partisan identification. The y-axis shows variation mainly among those leaning/not strong, reflecting non-partisan issue engagement or inconsistency in positions. Pure Independents show spread throughout, representing the lack of party identifier and a greater vertical spread, implying an individualistic pattern of thought. Overall, a comparison of the two suggests that while personal ideology plays a role, party affiliation carries a stronger influence.

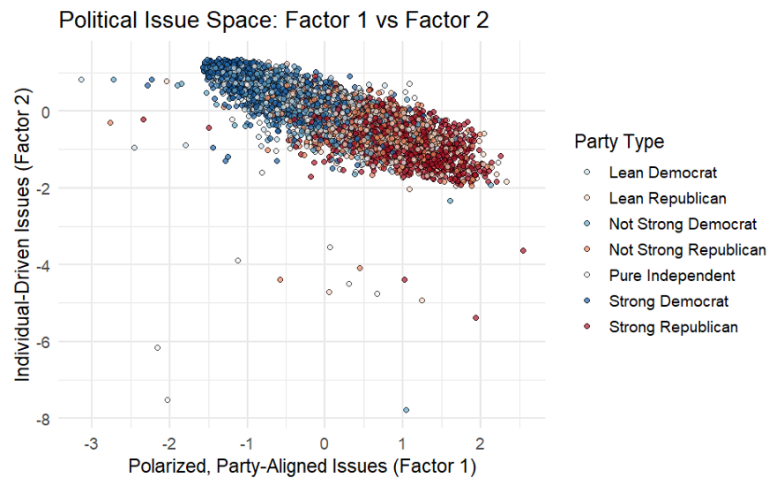


Figure 4: Factor 1 vs. Factor 2

Discussion and Conclusion

The EFA findings offer insight into political belief formation, offering empirical support for both identity and issue-based models. Factor 1 reflects the Michigan Model of party identification, where partisan identity is a strong driver of attitudes, particularly on high-salience issues. In contrast, Factor 2 gives some credit to the Rochester Model of rational choice, particularly on low-salience or more complex issues. These dual patterns reflect the broader theoretical model by Bendor and Petrov (2023) that identity-based reasoning is cognitively primary but not immutable, providing a useful lens to interpret this research.

Together, these findings align with the dual-process framework of political behaviour where identity-based reasoning dominates when party lines are clear, but issue-based reasoning emerges where personal context or ambiguity invites independent thinking. This helps explain both the depth of modern polarisation and the growing resonance of appeals to bipartisanship, such as “country over party” rhetoric. Understanding these layered processes is key to examining both the entrenchment of division and the potential for change in public opinion.

This study demonstrates that while party identification remains a dominant force in shaping political attitudes, there is also significant space for independent thought and variation on vague topics. The two-factor structure of this EFA highlights how both identity and issue-based reasoning contribute to political behaviour, often simultaneously. Future research may focus on how demographic characteristics – such as age, education, or race – interact with these patterns and how exposure to different viewpoints might influence the strength of each factor. Greater attention to the interplay between these identities and independent evaluation may yield new insights into political communication, affective polarisation, and the prospects for depolarisation.

While party identity remains a powerful force shaping political opinions, there is also meaningful space for independent thinking on less prominent or more complex topics. These findings suggest that political belief systems are not fully determined by identity or rationalised issue by issue. Instead, they reflect a complex mix of both, deeply shaped by party cues, yet still responsive to individual reflection and context.

Appendix

GitHub Repository:

https://github.com/rodriguesathena/DimmensionalityReduction_Spring2025/tree/main/final_report

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