

# **Appendix: The Conditional Association between Populism, Ideological Extremity, and Affective Polarization**

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## APPENDIX

This Appendix provides additional information and robustness checks for the analyses carried out in the manuscript. The data used for the paper is public and accessible according to the terms of use defined by the ANES, the data provider (<https://electionstudies.org/data-center/>). All the materials that are required to replicate the figures and the tables present in the text (custom-programmed R functions, R scripts, and Mplus scripts) are accessible through the author's public [GitHub profile](#). The R [Version 4.2.1; R Core Team (2022)] packages used for the data preparation and the visualizations are the following: *citr* [Version 0.3.2; Aust (2019)], *dplyr* [Version 1.0.9; Wickham et al. (2022)], *egg* [Version 0.4.5; Auguie (2019)], *fastDummies* [Version 1.6.3; Kaplan (2020)], *filesstrings* [Version 3.2.3; Nolan and Padilla-Parra (2017)], *forcats* [Version 0.5.1; Wickham (2021)], *ggplot2* [Version 3.4.1; Wickham (2016)], *glue* [Version 1.6.2; Hester and Bryan (2022)], *gridExtra* [Version 2.3; Auguie (2017)], *here* [Version 1.0.1; Müller (2020)], *knitr* [Version 1.39; Xie (2015)], *MplusAutomation* [Version 1.1.0; Hallquist and Wiley (2018)], *nanianr* [Version 0.6.1; Tierney et al. (2021)], *papaja* [Version 0.1.1.9001; Aust and Barth (2022)], *psych* [Version 2.2.5; Revelle (2022)], *purrr* [Version 0.3.4; Henry and Wickham (2020)], *readr* [Version 2.1.2; Wickham, Hester, and Bryan (2022)], *readstata13* [Version 0.10.0; Garbuszus and Jeworutzki (2021)], *rmarkdown* [Version 2.14; Xie, Allaire, and Golemund (2018); Xie, Dervieux, and Riederer (2020)], *stringr* [Version 1.4.1; Wickham (2022)], *tibble* [Version 3.1.8; Müller and Wickham (2022)], *tidyr* [Version 1.2.0; Wickham and Girlich (2022)], *tidyverse* [Version 1.3.2; Wickham et al. (2019)], and *tinylabels* [Version 0.2.3; Barth (2022)]. The *Mplus* [Version 8.4; Muthén and Muthén (2017)] output (i.e. .out) files containing the full model specifications and details about model convergence can be also found on the author's public GitHub profile.

### Models reported in the manuscript

#### ***Graphical representation of the structural model***

The structural part of the model specification is plotted in a SEM graph. For this purpose, I use the R package *semPlot* (Epskamp et al. 2019). Observed variables are indicated as squares and latent variables as circles. The edges refer to the connections between the different variables included in the model and are used to specify relationships between variables. Dashed edges indicate fixed parameters (i.e., first factor loading fix to 1 and variances of categorical indicators). Error variances are displayed as curved double-headed arrows. For the sake of clarity, I plotted the measurement part (see *infra*) separated from the structural part.

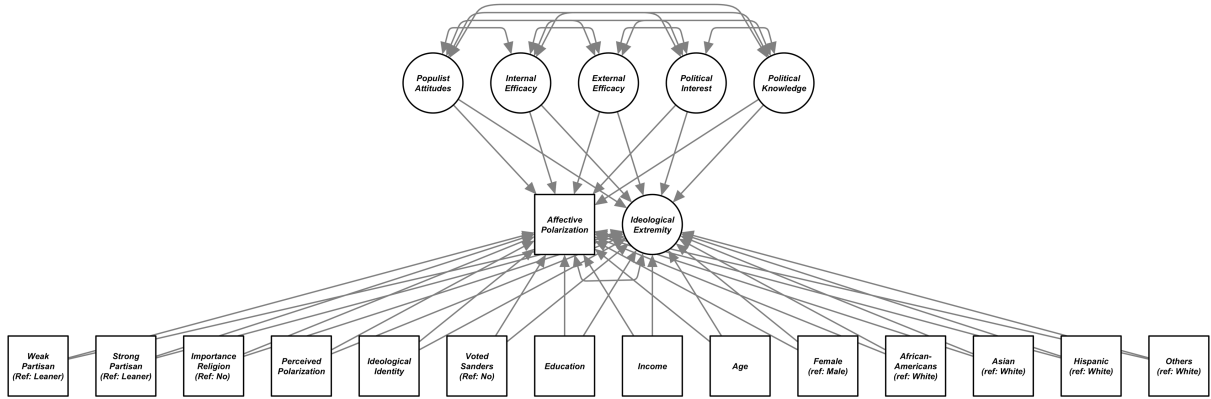


Figure 1: Graphical representation of the (structural) model reported in Table 2, Figure 1, and Figure 2 of the manuscript.

### Models for the marginal plots

These are the results for the coefficients of populism reported in Figure 1 and Figure 2 of the manuscript.

Table 1: Regression table for the coefficients of populist attitudes on ideological extremity displayed in Figure 1 and Figure 2.

	Democrats		Republicans	
	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value
Populist Attitudes	0.167 (0.056)	0.003	0.064 (0.058)	0.269
Internal Efficacy	0.181 (0.096)	0.061	0.186 (0.099)	0.061
External Efficacy	0.014 (0.051)	0.783	0.015 (0.053)	0.783
Political Interest	0.044 (0.076)	0.568	0.045 (0.079)	0.568
Political Knowledge	-0.026 (0.063)	0.682	-0.026 (0.065)	0.682
Perceived Polarization	0.080 (0.031)	0.010	0.082 (0.032)	0.009
Strength Ideological Identity	0.355 (0.038)	$\leq 0.001$	0.344 (0.037)	$\leq 0.001$
Education	-0.043 (0.035)	0.219	-0.039 (0.032)	0.222
Income	-0.026 (0.040)	0.510	-0.026 (0.039)	0.509
Age	-0.133 (0.034)	$\leq 0.001$	-0.135 (0.034)	$\leq 0.001$

Weak Partisan (Ref: Leaner)	0.003 (0.075)	0.965	0.003 (0.077)	0.965
Strong Partisan (Ref: Leaner)	0.108 (0.078)	0.169	0.111 (0.081)	0.169
Importance Religion (Ref: No)	0.075 (0.065)	0.248	0.078 (0.068)	0.250
Voted for Sanders (Ref: No)	0.052 (0.095)	0.584	0.054 (0.099)	0.585
Female (ref: Male)	-0.077 (0.058)	0.179	-0.080 (0.059)	0.179
African-Americans (ref: White)	0.196 (0.157)	0.211	0.202 (0.163)	0.216
Asian (ref: White)	0.034 (0.126)	0.788	0.035 (0.130)	0.789
Hispanic (ref: White)	0.200 (0.101)	0.048	0.206 (0.103)	0.045
Others (ref: White)	0.417 (0.143)	0.004	0.431 (0.145)	0.003

N=2316, Log-likelihood=-75079.3, AIC=150426.61, BIC=151196.78

Notes: All continuous variables are standardized. Beta coefficients for Populist Attitudes are allowed to vary across partisan groups. Robust std. errors in parenthesis.

*Table 2: Regression table for the coefficients of populist attitudes on affective polarization displayed in Figure 1 and Figure 2.*

	Democrats		Republicans	
	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value
Populist Attitudes	-0.117 (0.050)	0.019	0.175 (0.044)	$\leq 0.001$
Internal Efficacy	0.198 (0.076)	0.009	0.184 (0.070)	0.008
External Efficacy	-0.004 (0.041)	0.924	-0.004 (0.038)	0.924
Political Interest	0.022 (0.059)	0.709	0.020 (0.055)	0.710
Political Knowledge	-0.019 (0.056)	0.740	-0.017 (0.052)	0.740
Religiosity	0.005 (0.023)	0.843	0.004 (0.018)	0.843
Perceived Polarization	0.197 (0.026)	$\leq 0.001$	0.183 (0.023)	$\leq 0.001$
Strength Ideological Identity	0.115 (0.023)	$\leq 0.001$	0.101 (0.021)	$\leq 0.001$
Education	-0.036 (0.029)	0.211	-0.030 (0.024)	0.213
Income	-0.039 (0.028)	0.165	-0.034 (0.024)	0.164
Age	0.076 (0.025)	0.003	0.070 (0.023)	0.003
Weak Partisan (Ref: Leaner)	0.158 (0.065)	0.015	0.147 (0.060)	0.014
Strong Partisan (Ref: Leaner)	0.706 (0.061)	$\leq 0.001$	0.658 (0.056)	$\leq 0.001$

Voted for Sanders	-0.340 (0.070)	≤0.001	-0.317 (0.064)	≤0.001
Female (ref: Male)	0.080 (0.045)	0.076	0.074 (0.042)	0.076
African-Americans (ref: White)	-0.128 (0.097)	0.185	-0.119 (0.090)	0.187
Asian (ref: White)	-0.148 (0.127)	0.245	-0.138 (0.119)	0.246
Hispanic (ref: White)	0.053 (0.079)	0.502	0.050 (0.074)	0.503
Others (ref: White)	-0.084 (0.111)	0.449	-0.078 (0.103)	0.448

N=2316, Log-likelihood=-75079.3, AIC=150426.61, BIC=151196.78

Notes: All continuous variables are standardized. Beta coefficients for Populist Attitudes are allowed to vary across partisan groups. Robust std. errors in parenthesis.

### **Measurement models**

In the manuscript, six latent variables are estimated, namely ideological extremity, populist attitudes, political interest, political knowledge, and internal and external political efficacy. Results from the CFA models reveal good reliability and validity of the used scales with relatively high factor loadings ( $CFI \geq .95$ ,  $RMSA \leq .06$ ,  $SRMR \leq .08$ ) (Hu and Bentler 1999). Metric equivalence is achieved for every latent factor included in the model ( $\Delta\chi^2 p \geq .05$ ,  $\Delta CFI \leq -.10$ ,  $\Delta RMSA \leq .015$ ) (Chen 2007) meaning that the estimated latent constructs are understood in the same way across Democratic and Republican respondents.

### **Invariance testing**

All the used latent constructs reach metric invariance allowing the comparison of the coefficients of populism across Democratic and Republican respondents (Chen 2007).

*Table 3: Invariance testing for the populist attitudes scale.*

Model	$\Delta$ df	$\Delta\chi^2$	p-value	AIC	BIC	CFI	SRMR	RMSEA
Configural				54746.976	54964.973	0.944	0.037	0.057
Metric	5	8.155	0.15	54748.284	54936.003	0.941	0.04	0.052
Scalar	5	293.881	0	55150.573	55308.016	0.784	0.08	0.09

Table 4: Invariance testing for the ideological extremity scale.

Model	$\Delta$ df	$\Delta\chi^2$	p-value	AIC	BIC	CFI	SRMR	RMSEA
Configural				67134.517	67395.228	0.975	0.026	0.024
Metric	6	10.527	0.11	67140.913	67364.38	0.971	0.031	0.024
Scalar	6	284.104	0	67607.512	67793.734	0.758	0.071	0.063

Table 5: Invariance testing for political interest, internal and external efficacy.

Model	$\Delta$ df	$\Delta\chi^2$	p-value	AIC	BIC	CFI	SRMR	RMSEA
Configural				48172.668	48421.007	0.958	0.044	0.069
Metric	3	2.062	0.5596	48169.348	48399.516	0.957	0.045	0.065
Scalar	3	5.028	0.1698	48171.574	48383.571	0.956	0.045	0.059

For political knowledge, metric invariance cannot be tested. This is due to the fact that, to identify the model, the residual variances of the dichotomous manifest indicators (i.e., 1. Incorrect, 2. Correct) need to be set to 1. Nonetheless, the latent construct of political knowledge shows excellent goodness of fit for the scalar invariance model.

Table 6: Invariance testing for political knowledge (IRT parametrization).

Model	$\Delta$ df	$\Delta\chi^2$	p-value	AIC	BIC	CFI	SRMR	RMSEA
Configural				-	-	0.968	0.036	0.045
Scalar	6	2.546	0.89	-	-	0.980	0.038	0.022

### Confirmatory Factor Analysis results

For populism, the residual variances of the items measuring each of three sub-dimensions of populism (anti-elitism, people-centrism, and manicheism) are allowed to covary to account for the common variance that is unexplained by the unidimensional structure of the CSES populist attitudes scale (Wells 2021). This choice accounts for the fact that populist attitudes are considered a multidimensional construct (among others, see Wuttke, Schimpf, and Schoen 2020)

For political efficacy, the residuals of item V162216 (internal political efficacy) and V162217 (external political efficacy) are allowed to covary to account for the conceptual and semantic

similarity of the questions that tap both into the responsibility of the government in undermining citizens' political efficacy.

These adjustments improve the reliability of the measured constructs and the precision of the estimated coefficients of populism (Wells 2021). However, since the covariance matrix is only slightly adjusted, this choice has no substantial impact on the results presented in the paper. For sake of space parsimony, the models where the error correlations are not estimated are not shown. A CFA is estimated for each separate construct. When not possible for identification reasons (e.g., efficacy), the reported fit indices are obtained including multiple constructs.

*Table 7: Factor loadings from each CFA model.*

	<b>Std. factor loadings</b>	<b>p-value</b>
<b>Ideological Extremity</b>		
V161178	0.56	$\leq .001$
V161181	0.41	$\leq .001$
V161184	0.53	$\leq .001$
V161189	0.58	$\leq .001$
V161198	0.53	$\leq .001$
V161201	0.33	$\leq .001$
V161204x	0.34	$\leq .001$
CFI=0.969 RMSE=0.027 SRMR=0.025		
<b>Populism</b>		
V162259	0.47	$\leq .001$
V162260	0.80	$\leq .001$
V162262	0.65	$\leq .001$
V162264	0.43	$\leq .001$
V162265	0.68	$\leq .001$
V162267	0.29	$\leq .001$
CFI=0.979 RMSE=0.058 SRMR=0.025		

	<b>Std. factor loadings</b>	<b>p-value</b>
<b>Internal efficacy</b>		
V162217	0.51	$\leq .001$
V162218	0.56	$\leq .001$
<b>External efficacy</b>		
V162215	0.72	$\leq .001$
V162216	0.77	$\leq .001$
<b>Political Interest</b>		
V162256	0.86	$\leq .001$
V162257	0.83	$\leq .001$
<b>Political Knowledge</b>		
V161513	0.60	$\leq .001$
V161514	0.49	$\leq .001$
V161515	0.56	$\leq .001$
V161516	0.49	$\leq .001$
CFI=0.976 RMSE=0.021 SRMR=0.030		

*Table 8: Estimated correlation between populist attitudes and the other latent variables included in the model.*

<b>Latent variable</b>	<b>Correlation</b>	<b>Robust std. error</b>	<b>p-value</b>
Political Knowledge	-0.21	0.038	$\leq .001$
Political Interest	-0.13	0.024	$\leq .001$
Internal Efficacy	-0.21	0.033	$\leq .001$
External Efficacy	-0.61	0.021	$\leq .001$



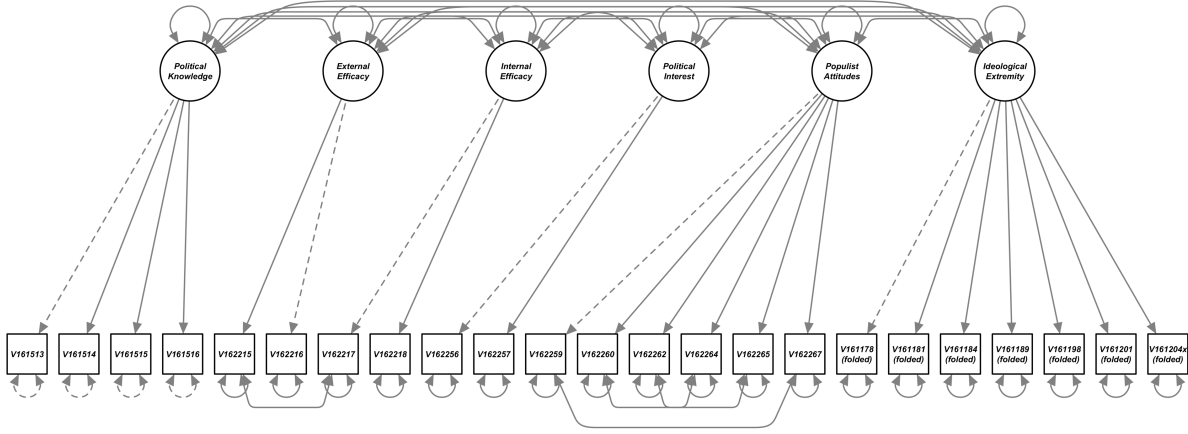


Figure 2: Graphical representation of the measurement model (CFA).

## Robustness

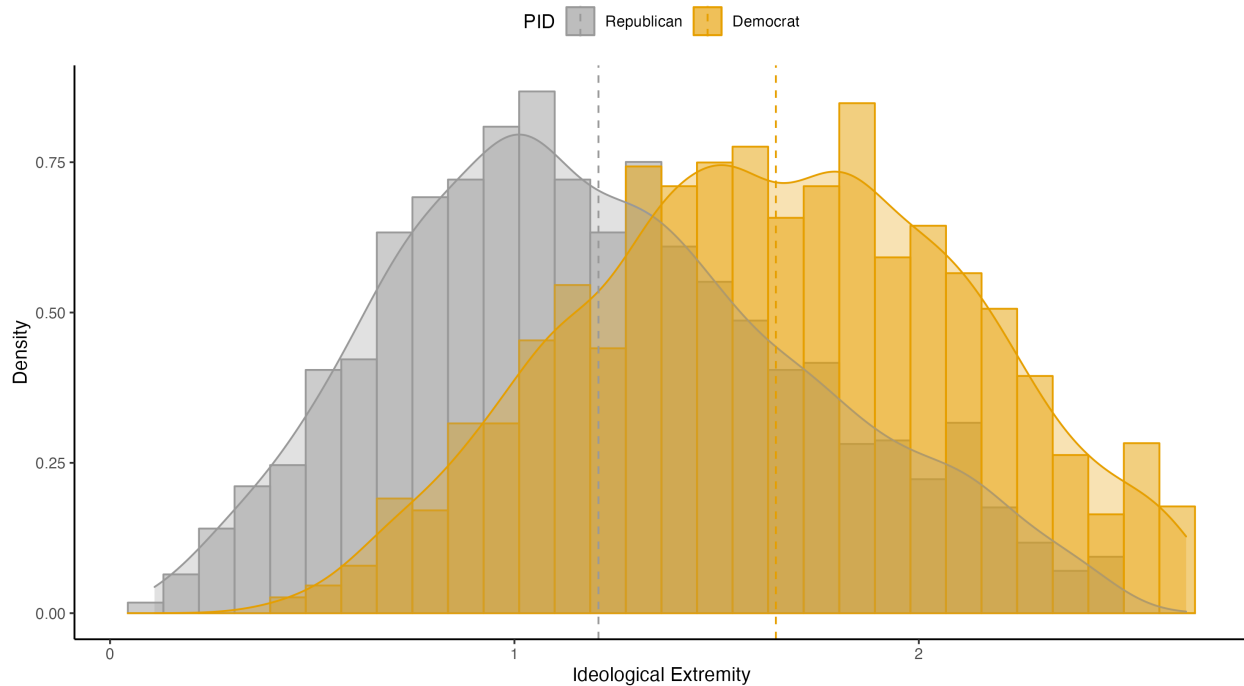
### **Estimated factor scores and 4-item ideological extremity scale**

The lack of association between populism and ideological extremity among Republican identifiers could be related to the fact that, overall, Republicans are more ideologically extreme compared to Democrats. This would mean that there is less variance to be explained by populist attitudes among Republican identifiers (i.e., ceiling effect), hence the small and insignificant coefficient of populist attitudes. To rule out this possibility, I calculated the mean and the variance of ideological extremity across the two partisan groups for the metric invariance model. Although from a substantial point of view comparing the latent means from a metric model is not very informative, this procedure allows me to understand whether the distributions of the estimated factor scores are significantly different across the two partisan groups. To obtain the distribution on the untransformed 4-point scale, I fix the intercept of one of the items (standard of living, V161189) to 0.

Results indicate small differences in the distribution of the latent measure of ideological extremity across the two partisan groups. Republicans are slightly less extreme than Democrats ( $\Delta M = 0.43, p \leq 0.001$ ) with estimated means of  $\hat{M} = 1.23$  and  $\hat{M} = 1.66$ , respectively. Both means are close to the mid-point of the scale and the difference in the estimated variances ( $\sigma = 0.39$  for Republicans,  $\sigma = 0.35$  for Democrats) is small and insignificant ( $\Delta\sigma = 0.042$ ).

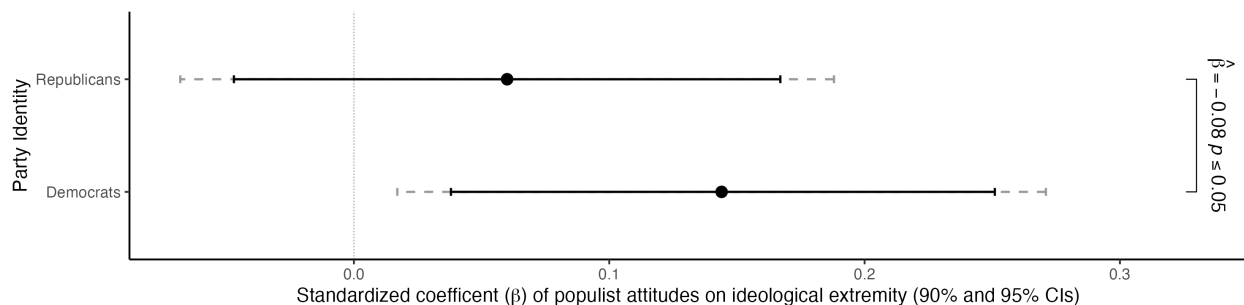
This suggests that the lack of association between populism and ideological extremity is unlikely to be caused by a ceiling effect. Republicans do not have a much higher baseline level of ideological extremity. Instead, they show lower levels of extremity as estimated by the CFA metric model. Furthermore, the latent factor of ideological extremity does not have a very low variance for

Republicans and the variances across the two partisan groups are statistically indistinguishable from each other. This is further confirmed by visually comparing the distribution of the factor score across the two groups as done in Figure 3. The distributions overlap for the most part, with a slightly more right-skewed distribution for Democratic identifiers.



*Figure 3: Predicted factor scores for the ideological extremity scale for Republicans and Democrats.*

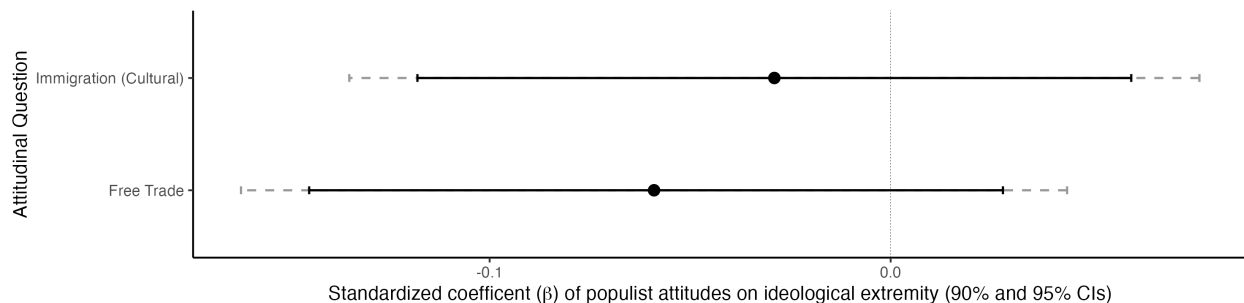
As an additional robustness check, I fit a model that uses a 4-item measure of ideological extremity. This set of items is selected excluding those questions with the largest mean difference across the two partisan groups ( $\Delta M \geq 0.3$ ). The excluded policy items are the ones referring to standards of living (V161189), environmental protection (V161201), and affirmative actions (V161204x). Results remain unchanged and are reported in Figure 4.



*Figure 4: Coefficient of populist attitudes on ideological extremity (4-item), controlling for the other variables included in the model.*

### **Free trade and immigration (cultural threat)**

While the invariance tests confirm that individuals on opposite sides of the ideological spectrum understood in the same way to the used policy items, issues related to free trade and cultural threat coming from immigration may have been more salient for the most populist part of the Republican electorate. Consequently, two models have been fitted to the data using as dependent variable (1) a question tapping into the degree to which each respondent favors or opposes free trade agreements (V162176x) and (2) an item measuring whether the respondent thinks “America’s culture is generally harmed by immigrants” (V162269). These items do not tap into policy opinions (they instead measure attitudes) and have different scales and, thus, have not been included in the main analysis. Results reveal that both coefficients are negative but rather small and insignificant. Even using questions tapping into attitudes related to two of the most relevant dimensions of Trump’s campaign, I find no association between populist attitudes and extremity.



*Figure 5: Coefficient of populist attitudes on attitudinal extremity for Republican identifiers, controlling for the other variables included in the model.*

### **Marginal coefficients of populist attitudes using sum-score indices and OLS regression**

Instead of using the MG-SEM approach, I estimated two OLS models using traditional sum scores indices for each of the latent constructs included in the model. In this case, ideological extremity is measured by subtracting each issue item score from the sample average of the same issue and, then, averaging over the entire set of policy items. In this way, the individual scores reflect the extremity of each individual adjusted for the sample preferences. I employed the R package “survey” (Lumley 2020) to take into account the stratified nature of the ANES sample and adjust the estimated standard errors accordingly. I then calculated the marginal coefficient of populism on ideological and affective extremity for Republican and Democratic identifiers using the R

package *emmeans* (Lenth et al. 2021). The patterns of significance and the size of the association between populist attitudes, ideological extremity, and affective polarization are similar to the ones obtained from the MG-SEM model.

*Table 9: Marginal coefficients of populist attitudes on ideological extremity using sum score OLS regression.*

<b>PID</b>	<b>Marginal effect</b>	<b>Robust std. Error</b>	<b>p-value</b>
Democrats	0.086	0.033	0.0080
Republicans	0.043	0.035	0.2142

*Table 10: Marginal coefficients of populist attitudes on affective polarization using sum score OLS regression.*

<b>PID</b>	<b>Marginal effect</b>	<b>Robust std. Error</b>	<b>p-value</b>
Democrats	-0.109	0.030	≤0.001
Republicans	0.187	0.033	≤0.001

### ***Pairwise correlations***

Simple pairwise correlations for each partisan group also show the same pattern of association. This means that none of the included control variables change in a significant way the estimated coefficients.

<b>Dependent Variable</b>	<b>Democrats</b>	<b>Republicans</b>
Ideological Extremity	0.11 ( <i>p</i> – value ≤ .05)	0.04 ( <i>p</i> – value ≥ .10)
Affective Polarization	-0.09 ( <i>p</i> – value ≤ .05)	0.13 ( <i>p</i> – value ≤ .05)

### ***Alternative measures of affective polarization***

As with other concepts in the social sciences, scholars measure (and conceptualize) affective polarization in different ways. In this work, I follow recent literature on the topic and measure affective polarization using leader evaluations (Druckman et al. 2021; Garrett, Long, and Jeong 2019; Lelkes 2021; Mason 2015; Rogowski and Sutherland 2016). This is a better choice than using party evaluations since, in the US context, evaluations of relevant political figures (i.e., party leaders) are better suited to capture partisan affect compared to other measures. Druckman and Levendusky explain that “when scholars use items that measure feelings toward ‘parties’, [*as compared to candidates*] they are capturing attitudes toward elites more than toward voters” or broader political groups (2019, 7, *italic mine*).

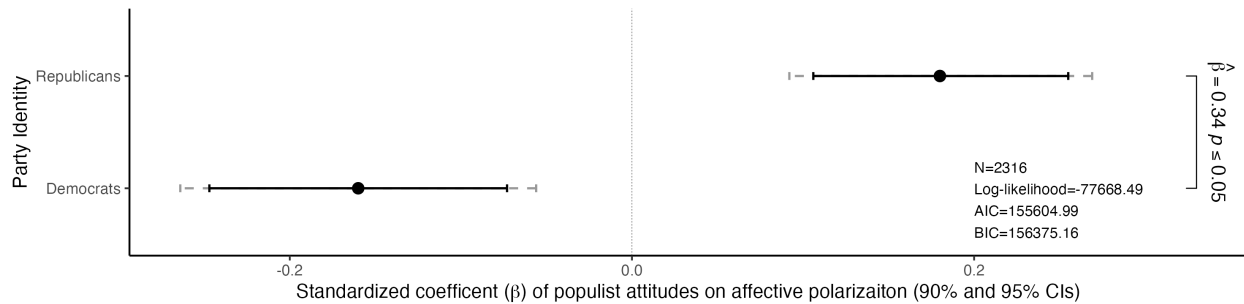
The main analysis uses what it is referred to in Wagner (2021) as the “spread of like-dislike scores” measure for the four political candidates running in the 2016 election. It is formalized as

$Affective_i = \sqrt{\frac{\sum_{c=1}^C V_c (like_{ic} - \overline{like_i})^2}{n_c}}$  where  $c$  is the candidate,  $i$  the individual respondent,  $like_{ic}$  the like-dislike thermometer score assigned to each candidate  $c$  by individual  $i$ ,  $\overline{like_i}$  is the average thermometer score by the individual  $i$ ,  $V_c$  is the vote share of each candidate measured as a proportion from 0 to 1. According to this measure, an individual with low affective polarization rates all the candidates similarly, regardless of a positive or negative score. In contrast, an individual with a high level of affective polarization has very different ratings for the different candidates.

In addition to this measure, the results are replicated using (1) the difference between the thermometer ratings of Trump and Clinton (Lelkes, Sood, and Iyengar 2017), (2) a measure of extremity of obtained by folding the out-party thermometer on its natural mid-point (50°), and (3) the difference in trait ratings (e.g., intelligent) between the out- and in-group candidate (i.e. Trump and Clinton) (Miller and Conover 2015). In line with previous research (Druckman and Levendusky 2019), these measures are highly correlated with each other and do not substantively change the results of any of the analyses. Results are reported below.

### **Differences in thermometer ratings (1)**

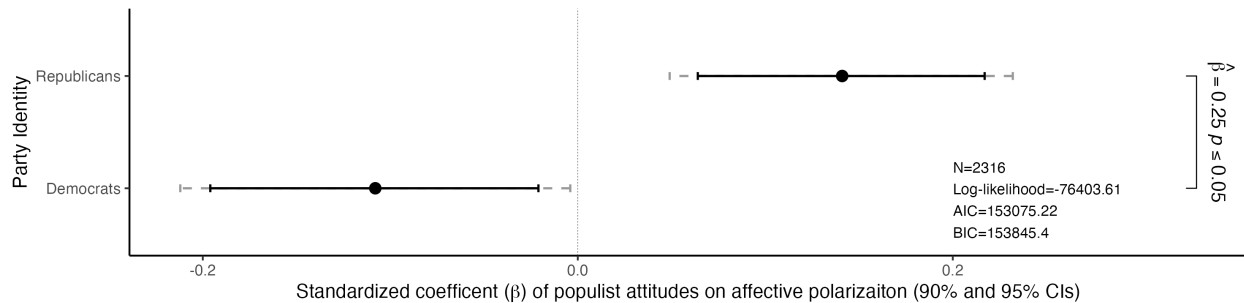
In this model, affective polarization is measured using the difference in thermometer ratings between Donald Trump and Hilary Clinton (e.g., Lelkes, Sood, and Iyengar 2017). The estimated coefficients are virtually the same.



*Figure 6: Coefficient of populist attitudes on the difference in thermometer ratings for Republicans and Democrats, controlling for the other variables included in the model.*

### ***Extremity of negative leader evaluations (2)***

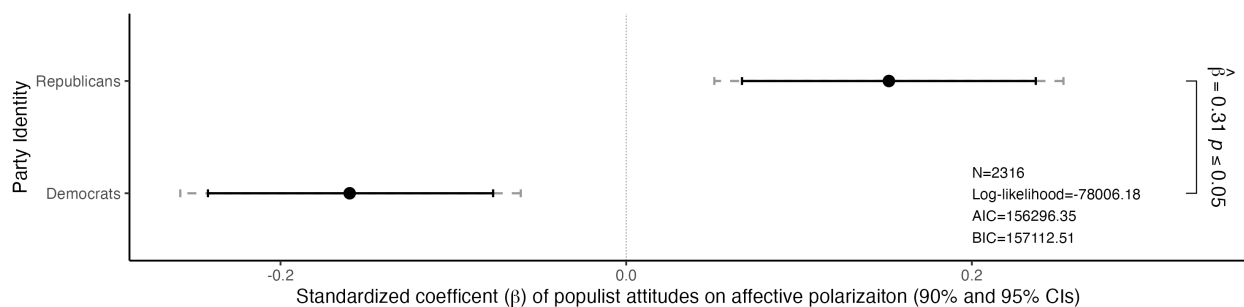
In this model, affective polarization is measured by folding the out-party thermometers on their natural mid-point (50) to gauge the extremity of negative affective evaluation of the out-party leader. The estimated coefficients are similar to the ones obtained using other measures of affective polarization.



*Figure 7: Coefficient of populist attitudes on the extremity of negative thermometer ratings for the out-party candidate, controlling for the other variables included in the model.*

### ***Trait ratings (3)***

The main analysis has been replicated using a latent measure of negative candidate affect measured using items that ask whether the respondent thinks that the out-party candidate (Trump and Clinton) cares about “people like you”, is knowledgeable, and honest (for a similar approach see, [Miller and Conover 2015](#)). Results remain unchanged confirming the validity of using feeling thermometers to measure affective polarization.



*Figure 8: Coefficient of populist attitudes on negative evaluation of candidate traits for Republicans and Democrats, controlling for the other variables included in the model.*

## Alternative measures of populist attitudes

### 5-item measure of populist attitudes

The exact sub-dimension captured by the item that states “The will of the majority should always prevail” (V162267 in the original ANES documentation) is difficult to establish. Wuttke, Schimpf, and Schoen (2020) (Supplementary Files, p. XL) argue that the question measures the “challenge [of *populism*] to representative democracy” (*italic mine*) which is related to “the anti-pluralist component of a Manichean worldview” (Jungkunz, Fahey, and Hino 2021, 6). Yet, the item has the lowest standardized loading ( $\lambda = 0.25$ ) on the latent factor measuring populist attitudes and comparative work has shown that it “does not seem to be related to the concept of populist attitudes quite that much” (Jungkunz, Fahey, and Hino 2021, 9). For these reasons, I fit a model that excludes this item. Unsurprisingly, the results are the same. This is due to the low contribution of the excluded item (V162267) to the variance of the latent factor.

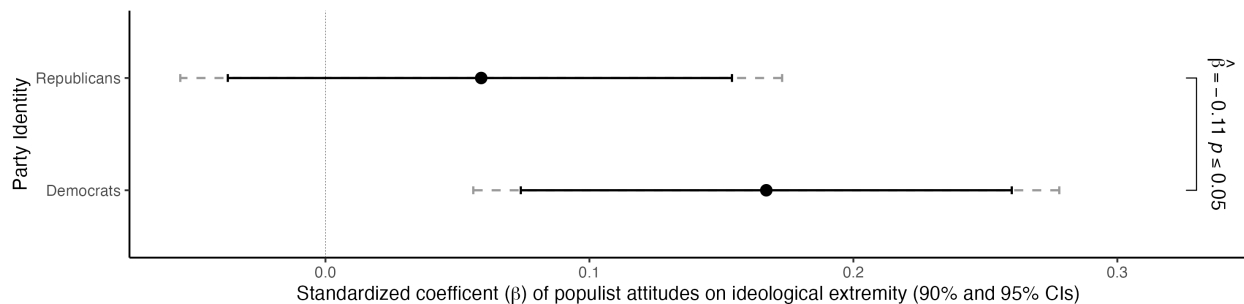


Figure 9: Coefficient of populist attitudes (5-item) on ideological extremity, controlling for the other variables included in the model.

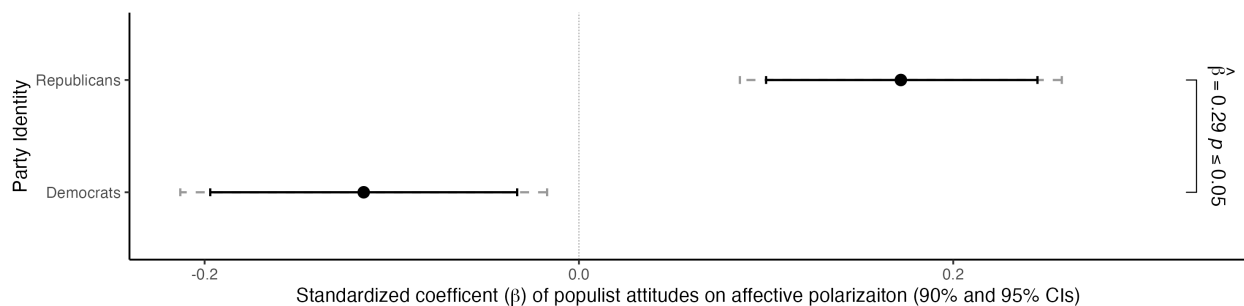


Figure 10: Coefficient of populist attitudes (5-item) on affective polarization, controlling for the other variables included in the model.

### 3-item measure of populist attitudes

Although, conceptually, populism strongly revolves around the powerless-powerful vertical dimension, the CSES scale is unbalanced in favor of anti-elitism. This is because the CSES battery

has been designed to measure, first and foremost, “attitudes about elites” (Hobolt et al. 2017) that are correlated with but not equal to populism. To ensure that the results are robust to different specifications of populist attitudes, I estimate a latent populism measure using the approach proposed by Castanho Silva, Fuks, and Tamaki (2022). This measure uses the items with the highest factor loading for each sub-dimension of the populist attitudes scale (V162259, V162260, V162264). The results are consistent with the ones obtained using the 6-item populist measure with slightly larger coefficients in the expected direction for ideological extremity.

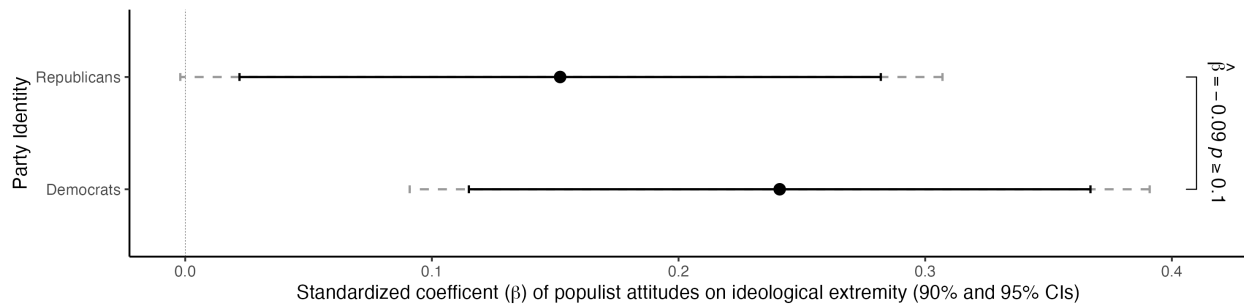


Figure 11: Coefficient of populist attitudes (3-item) on ideological extremity, controlling for the other variables included in the model.

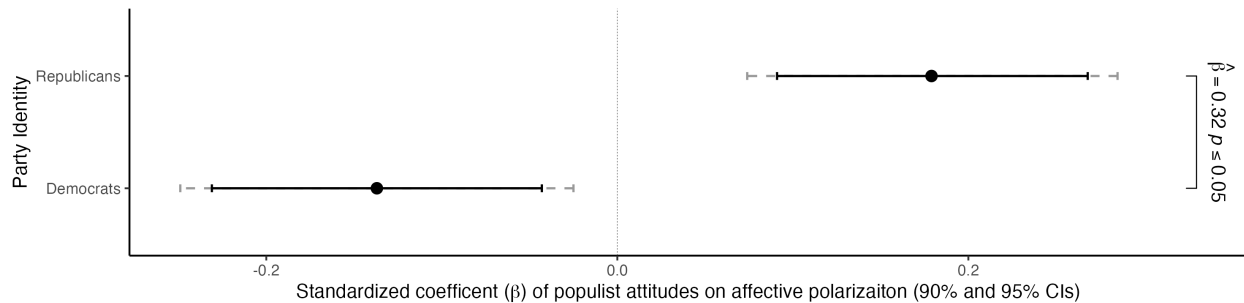


Figure 12: Coefficient of populism attitudes (3-item) on affective polarization, controlling for the other variables included in the model.

### Entire sample (Republicans, Democrats, Pure Independents) model

A model has been fitted using the entire sample (instead of only Republican and Democratic identifiers) and, thus, including respondents who identify as pure independents (i.e., not leaning towards neither the Democratic nor the Republican party). Given that the variance covariance matrix needs to be symmetrical across the different groups, the indicator measuring the strength of partisan identity has been omitted from the model (independents cannot be “weak” or “strong” partisans). Unsurprisingly, the coefficients presented in the paper for Democrats and Republicans remain unchanged.



Although this article focuses only on partisans, it is worth briefly examining the relationship between populism, ideological extremity, and affective polarization among respondents who identify as pure independents. Heaney (2016) suggests that pure independents tend to place greater focus on issues positions due to their disinterest in the more partisan aspects of the political competition (e.g., affective leader evaluations). Our findings indicate that populism may help explaining Heaney's argument. First, the results reveal that the relationship between populism and affective polarization for pure independents is insignificant at conventional levels. Second, I found that pure independents who score high on the populist attitudes scale are more ideologically extreme than pure independents who score low on the same scale. The coefficient for populism is also substantially larger if compared to the one estimated for Democrats or Republicans. Motivated by the hope of changing the *status quo*, populist individuals who refuse any party affiliation may do so because they think that the mainstream parties are not extreme (or unambiguous) enough in terms of issue positions. Although these results are noteworthy, the size of the pure independents group is small (N=264) and thus, extreme caution needs to be used when interpreting the results presented above. I encourage other researchers to focus on how populist ideas among independent voters impact their political judgments.

*Table 11: Regression for ideological extremity including pure independents.*

	Democrats		Independents		Republicans	
	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value
Populist Attitudes	0.131 (0.056)	0.020	0.366 (0.090)	$\leq 0.001$	0.023 (0.058)	0.698
Internal Efficacy	0.219 (0.098)	0.025	0.211 (0.095)	0.027	0.228 (0.101)	0.025
External Efficacy	-0.026 (0.051)	0.615	-0.025 (0.050)	0.616	-0.027 (0.053)	0.614
Political Interest	0.024 (0.077)	0.751	0.024 (0.074)	0.750	0.025 (0.080)	0.751
Political Knowledge	-0.052 (0.057)	0.361	-0.050 (0.055)	0.360	-0.054 (0.059)	0.358
Perceived Polarization	0.101 (0.028)	$\leq 0.001$	0.118 (0.033)	$\leq 0.001$	0.104 (0.029)	$\leq 0.001$

	Democrats		Independents		Republicans	
	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value
Strength Ideological Identity	0.363 (0.035)	$\leq 0.001$	0.279 (0.033)	$\leq 0.001$	0.355 (0.034)	$\leq 0.001$
Education	-0.035 (0.034)	0.308	-0.034 (0.034)	0.318	-0.032 (0.032)	0.311
Income	-0.028 (0.038)	0.458	-0.028 (0.037)	0.455	-0.028 (0.037)	0.457
Age	-0.098 (0.032)	0.003	-0.089 (0.029)	0.002	-0.100 (0.033)	0.003
Importance Religion (Ref: No)	0.034 (0.062)	0.580	0.033 (0.060)	0.579	0.036 (0.065)	0.581
Voted for Sanders (Ref: No)	0.086 (0.096)	0.370	0.083 (0.092)	0.370	0.089 (0.100)	0.374
Female (ref: Male)	-0.042 (0.056)	0.447	-0.041 (0.054)	0.449	-0.044 (0.058)	0.447
African- Americans (ref: White)	0.185 (0.148)	0.211	0.179 (0.147)	0.224	0.192 (0.155)	0.215
Asian (ref: White)	0.087 (0.122)	0.475	0.084 (0.118)	0.475	0.091 (0.127)	0.476
Hispanic (ref: White)	0.237 (0.099)	0.017	0.229 (0.098)	0.020	0.246 (0.101)	0.015
Others (ref: White)	0.343 (0.147)	0.020	0.331 (0.143)	0.021	0.356 (0.151)	0.018

N=2562, Log-likelihood=-83713.9, AIC=167715.79, BIC=168557.98

Notes: All continuous variables are standardized. Beta coefficients for Populist Attitudes are allowed to vary across partisan groups. Robust std. errors in parenthesis.

*Table 12: Regression for affective polarization including pure independents.*

	Democrats	Independents	Republicans
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	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value	Std. Coefficient ( $\beta$ )	p-value
Populist Attitudes	-0.123 (0.053)	0.020	-0.101 (0.085)	0.237	0.151 (0.046)	$\leq 0.001$
Internal Efficacy	0.221 (0.077)	0.004	0.201 (0.069)	0.004	0.213 (0.073)	0.004
External Efficacy	0.003 (0.040)	0.945	0.002 (0.036)	0.945	0.003 (0.038)	0.945
Political Interest	0.022 (0.060)	0.711	0.020 (0.055)	0.712	0.021 (0.058)	0.712
Political Knowledge	-0.018 (0.055)	0.737	-0.017 (0.050)	0.737	-0.018 (0.053)	0.737
Perceived Polarization	0.232 (0.024)	$\leq 0.001$	0.256 (0.025)	$\leq 0.001$	0.223 (0.022)	$\leq 0.001$
Strength affective Identity	0.193 (0.023)	$\leq 0.001$	0.140 (0.017)	$\leq 0.001$	0.175 (0.021)	$\leq 0.001$
Education	-0.069 (0.031)	0.027	-0.063 (0.029)	0.028	-0.059 (0.027)	0.028
Income	-0.021 (0.027)	0.438	-0.020 (0.025)	0.435	-0.019 (0.025)	0.437
Age	0.116 (0.027)	$\leq 0.001$	0.100 (0.023)	$\leq 0.001$	0.110 (0.025)	$\leq 0.001$
Importance Religion (Ref: No)	0.050 (0.047)	0.282	0.045 (0.042)	0.282	0.048 (0.045)	0.281
Voted for Sanders (Ref: No)	-0.385 (0.071)	$\leq 0.001$	-0.017 (0.182)	0.927	-0.370 (0.068)	$\leq 0.001$
Female (ref: Male)	0.102 (0.045)	0.022	0.092 (0.041)	0.023	0.098 (0.043)	0.022
African- Americans (ref: White)	-0.069 (0.096)	0.471	-0.063 (0.088)	0.472	-0.067 (0.093)	0.473
Asian (ref: White)	-0.206 (0.129)	0.111	-0.186 (0.118)	0.114	-0.198 (0.124)	0.112

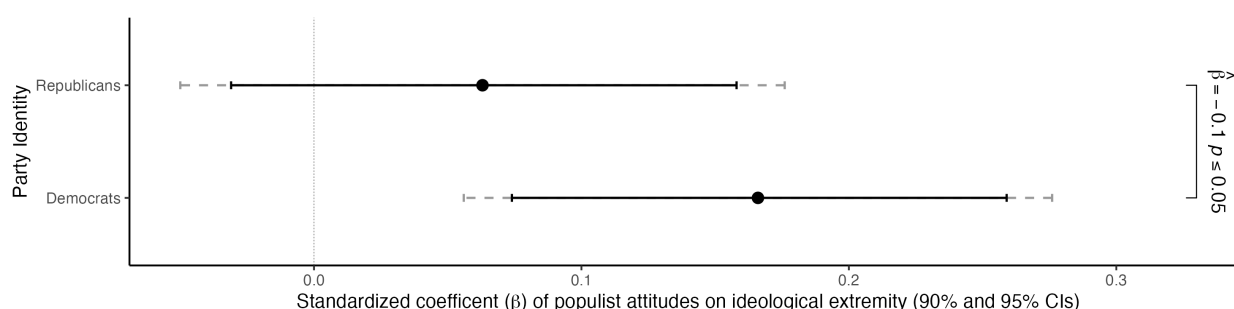
Hispanic (ref: White)	0.037 (0.082)	0.649	0.034 (0.074)	0.648	0.036 (0.079)	0.649
Others (ref: White)	-0.148 (0.117)	0.207	-0.134 (0.105)	0.204	-0.142 (0.112)	0.206

N=2562, Log-likelihood=-83713.9, AIC=167715.79, BIC=168557.98

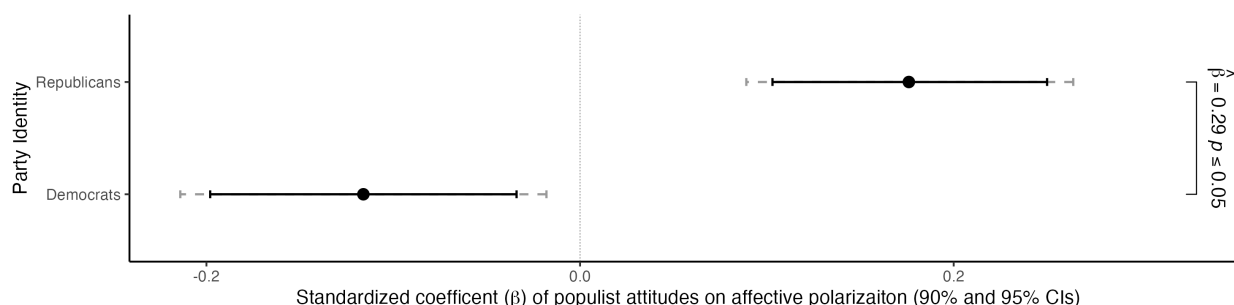
Notes: All continuous variables are standardized. Beta coefficients for Populist Attitudes are allowed to vary across partisan groups. Robust std. errors in parenthesis.

### ***Varying coefficient of voting for Bernie Sanders across partisan groups***

This model allows the coefficient of voting for Bernie Sanders to vary across partisan groups to rule out the possibility that Sanders's primary voters are driving the results due to their more extreme opinions. The results remain unchanged. This confirms the theoretical intuition that populism is driving ideological extremity in a substantial portion of the Democratic party and not only among Sanders's voters.



*Figure 13: Coefficient of populist attitudes on ideological extremity allowing the coefficient of voting for Sanders to vary across partisan groups and controlling for the other variables included in the model.*



*Figure 14: Coefficient of populist attitudes on affective polarization allowing the coefficient of voting for Sanders to vary across partisan groups and controlling for the other variables included in the model.*

### Exclusion of external political efficacy

To check for the potential impact of multicollinearity between the latent factor of external political efficacy and populist attitudes (Geurkink et al. 2020), a model without political efficacy has been fitted to the data. The coefficients are the same as the ones obtained from the model with the inclusion of external political efficacy.

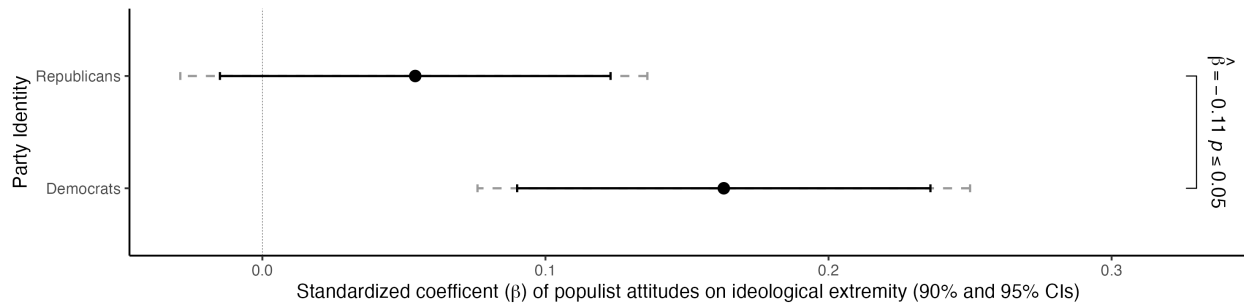


Figure 15: Coefficient of populist attitudes on ideological extremity, excluding external political efficacy and controlling for the other variables included in the model.

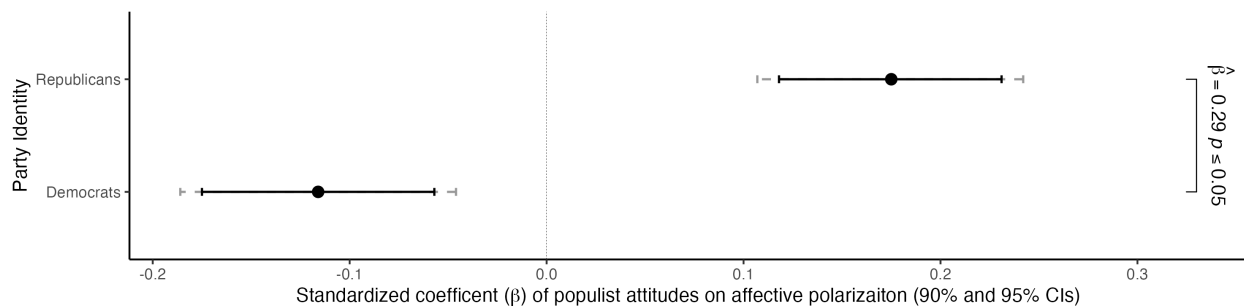


Figure 16: Coefficient of populist attitudes on affective polarization, excluding external political efficacy and controlling for the other variables included in the model.

### Instruments

Table 13: Policy items used to construct the ideological extremity factor.

Item Ref.	Label	Question
V161178	Services	1. Govt should provide many fewer services – 7. Govt should provide many more services
V161181	Defense	1. Govt should decrease defense spending – 7. Govt should increase defense spending
V161184	Medical insurance	1. Govt insurance plan – 7. Private insurance plan
V161189	Standard of living	1. Govt should see to jobs and standard of living – 7. Govt should let each person get ahead on own

Item Ref.	Label	Question
V161198	Help people blacks	1. Govt should help Blacks – 7. Blacks should help themselves
V161201	Environmental protection	1. Regulate business to protect the environment and create jobs – 7. No regulation because it will not work and will cost jobs
V161204x	Affirmative actions	1. Favor a great deal – 7. Oppose a great deal

*Table 14: Partisan affect items used to construct the affective polarization indices.*

Item Ref.	Label	Question
V161086	Thermometer for Democratic candidate (Clinton)	0° – Very cold or unfavorable feeling - 100° – Very warm or favorable feeling
V161087	Thermometer for Republican candidate (Trump)	0° – Very cold or unfavorable feeling - 100° – Very warm or favorable feeling
V161088	Thermometer for Libertarian candidate (Johnson)	0° – Very cold or unfavorable feeling - 100° – Very warm or favorable feeling
V161086	Thermometer for Green Party candidate (Stein)	0° – Very cold or unfavorable feeling - 100° – Very warm or favorable feeling
V161160 (Democratic), V161165 (Republican)	Robustness: Trait out-party candidate: really cares	1. Extremely well – 5. Not well at all
V161161 (Democratic), V161166 (Republican)	Robustness: Trait out-party candidate: knowledgeable	1. Extremely well – 5. Not well at all
V161162 (Democratic), V161167 (Republican)	Robustness: Trait out-party candidate: honest	1. Extremely well – 5. Not well at all

*Table 15: Populist attitudes items*

<b>Item Ref.</b>	<b>Label</b>	<b>Question</b>
V162259	Manicheism	Compromise in politics is selling out on one's principles (1. Agree strongly – 5. Disagree strongly)
V162260	Anti-elitism/People centrism	Most politicians do not care about the people (1. Agree strongly – 5. Disagree strongly)
V162262	Anti-elitism	Politicians are the main problem in the U.S. (1. Agree strongly – 5. Disagree strongly)
V162264	People centrism	People not politicians should make most important policy decisions (1. Agree strongly – 5. Disagree strongly)
V162265	Anti-elitism	Most politicians only care about interests of rich and powerful (1. Agree strongly – 5. Disagree strongly)
V162267	-	The will of the majority should always prevail (1. Agree strongly – 5. Disagree strongly)

*Table 16: Party Identity (PID, grouping variable) and control variables.*

<b>Item Ref.</b>	<b>Label</b>	<b>Question and data manipulation procedure</b>
V161158x	PID	Party identification (Recoded as Democrat, Republican, Robustness: Pure independent)
V161158x	Strength PID	Strength Party identification (Recoded as Leaner, Weak partisan, Strong partisan)
V162260	Primary vote	Candidate voted in the Presidential primary (Recoded as Voted/No vote for Sanders)
V162289	Strength Ideological self-placement	Liberal-Conservative respondent's self-placement (Recoded folding on the mid-point of the scale)
V162287	Respondent's placement of the Democratic Party	Left-right Democratic Party placement (0. Left – 10. Right, used to calculate perceived party polarization by

Item Ref.	Label	Question and data manipulation procedure
		subtracting the two indices and taking the absolute value)
V162287	Respondent's placement of the Republican Party	Left-right Republican Party placement (0. Left – 10. Right, used to calculate perceived party polarization by subtracting the two indices and taking the absolute value)
V161241	Religiosity	Religion important part of respondent's life (Yes, No)
V162256	Political interest	Respondent interest in politics (1. Very interested – 4. Very interested)
V162257	Political interest	Follows politics in media (1. Very closely – 4. Not at all)
V162215	External efficacy	Public officials don't care much what people like me think (1. Agree str. – 5. Disagree str.)
V162216	External efficacy	People like me don't have any say about what the government does (1. Agree str. – 5. Disagree str.)
V162217	Internal efficacy	How often do politics and government seem so complicated that you can't really understand what's going on? (1. Agree str. – 5. Disagree str.)
V162218	Internal efficacy	How well do you understand the important political issues facing our country? (1. Agree str. – 5. Disagree str.)
V161513	Political knowledge	For how many years is a United States Senator elected that is, how many years are there in one full term of office for a U.S. Senator? (recoded as 1. Incorrect, 2. Correct)
V161514	Political knowledge	On which of the following does the U.S. federal government currently spend the least? (recoded as 1. Incorrect, 2. Correct)



<b>Item Ref.</b>	<b>Label</b>	<b>Question and data manipulation procedure</b>
V161515	Political knowledge	Do you happen to know which party currently has the most members in the U.S. House of Representatives in Washington? (recoded as 1. Incorrect, 2. Correct)
V161516	Political knowledge	Do you happen to know which party currently has the most members in the U.S. Senate? (recoded as 1. Incorrect, 2. Correct)
V161267	Age	Respondent's age
V161270	Education	Respondent's highest level of education (1. Less than 1st grade – 16. Doctorate degree)
V161361x	Income	Respondent's income
V161342	Gender	Respondent's self-identified gender ('Other' excluded)
V161310x	Race	Respondent's self-identified race (Recoded as White, African American, Latino, Asian, Other)

## Descriptive statistics

Table 17: Descriptive statistics for the main analysis sample.

Variable	N	N = 3,668
<b>Ideological extremity (services, V161178, folded)</b>	3,187	
Mean (SD)		1.35 (1.05)
Median (IQR)		1.00 (1.00, 2.00)
Range		0.00 - 3.00
<b>Ideological extremity (defense, V161181, folded)</b>	3,233	
Mean (SD)		1.31 (1.05)
Median (IQR)		1.00 (0.00, 2.00)
Range		0.00 - 3.00
<b>Ideological extremity (medical, V161184, folded)</b>	3,294	
Mean (SD)		1.73 (1.12)
Median (IQR)		2.00 (1.00, 3.00)
Range		0.00 - 3.00
<b>Ideological extremity (standard living, V161189, folded)</b>	3,298	
Mean (SD)		1.50 (1.07)
Median (IQR)		1.00 (1.00, 2.00)
Range		0.00 - 3.00
<b>Ideological extremity (blacks, V161198, folded)</b>	3,276	
Mean (SD)		1.61 (1.13)
Median (IQR)		2.00 (1.00, 3.00)
Range		0.00 - 3.00
<b>Ideological extremity (environment V161201, folded)</b>	3,116	
Mean (SD)		1.68 (1.09)
Median (IQR)		2.00 (1.00, 3.00)
Range		0.00 - 3.00

<b>Ideological extremity (affirmative actions, V161204x, folded)</b>	3,635
Mean (SD)	1.59 (1.29)
Median (IQR)	2.00 (0.00, 3.00)
Range	0.00 - 3.00
<b>Affective Polarization (index)</b>	3,652
Mean (SD)	29.00 (13.36)
Median (IQR)	29.81 (19.28, 41.29)
Range	0.00 - 49.65
<b>Political knowledge (senators, V161513)</b>	3,511
Incorrect	1,969 / 3,511 (56%)
Correct	1,542 / 3,511 (44%)
<b>Political knowledge (spending, V161514)</b>	3,573
Incorrect	2,540 / 3,573 (71%)
Correct	1,033 / 3,573 (29%)
<b>Political knowledge (house, V161515)</b>	3,526
Incorrect	897 / 3,526 (25%)
Correct	2,629 / 3,526 (75%)
<b>Political knowledge (senate, V161516)</b>	3,521
Incorrect	1,114 / 3,521 (32%)
Correct	2,407 / 3,521 (68%)
<b>Populism (M1, V162259)</b>	3,136
Mean (SD)	1.88 (1.15)
Median (IQR)	2.00 (1.00, 3.00)
Range	0.00 - 4.00
<b>Populism (AE1, V162260)</b>	3,146
Mean (SD)	2.22 (1.12)
Median (IQR)	2.00 (1.00, 3.00)

Range		0.00 - 4.00
<b>Populism (AE2, V162262)</b>	3,146	
Mean (SD)		2.18 (1.09)
Median (IQR)		2.00 (1.00, 3.00)
Range		0.00 - 4.00
<b>Populism (PC1, V162264)</b>	3,140	
Mean (SD)		2.45 (1.16)
Median (IQR)		3.00 (2.00, 3.00)
Range		0.00 - 4.00
<b>Populism (AE3, V162265)</b>	3,146	
Mean (SD)		2.53 (1.07)
Median (IQR)		3.00 (2.00, 3.00)
Range		0.00 - 4.00
<b>Populism (-, V162267)</b>	3,133	
Mean (SD)		1.59 (1.23)
Median (IQR)		2.00 (1.00, 3.00)
Range		0.00 - 4.00
<b>Education (V161270)</b>	3,640	
Mean (SD)		11.28 (2.32)
Median (IQR)		11.00 (10.00, 13.00)
Range		1.00 - 16.00
<b>Income (V161361x)</b>	3,505	
Mean (SD)		15.76 (8.01)
Median (IQR)		17.00 (10.00, 23.00)
Range		1.00 - 28.00
<b>Age (V161267)</b>	3,577	
Mean (SD)		50.06 (17.62)

Median (IQR)	51.00 (35.00, 64.00)
Range	18.00 - 90.00
<b>Importance Religion (V161241)</b>	3,652
Non important	1,227 / 3,652 (34%)
Important	2,425 / 3,652 (66%)
<b>Gender (V161342)</b>	3,625
Male	1,708 / 3,625 (47%)
Female	1,917 / 3,625 (53%)
<b>Race (self-identification, V161310x)</b>	3,643
White	2,651 / 3,643 (73%)
African American	347 / 3,643 (9.5%)
Asian	117 / 3,643 (3.2%)
Hispanic	364 / 3,643 (10.0%)
Others	164 / 3,643 (4.5%)
<b>Primary vote (V162260)</b>	3,661
Other candidates	3,308 / 3,661 (90%)
Sanders	353 / 3,661 (9.6%)
<b>Perceived party polarization (V162260)</b>	2,995
Mean (SD)	5.58 (2.95)
Median (IQR)	6.00 (4.00, 8.00)
Range	0.00 - 10.00
<b>Strength ideological identity (V162289)</b>	2,949
Mean (SD)	1.36 (0.95)
Median (IQR)	1.00 (1.00, 2.00)
Range	0.00 - 3.00
<b>Party ID (V161158x)</b>	3,668
Democratic Party	1,939 / 3,668 (53%)

Republican Party	1,729 / 3,668 (47%)
<b>Strength Party ID (V161158x)</b>	<b>3,668</b>
Leaner	990 / 3,668 (27%)
Weak partisan	1,067 / 3,668 (29%)
Strong partisan	1,611 / 3,668 (44%)
<b>Interest in politics (V162256)</b>	<b>3,151</b>
Mean (SD)	1.92 (0.82)
Median (IQR)	2.00 (1.00, 2.00)
Range	0.00 - 3.00
<b>Follow politics in media (V162257)</b>	<b>3,149</b>
Mean (SD)	1.84 (0.80)
Median (IQR)	2.00 (1.00, 2.00)
Range	0.00 - 3.00
<b>External Efficacy (publ. officials, V162215)</b>	<b>3,150</b>
Mean (SD)	2.44 (1.09)
Median (IQR)	2.00 (2.00, 3.00)
Range	1.00 - 5.00
<b>External Efficacy (no say, V162216)</b>	<b>3,148</b>
Mean (SD)	2.78 (1.24)
Median (IQR)	3.00 (2.00, 4.00)
Range	1.00 - 5.00
<b>Internal Efficacy (too complicated, V162217)</b>	<b>3,147</b>
Mean (SD)	3.25 (1.05)
Median (IQR)	3.00 (2.00, 4.00)
Range	1.00 - 5.00
<b>Internal Efficacy (understanding, V162218)</b>	<b>3,151</b>
Mean (SD)	2.12 (0.94)

Median (IQR)

2.00 (2.00, 3.00)

Range

0.00 - 4.00

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<sup>1</sup>n / N (%)

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