

Supplement to:

Kwon, Hyunku, and John Levi Martin. 2023. "Subjective Political Polarization." *Sociological Science* 10: 903–929.

## Appendix A: Information on Control Variables

### *Sociodemographic Variables*

Here we give the original ANES wordings, and our collapsings (if any), for the key control variables used.

*Gender.* Original: 1. Male; 2. Female; 3. Other (2016). We treat *male* as 1, *female* (and other, when asked) as 0.

*Race.* “I am going to read you a list of five race categories. Please choose one or more races that you consider yourself to be.” Original: 1. White; 2. Black or African American; 3. American Indian or Alaska Native; 4. Asian; 5. Native Hawaiian or other Pacific Islander; 6. Other. We collapse this into *white*, *black or African American*, and combine all other categories as *other*.

*Education.* “What is the highest level of school you have completed or the highest degree that you received?” Original: 1. Grade school or less (0–8 grades); 2. High school (12 grades or fewer, incl. non-college training if applicable); 3. Some college (13 grades or more but no degree); 4. College or advanced degree. We create three dummies, with *Grade school or less* as the omitted category.

*South.* Here we treat residence in one of the 11 secession states as being *South*.

*Family Income.* “The next question is about the total income of all the members of your family living here in <year>, before taxes. This figure should include income from all sources, including salaries, wages, pensions, Social Security, dividends, interest, and all other income.” Original: ANES then categorizes this into 5 categories: 1. 0 to 16 percentile; 2. 17 to 33 percentile; 3. 34 to 67 percentile; 4. 68 to 95 percentile; 5. 96 to 100 percentile. We treat these as dummy variables, with the bottom category (0–16%) omitted.

*Employed.* “We’d like to know if you are working now, or are you unemployed, retired, a homemaker, (a student), or what?” Original: 1. Employed; 2. Not employed: laid off, unemployed, on strike, permanently disabled, other (exc.: retired, student, housewife); 3. Retired; 4. Homemaker (since 1972: not working 20 or more hrs/wk; 1968–1970: if identifies self as ‘housewife,’ 1956–1964: not working at all; 1952: not working full time); 5. Student. We make a dummy variable where the first of these is 1, and all the others, 0.

## Appendix B: Examination of Negative Polarization

To examine those respondents whose score of micro-level polarization is negative, we compare those whose polarization score is negative to those whose score is non-negative using logistic regressions. Model 1, Table B-1, demonstrates that negative polarization is most common among the uneducated, among whites, among Southerners, and among Democrats. It is also more common among those who had difficulty answering the political attitude questions (the number of items on which the response is missing). Finally, there is some evidence that, holding other things constant, negative polarization decreased after 2000. Model 2 replicates this, only using distances constructed using candidate (and not party) position and the results are largely the same.

**Table B-1:** Logistic Regression Models Predicting Negative Polarization

	<i>Dependent variable:</i>	
	Negative Polarization (party)	Negative Polarization (candidate)
<i>Partisan Strength</i>	-0.307*** (0.026)	-0.358*** (0.029)
<i>Ideological Strength</i>	-0.304*** (0.023)	-0.332*** (0.026)
<i>Education</i> (ref: Grade school or less)		
High school	-0.141 (0.094)	-0.310** (0.111)
Some college	-0.307** (0.098)	-0.553*** (0.116)
College	-0.454*** (0.101)	-0.786*** (0.120)
<i>Black</i>	-0.769*** (0.079)	-0.783*** (0.087)
<i>Income %tile</i> (ref: 0 to 16)		
17 to 33	0.009 (0.076)	-0.130 (0.084)
34 to 66	-0.048 (0.067)	-0.082 (0.073)
67 to 95	-0.069 (0.071)	-0.109 (0.078)
96 to 100	-0.171 (0.105)	-0.379** (0.128)
<i>Male</i>	0.003 (0.041)	-0.030 (0.047)
<i>South</i>	-0.108 (0.076)	-0.017 (0.084)
<i>Partisanship (Democratic)</i>	0.280*** (0.049)	0.413*** (0.057)
<i>Employment</i>	-0.002 (0.044)	0.084 (0.050)
<i># of Missing values</i>	0.070** (0.025)	0.109*** (0.029)
<i>Year</i> (ref: 1972)		
1974	-0.478*** (0.130)	
1976	-0.157 (0.103)	-0.127 (0.110)
1978	-0.475*** (0.119)	

(Table continued on the next page)

	<i>Dependent variable:</i>	
	Negative Polarization (party)	Negative Polarization (candidate)
1980	0.168 (0.126)	0.408** (0.125)
1982	-0.461*** (0.134)	
1984	-0.220 (0.117)	-0.108 (0.120)
1986	-0.469*** (0.122)	
1988	-0.059 (0.134)	-0.105 (0.143)
1990	-0.330** (0.123)	
1992	-0.390*** (0.106)	-0.374*** (0.110)
1994	-0.527*** (0.123)	
1996	-0.296* (0.143)	-0.069 (0.140)
1998	-0.427** (0.135)	
2000	-0.318 (0.193)	-0.346 (0.199)
2004	-0.649*** (0.146)	-0.291* (0.144)
2008		-0.149 (0.160)
2012	-0.608*** (0.107)	-0.418*** (0.111)
2016		-0.621*** (0.122)
<i>South: Partisanship</i>	0.544*** (0.094)	0.397*** (0.104)
Constant	-0.456* (0.183)	-0.292 (0.203)
Observations	19,037	15,764
Log Likelihood	-8,180.865	-6,340.374
Akaike Inf. Crit.	16,427.730	12,736.750

Note: Logistic Regression. \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ . Two-tailed test. Standard Error in parenthesis. Missing values are excluded in the analysis. Omitted values are less than grade school for education, 0 to 16 for income percentile. Source: American National Election Studies (1972–2016).

### Appendix C: Relative Importance of Different Components

Although Figures 7 and 8 show how each component of polarization changed over time, those panels do not specify how much each element contributes to polarization and how such contributions change over time. To portray the relative importance of each component to overall polarization, we first ignore the 26.59% of values that are  $\leq 0$ . We then, for each observation, take the logarithm of the polarization, which is a non-positive number (with maximum polarization being 0).<sup>1</sup> We then construct, for each year, three quantities. The first is simply the average of the log of the interparty *distance*; the second, the sum of this quantity and the average of the log of the *partisan logic* measure; and the third, the sum of this quantity and the average of the log of the *lean* (identical to the average of the log of the polarization). Figure C-1 then graphs trends in these cumulative figures as a way of approximating a decomposition. The top panel (C-1a) presents the results for party positions, and the bottom (C-1b) for candidate positions.

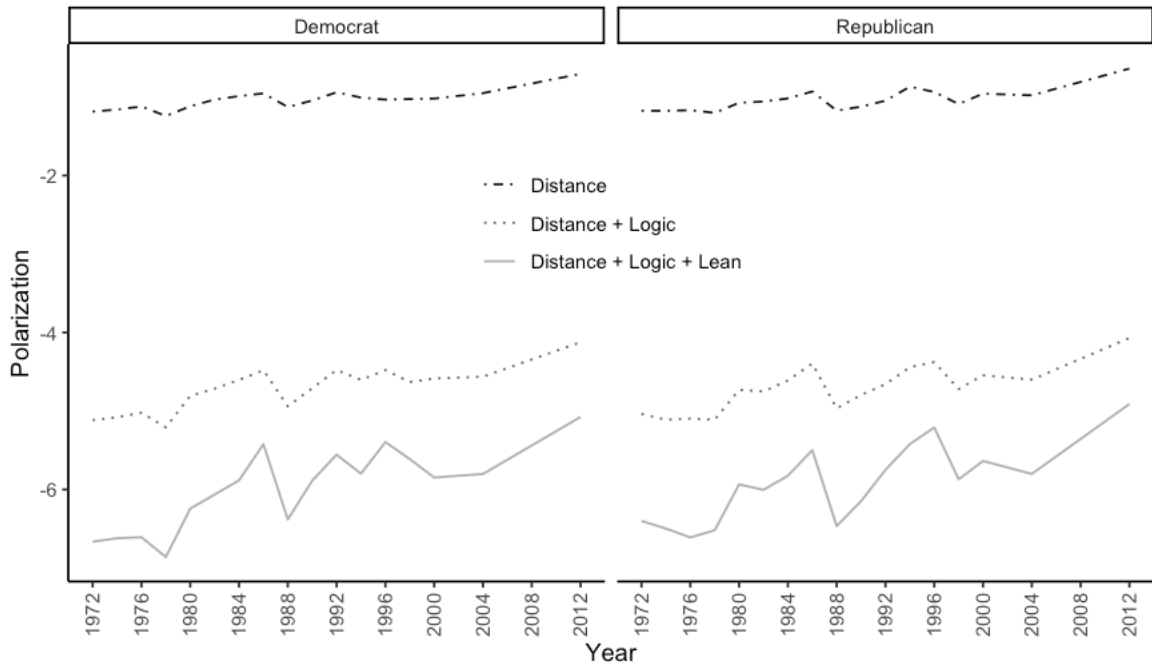
To interpret the results, recall that the components of the multiplicative polarization score all fall between 0 and 1. This means that when we add components, the polarization score must *decrease*, not increase. Figure C-1 should then be interpreted as showing us “less bad” components. If we compare the difference between the first top and middle lines, this is telling us how much in score points we *lose* when multiplying the *distance* by the *logic* components. The bigger the gap between the lines, the less that *logic* is contributing. Similarly, the greater the distance between the middle and bottom lines, the less that *lean* is contributing. What is most important is that the patterns are largely similar between the two parties. We are, in other words, comparing apples to apples with the polarization score, and not apples to oranges.

---

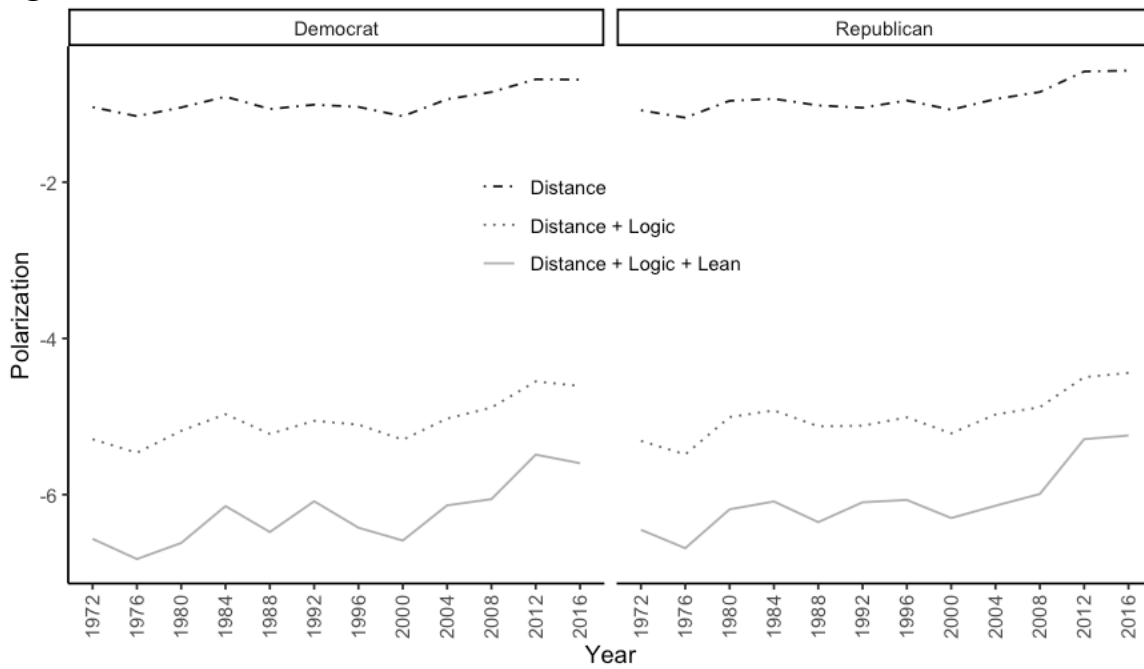
<sup>1</sup> Note that because the logarithm of a mean is not the same thing as the mean of a logarithm, we are not decomposing the logarithms of the averages portrayed in Figure 10, but, rather, doing an accessory analysis on individual-level scores that are put into a logarithmic metric for ease of comparison.

**Figure C-1: Contributions of Each Polarization Component (Log transformed)**

**Figure C-1a: Party Measures**



**Figure C-1b: Candidate Measures**



## Appendix D: Robustness Replications

Tables D-1 and D-2 replicate the analyses of Table 1, but separately for Democrats and Republicans, respectively. We see relatively few differences, and none with theoretical significance. Table D-3 replicates the analyses of Table 2, but using distance measures based on respondents' estimates of the positions of the parties' presidential candidates.



**Table D-1:** Replication of Table 1, Democrats Only

	<i>Dependent variable:</i>					
	<i>Subjective Polarization</i>		<i>Subjective Polarization</i>		<i>Partisan Strength</i>	<i>Ideological Strength</i>
	(party)	(cand)	(party)	(cand)	(5)	(6)
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Partisan Strength</i>			0.021*** (0.001)	0.017*** (0.001)		
<i>Ideological Strength</i>			0.020*** (0.001)	0.023*** (0.001)		
<i>Education</i> (ref: Grade school or less)						
High school	0.004 (0.006)	-0.009 (0.006)	0.015* (0.007)	-0.001 (0.007)	-0.150*** (0.033)	-0.004 (0.052)
Some college	0.007 (0.006)	-0.002 (0.007)	0.015* (0.007)	0.0005 (0.008)	-0.115** (0.035)	0.077 (0.053)
College	0.017** (0.006)	-0.001 (0.007)	0.020** (0.007)	-0.001 (0.008)	-0.069 (0.036)	0.134* (0.053)
<i>Black</i>	-0.026*** (0.007)	-0.058*** (0.007)	-0.014 (0.008)	-0.058*** (0.008)	-0.167*** (0.045)	-0.060 (0.066)
<i>Income Percentile</i> (ref: 0 to 16)						
17 to 33	0.004 (0.004)	0.013** (0.004)	0.003 (0.005)	0.018*** (0.005)	0.011 (0.027)	0.006 (0.036)
34 to 67	0.010** (0.004)	0.024*** (0.004)	0.010* (0.004)	0.024*** (0.004)	0.023 (0.024)	0.007 (0.031)
68 to 95	0.023*** (0.004)	0.033*** (0.004)	0.022*** (0.004)	0.032*** (0.004)	0.034 (0.025)	0.023 (0.032)
96 to 100	0.033*** (0.005)	0.041*** (0.005)	0.028*** (0.005)	0.037*** (0.005)	0.128*** (0.033)	0.067 (0.041)
<i>Male</i>	0.006** (0.002)	0.002 (0.002)	0.005* (0.002)	0.002 (0.002)	-0.080*** (0.014)	0.122*** (0.017)
<i>South</i>	0.007** (0.002)	0.009*** (0.002)	0.005* (0.002)	0.005* (0.002)	-0.024 (0.015)	0.088*** (0.019)
<i>Employment</i>	-0.008*** (0.002)	-0.007*** (0.002)	-0.006* (0.002)	-0.004 (0.002)	-0.091*** (0.015)	-0.066*** (0.018)
Constant	0.020** (0.006)	0.026*** (0.007)	-0.050*** (0.008)	-0.034*** (0.009)	2.170*** (0.040)	0.878*** (0.062)
Observations	9,769	8,371	8,452	7,113	14,068	11,305
R <sup>2</sup>	0.125	0.130	0.192	0.202	0.018	0.039
Adjusted R <sup>2</sup>	0.123	0.128	0.189	0.199	0.016	0.036
Residual Std. Error (df)	0.098 (9741)	0.092 (8348)	0.096 (8422)	0.088 (7088)	0.792 (14038)	0.879 (11275)
F Statistic	51.683*** (27; 9,741)	56.763*** (22; 8,348)	69.058*** (29; 8,422)	74.687*** (24; 7,088)	8.761*** (29; 14,038)	15.690*** (29; 11,275)

Note: OLS Regression. \**p* < 0.05; \*\**p* < 0.01; \*\*\**p* < 0.001. Two-tailed test. Standard Error in parenthesis. Missing values are excluded in the analysis. Year fixed effect included. Omitted values are less than grade school for education, 0 to 16 for income percentile.

Source: American National Election Studies (1972–2016).

**Table D-2:** Replication of Table 1, Republicans Only

	<i>Dependent variable:</i>					
			<i>Subjective Polarization</i>		<i>Partisan Strength</i>	<i>Ideological Strength</i>
	(party)	(cand)	(party)	(cand)	(5)	(6)
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Partisan Strength</i>			0.021*** (0.001)	0.019*** (0.001)		
<i>Ideological Strength</i>			0.015*** (0.001)	0.013*** (0.001)		
<i>Education</i> (ref: Grade school or less)						
High school	-0.009* (0.004)	-0.004 (0.004)	-0.00002 (0.005)	0.010* (0.005)	-0.232*** (0.021)	-0.210*** (0.036)
Some college	-0.006 (0.004)	0.002 (0.004)	0.007 (0.005)	0.018*** (0.005)	-0.316*** (0.023)	-0.102** (0.038)
College	0.016*** (0.004)	0.022*** (0.004)	0.023*** (0.005)	0.032*** (0.005)	-0.247*** (0.024)	0.160*** (0.039)
<i>Black</i>	0.056*** (0.002)	0.049*** (0.002)	0.046*** (0.003)	0.039*** (0.002)	0.309*** (0.014)	0.060** (0.021)
<i>Income Percentile</i> (ref: 0 to 16)						
17 to 33	-0.005 (0.003)	0.001 (0.003)	-0.005 (0.003)	0.003 (0.003)	0.060*** (0.018)	-0.019 (0.027)
34 to 67	-0.005 (0.003)	-0.004 (0.003)	-0.001 (0.003)	-0.002 (0.003)	0.047** (0.016)	-0.082*** (0.025)
68 to 95	-0.010** (0.003)	-0.007* (0.003)	-0.005 (0.003)	-0.004 (0.003)	0.035 (0.018)	-0.100*** (0.027)
96 to 100	-0.012* (0.005)	-0.007 (0.005)	-0.006 (0.005)	-0.003 (0.005)	0.059 (0.033)	-0.079 (0.044)
<i>Male</i>	-0.007*** (0.002)	-0.008*** (0.002)	-0.006** (0.002)	-0.007*** (0.002)	-0.063*** (0.011)	0.031 (0.016)
<i>South</i>	-0.009*** (0.002)	-0.007*** (0.002)	-0.011*** (0.002)	-0.010*** (0.002)	0.029* (0.012)	-0.002 (0.018)
<i>Employment</i>	-0.005* (0.002)	-0.007*** (0.002)	-0.004 (0.002)	-0.006** (0.002)	-0.101*** (0.012)	0.009 (0.017)
Constant	0.038*** (0.005)	0.027*** (0.005)	-0.039*** (0.007)	-0.038*** (0.006)	2.261*** (0.028)	1.078*** (0.048)
Observations	13,540	11,328	10,585	8,651	19,952	14,114
R <sup>2</sup>	0.108	0.105	0.164	0.158	0.054	0.033
Adjusted R <sup>2</sup>	0.106	0.103	0.162	0.155	0.052	0.031
Residual Std. Error (df)	0.107 (13512)	0.092 (11305)	0.099 (10555)	0.086 (8626)	0.762 (19922)	0.926 (14084)
F Statistic	60.486*** (27; 13512)	60.389*** (22; 11305)	71.324*** (29; 10555)	67.212*** (24; 8626)	38.938*** (29; 19922)	16.429*** (29; 14084)

Note: OLS Regression. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . Two-tailed test. Standard Error in parenthesis. Missing values are excluded in the analysis. Year fixed effect included. Omitted values are less than grade school for education, 0 to 16 for income percentile.

Source: American National Election Studies (1972–2016).

**Table D-3:** Replication of Table 2, Using Candidate Positions

	<i>DV: Partisan Animus for...</i>							
	Candidate				Party			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Partisan Strength</i>	13.610*** (0.313)			7.880*** (0.310)	7.634*** (0.324)	11.349*** (0.276)	6.455*** (0.529)	3.088*** (0.287)
<i>Ideological Strength</i>		9.781*** (0.307)		3.815*** (0.272)	3.913*** (0.283)	4.208*** (0.242)	2.695*** (0.445)	10.407*** (0.251)
<i>Subjective Polarization</i> (candidate)			203.820*** (2.298)	187.264*** (2.643)	183.203*** (2.745)	106.780*** (2.361)	56.269*** (4.627)	96.145*** (2.433)
<i>Education</i> (ref: Grade school or less)								
High school					6.442*** (1.449)	2.464 (1.460)	1.913 (1.490)	6.742*** (1.285)
Some college					9.601*** (1.464)	2.966* (1.468)	2.086 (1.599)	11.339*** (1.298)
College					10.606*** (1.481)	3.472* (1.482)	1.546 (1.638)	15.700*** (1.313)
<i>Black</i>					3.915*** (0.824)	7.428*** (0.699)	8.117*** (1.425)	-8.899*** (0.730)
<i>Income Percentile</i> (ref: 0 to 16)								
17 to 33					0.162 (0.956)	0.320 (0.811)	0.792 (1.613)	0.602 (0.848)
34 to 67					-0.184 (0.833)	-0.917 (0.707)	-0.633 (1.412)	2.539*** (0.738)
68 to 95					-1.816* (0.874)	-2.631*** (0.747)	-1.221 (1.451)	3.834*** (0.775)
96 to 100					-1.810 (1.273)	-4.172*** (1.100)	-0.572 (1.944)	1.865 (1.128)
<i>Male</i>					0.193 (0.508)	0.105 (0.433)	0.310 (0.829)	2.436*** (0.450)
<i>South</i>					-2.114*** (0.557)	0.019 (0.472)	0.810 (0.938)	-0.844 (0.494)
<i>Employment</i>					-2.904*** (0.546)	-2.125*** (0.467)	-1.028 (0.893)	-1.925*** (0.484)
Constant	9.822*** (0.705)	28.162*** (0.461)	24.879*** (0.272)	5.776*** (0.697)	0.473 (1.681)	-2.095 (1.619)	-3.454 (2.132)	-16.467*** (1.490)
Observations	21,093	16,787	21,093	16,787	15,764	13,732	2,709	15,764
<i>R</i> <sup>2</sup>	0.082	0.057	0.272	0.321	0.326	0.326	0.166	0.279

Note: OLS Regression. \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ . Two-tailed test. Standard Error in parenthesis. Missing values are excluded in the analysis. Year fixed effect included. Omitted values are less than grade school for education, 0 to 16 for income percentile.

Source: American National Election Studies (1972–2016).