

**Supplementary Appendix for  
Outgroup Homogeneity as Evidence of Left–Right Identification in Multiparty  
Democracies**

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## Appendix A: Sample and Summary Statistics

Table A1 documents the country and survey year for all the surveys we used in the analyses reported in the main text and in the appendix. The specific parties used in different estimations are discussed in Appendix B. In each survey, we included all respondents except those who placed over half of the required parties on the same position of the left-right scale. These respondents constitute roughly 4.5% of the sample and including them in our analyses does not change our conclusion. Table A2 provides descriptive statistics for all the variables we use based on the specification and samples reported in Table 1.

**Table A1: Countries and Survey Years included in the Sample**

Country	Survey Year	Country	Survey Year
Australia	1996, 2004, 2007, 2013, 2019	Ireland	2002, 2007, 2011, 2016
Austria	2008, 2013, 2017	Israel	1996, 2003, 2006, 2013, 2020
Belgium	1999, 2019	Italy	2006, 2018
Canada	1997, 2004, 2019	Netherlands	1998, 2002, 2006, 2010, 2017
Denmark	1998, 2001, 2007, 2019	New Zealand	1996, 2002, 2008, 2011, 2014, 2017, 2020
Finland	2003, 2007, 2011, 2015, 2019	Norway	1997, 2001, 2005, 2009, 2013, 2017
France	2002, 2007, 2012	Portugal	2002, 2005, 2009, 2019
Germany	1998, 2002, 2005, 2009, 2013, 2017	Spain	1996, 2000, 2008
Great Britain	2015, 2017	Sweden	1998, 2002, 2006, 2014, 2018
Iceland	1999, 2003, 2007, 2009, 2013, 2016, 2017	Switzerland	1999, 2003, 2007, 2011, 2019

**Table A2: Summary Stats of Key Variables**

Variable	Mean	Std. Dev.	Min	Max
Het1 (Diff. in SD of Party Placements)	0.100	1.401	-7.071	7.071
Het 2 (Diff. in Sum of Pairwise Distances)	0.083	1.815	-10	10
Left Self-Placement	0.240	---	0	1
Right Self-Placement	0.293	---	0	1
Left Partisan	0.331	---	0	1
Right Partisan	0.353	---	0	1
Cabinet Purity	0.112	0.712	-1	1
True LR Heterogeneity (SD of party placements)	0.044	0.570	-1.208	1.539
True LR Heterogeneity (Sum of actual party distance)	0.110	0.509	-1.367	1.245
Total # of Parties on the Right	3.655	1.105	2	6
Total # of Parties on the Left	3.292	0.994	2	6

## Appendix B: Categorization of Political Parties

To categorize political parties into leftist and rightist groups, we rely on all respondents' assessments of a party's left-right position. This is a common way to characterize the "true" ideological positions of political parties and has been shown to correspond closely to expert placements of various kinds and also relative placements based on manifestos (e.g., Fortunato et. al. 2016). In Table B1, we report the left-right categorization of parties in each country for the rule we used to produce the results in the main text: Political parties with average positions greater than 5 are assigned to the rightist group and those less than 5 to the leftist group. That said, in the next sub-section of the appendix we provide several alternative classification rules and replications of the main results using them.

**Table B1: Left-Right Categorization of Parties included in the CSES**

Country	Parties on the Left	Parties on the Right	Country	Parties on the Left	Parties on the Right
<b>Australia</b>	Australian Labor Party (ALP)	Liberal Party (LP)	<b>Ireland</b>	Labor (Lab)	
	Australian Greens (AG)	National Party of Australia (NP A)		Sinn Fein (SF)	
	Australian Democrats (AD)	United Australia Party (UAP)		Greens (GP)	
	Family First Party (FFP)	Australian Democrats (AD)(2004)		United Left Alliance (ULA)	Fianna Fail (FF)
		Palmer United Party (PUP)		Anti-Austerity Alliance- People Before Profit (AAA-PBP)	Fine Gael (FG)
<b>Austria</b>	Social Democratic Party of Austria (SPO)	Austrian People's Party (OVP)	<b>Israel</b>	Social Democrats (SD)	Likud - The Consolidation (L)
	The Greens - The Green Alternative (GRUENE)	Freedom Party of Austria (FPO)		Israeli Labor Party (MHH)	Sfarad's Keepers of the Torah (Shas)
	Liberal Forum (LiF)	Alliance for the Future of Austria (BZO)		Energy Change (Shinui)	National Religious Party (Mafdal)
	The New Austria (NEOS)	Citizens' Forum		Forward (Kadima)	National Union (HaLe)
	Peter Pilz List (PILZ)	Team Stronach		United Torah Judaism (YH)	Israel is Our Home (YB)
		The New Austria (NEOS)		Joint List	National Union - National
				Labor-Gesher-Meretz (Emet)	

				Religious Party (HaLe - Mafdal) There is a Future (YA) The Jewish Home (HH) Likud - The Consolidation (L) - Yisrael Beiteinu (L - YB) Blue and White (KL) United Torah Judaism (YH) (2020) Yamina
	Christian Democratic & Flemish (CD&V) Socialist Party Differently (SP.A) Live Differently - Flemish- speaking Ecologists (AGALEV) Open Flemish Liberals and Democrats (Open-VLD) Green Workers Party of Belgium (PVDA) Ecolo Workers' Party of Belgium (PTB) Humanist Democratic Centre (cdH) Democratic Federalist Independent (DeFI)	Flemish Liberals and Democrats (VLD) Flemish Block (VB) People's Union (VU) New Flemish Alliance (N-VA) Socialist Party (PS) Reformist Movement (MR)	<b>Italy</b> Democrats of the Left (DS) Communist Refoundation Party (PRC) Daisy - Democracy is Freedom (DL) Democratic Party (PD) Free and Equal (LeU)	Forward Italy (Forza Italia) (FI) Union of Christian and Centre Democrats (UDC) National Alliance (AN) Five Star Movement (M5S) Lega (LN) Brothers of Italy (Fdi)



				The Opportunities Party (TOP)	New Zealand First Party (NZFP)
				MANA Movement (MANA)	The Opportunities Party (TOP)
<b>Finland</b>	Social Democratic Party of Finland (SDP) Green League (VIHR) Left Alliance (VAS)	Center Party (KESK) National Coalition Party (KOK) Christian Democrats (KD) Swedish People's Party of Finland (RKP - SFP) True Finns (PS) Blue Reform	<b>Norway</b>	Labor Party (Ap) Socialist Left Party (SV) Center Party (Sp) Liberal Party (V) Red Electoral Alliance (RV) Red Party (R) The Greens (MDG)	Conservative Party (H) Progress Party (FrP) Christian People's Party (KrF) Liberal Party (V) (2017)
<b>France</b>	Socialist Party (PS) French Communist Party (PCF) Europe Ecology - The Greens (EELV) Workers' Struggle (LO) Republican And Civic Movement (MDC) Revolutionary Communist League (LCR) Left Front (FDG)	Democratic Movement (MoDem) National Front (FN) Rally For the Republic (RPR) Liberal Democracy (LD) Union for a Popular Movement (UMP)	<b>Portugal</b>	Socialist Party (PS) Unitarian Democratic Coalition (CDU) Left Block (BE) Portuguese Communist Worker's Party (PCTP/MRPP) People–Animals–Nature (PAN)	Social Democratic Party (PSD) Democratic and Social Centre - People's Party (CDS-PP) Socialist Party (PS) (2009)
<b>Germany</b>	Social Democratic Party (SPD) Alliance 90/Greens (B90/GRUENE)	Christian Democratic Party (CDU) Christian Social Union in Bavaria (CSU)	<b>Spain</b>	Spanish Socialist Workers' Party (PSOE) United Left (IU)	People's Party (PP) Convergence and Union (CiU) Basque Nationalist Party (PNV)

	Left Party (DIE LINKE) Pirates Party (PIRATEN)	Free Democratic Party (FDP) The Republicans (REP) Party of the Rule of Law Offensive (Schill-Party) National Democratic Party of Germany (NPD) Alternative for Germany (AfD)		Basque Nationalist Party (PNV) (2008) Galician Nationalist Bloc (BNG) Republican Left of Catalonia (ERC) Union, Progress and Democracy (UPyD)	Canarian Coalition - Canarian Nationalist Party (CC - PNC)
<b>Great Britain</b>	Labor Party (Lab) Liberal Democrats (LD) Scottish National Party (SNP) Green Party (GP) Plaid Cymru (PC)	Conservative Party (Con) United Kingdom Independence Party (UKIP)	<b>Sweden</b>	Sweden's Social Democratic Worker's Party (SAP) Left Party (V) Green Party (MP) Feminist Party (Fi)	Moderate Party (M) Liberal People's Party (FP) Christian Democrats (KD) Centre Party (C) Sweden Democrats (SD) Liberals (L)
<b>Iceland</b>	Social Democratic Alliance (Sam) Left-Green Movement (VG) Icelandic Movement (IL) Civic Movement (B) Bright Future (BF) Pirate Party (Pi) Liberal Reform Party (2016) People's Party (FIF)	Independence Party (Sj) Progressive Party (F) Liberal Party (FF) Centre Party (M) Liberal Reform Party (2017)	<b>Switzerland</b>	Social Democratic Party (SP / PS) Green Party (GPS / PES) Evangelical People's Party (EVP / PEP) Green Liberal Party (GLP / PVL)	Swiss People's Party (SVP / UDC) Christian Democratic People's Party (CVP / PDC) Radical Democratic Party (FDP / PLR) Ticino League (Lega) Liberal Party (LPS / PLS) Conservative Democratic

*Robustness of Results to Reasonable Variation in the Classifications of Parties*

In almost all cases, it is easy to classify parties as left or right because all reasonable observers would agree on the classification. However, there are some cases in which there is ambiguity. Usefully, in all such cases, we find that respondents' placements of these parties reflect this ambiguity in two ways: (1) on average, respondents tend to place the parties near 5 on the LR scale, and (2) the standard deviation of the mean respondent placement tends to be larger for these parties (reflecting both a smaller  $n$  – because some voters refuse to make a placement – and larger variability in the placements themselves). In addition, we have 12 parties that change left-right classifications over time (according to the rule used in Table B1). However, looking closely at these cases, it is clear that the changes in classifications stem from the same two reasons for ambiguity reflected above. Thus, to explore the robustness of our results to the classification of parties as left or right, we constructed several alternative classifications (to those listed in Table B1) as explained below.

The first alternative classification (Alt1) excludes from the analysis any party (in a given survey) whose mean left-right position (according to the respondents in the survey) was not statistically different from 5 (the center point in all our surveys). This resulted in the exclusion of 17 party-surveys from the list in Table B1. The second (Alt2) excludes (in addition to those in the first alternative) all parties whose mean left-right position was between 4.8 and 5.2, regardless of whether this mean was statistically different from 5. This resulted in an additional 13 excluded cases (30 total exclusions). The third set (Alt3) adds to the those above all parties (in any survey) in which the left-right classification of the party (as listed in B1) changed over time. This excludes an additional 17 cases for a total of 47 exclusions. Finally, the fourth set (Alt4) uses the CSES designation of party families to construct our left right sets. The classifications of CSES party families to the left and right are provided in Table B2 below. This classification excludes a total of 90 parties from our analyses (those with party families in the third column). We provide the list of excluded parties given different classification rules in Table B3.

**Table B2: Left-Right Categorization of CSES Party Families**

Party Family on the Left	Party Family on the Right	Party Family not Assigned (excluded from analysis)
1. Ecology	1. Liberal	1. Agrarian
2. Communist	2. Right Liberal	2. Regional
3. Socialist	3. Christian Democratic	3. Independent
4. Social Democratic	4. Conservative	4. Other
5. Left-Liberal	5. National	5. Missing
6. Extreme Left	6. Ethnic	
7. Nationalist Left	7. Religious	

- 
- |                    |                        |
|--------------------|------------------------|
| 8. Communist-Green | 8. Extreme Nationalist |
|                    | 9. Orthodox-Calvinist  |
- 

**Table B3: Excluded Parties Using Different Classification Rules**

<b>Alternative Classification 1 (Alt1)</b>					
<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>	<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>
Austria 2008	Citizens' Forum	Right	Israel 2013	There is a Future (YA)	Right
Belgium WAL 1999	National Front (FN)	Left	Israel 2020	Blue and White (KL)	Right
Canada 2004	Liberal Party (LIB)	Right	Italy 2018	Five Star Movement (M5S)	Right
Finland 2011	Green League (VIHR)	Left	New Zealand 2017	The Opportunities Party (TOP)	Left
Germany 1998	Free Democratic Party (FDP)	Right	Portugal 2009	Socialist Party (PS)	Right
Germany 2017	Free Democratic Party (FDP)	Right	Spain 2008	Basque Nationalist Party (PNV)	Left
Great Britain 2015	Liberal Democrats (LD)	Left	Spain 2008	Union, Progress and Democracy (UPyD)	Left
Israel 2003	Change (Shinui)	Left	Switzerland 2007	Evangelical People's Party (EVP / PEP)	Left
Israel 2006	Forward (Kadima)	Left			
<b>Alternative Classification 2 (Alt2)</b>					
<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>	<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>

Australia 1996	Australian Democrats (AD)	Left	Iceland 2016	Bright Future (BF)	Left
Denmark 2007	Christian Democrats (KD)	Left	Netherlands 1998	Democrats 66 (D66)	Right
Finland 2003	Green League (VIHR)	Left	Netherlands 2006	Democrats 66 (D66)	Left
Finland 2007	Green League (VIHR)	Left	Netherlands 2017	Democrats 66 (D66)	Right
Finland 2015	Green League (VIHR)	Left	Norway 2005	Liberal Party (V)	Left
Iceland 2007	Social Democratic Alliance (Sam)	Left	Spain 2008	Canarian Coalition - Canarian Nationalist Party (CC - PNC)	Right
Iceland 2016	Pirate Party (Pi)	Left	Spain 2008	Union, Progress and Democracy (UPyD)	Left

**Alternative Classification 3 (Alt3)**

<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>	<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>
Australia_2004	Australian Democrats (AD)	Right	Norway_2001	Liberal Party (V)	Left
Belgium FLD_1999	Christian Democratic & Flemish (CD&V)	Right	Norway_2009	Liberal Party (V)	Left
Belgium FLD_2019	Christian Democratic & Flemish (CD&V)	Left	Norway_2013	Liberal Party (V)	Left
Denmark_2001	Christian Democrats (KD)	Right	Norway_2017	Liberal Party (V)	Right

Iceland_2016	Reform Party	Left	Portugal_2002	Socialist Party (PS)	Left
Iceland_2017	Reform Party	Right	Portugal_2005	Socialist Party (PS)	Left
Netherlands_2002	Democrats 66 (D66)	Left	Portugal_2019	Socialist Party (PS)	Left
Netherlands_2010	Democrats 66 (D66)	Left	Spain_1996	Basque Nationalist Party (PNV)	Right
Netherlands_2017	Democrats 66 (D66)	Right	Spain_2000	Basque Nationalist Party (PNV)	Right
<b>Alternative Classification 4 (Alt4)</b>					
<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>	<b>Country Year</b>	<b>Party Name</b>	<b>Categorization before Exclusion</b>
Australia_1996	National Party of Australia (NPA)	Right	Israel_2020	Sephardi Keepers of the Torah (Shas)	Right
Australia_2004	National Party of Australia (NPA)	Right	Netherlands_1998	Reformed Political Alliance (GPV)	Right
Australia_2007	National Party of Australia (NPA)	Right	Netherlands_2002	Pim Fortuyn List (LPF)	Right
Australia_2019	National Party of Australia (NP)	Right	Netherlands_2006	Christian Union (CU)	Right
Austria_2017	Peter Pilz List (PILZ))	Left	Netherlands_2010	Christian Union (CU)	Right
Belgium FLD_1999	Flemish Block (VB)	Right	Netherlands_2010	Reformed Political Party (SGP)	Right
Belgium FLD_1999	People's Union (VU)	Right	Netherlands_2017	Party for Freedom (PVV)	Right

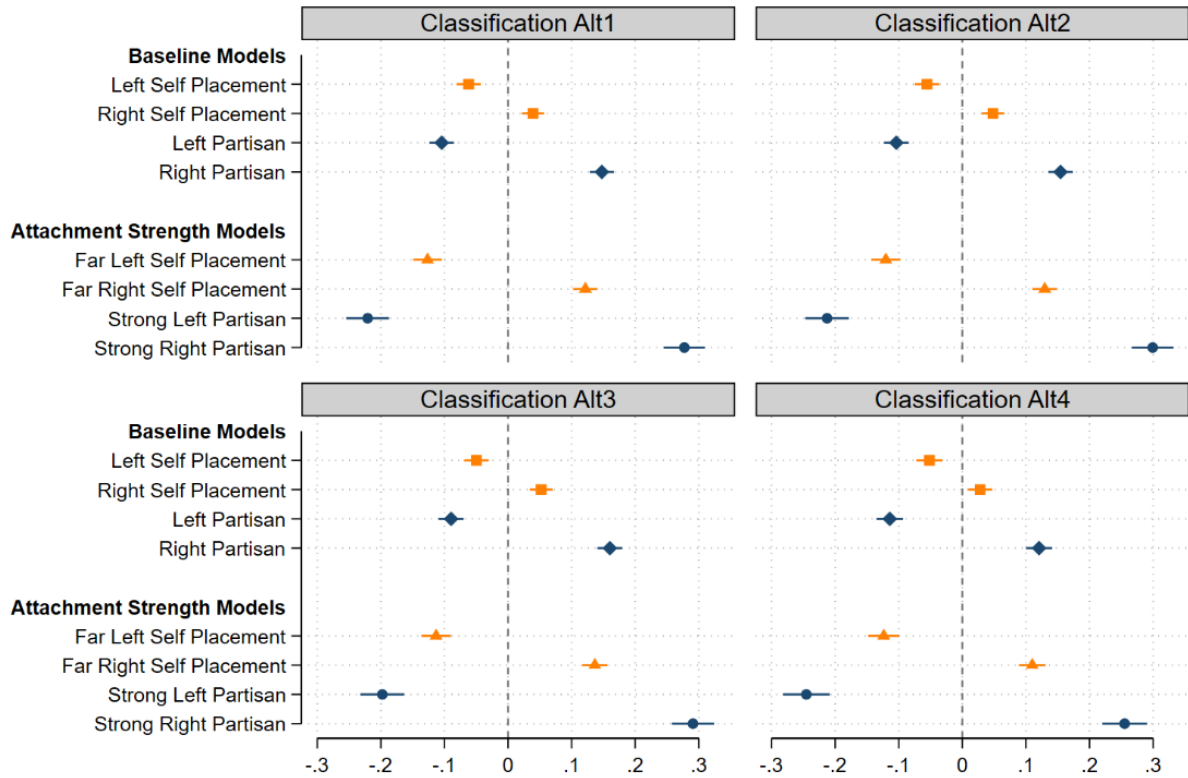
Belgium WAL_1999	Liberal Reformist Party - Francophone Democratic Front (PRL- FDF)	Left	Netherlands _2017	Christian Union (CU)	Right
Belgium WAL_2019	People's Party (PP)	Right	New_Zealan d_2008	New Zealand First (NZF)	Right
Canada_1997	Bloc Quebécois (BQ)	Left	New_Zealan d_2008	United Future New Zealand (UFNZ)	Right
Denmark_2007	United List - Red-Greens (En - O)	Left	New_Zealan d_2011	New Zealand First (NZF)	Right
Finland_2007	Center Party (KESK)	Right	New_Zealan d_2014	New Zealand First (NZF)	Right
Finland_2007	True Finns (PS)	Right	New_Zealan d_2017	New Zealand First Party (NZFP)	Right
Finland_2011	Center Party (KESK)	Right	Norway_199 7	Center Party (Sp)	Left
Finland_2015	Center Party (KESK)	Right	Norway_200 1	Center Party (Sp)	Left
Finland_2019	Center Party of Finland (KESK)	Right	Norway_200 5	Center Party (Sp)	Left
France_2012	Democratic Movement (MoDem)	Right	Norway_200 9	Center Party (Sp)	Left
Germany_2002	The Republicans (REP)	Right	Norway_201 3	Center Party (Sp)	Left
Germany_2002	Party of the Rule of Law Offensive (Schill-Party)	Right	Norway_201 7	Center Party (Sp)	Left
Germany_2005	National Democratic Party of	Right	Norway_201 7	Red Party (R)	Left

	Germany (NPD)				
Germany_2013	Alternative for Germany (AfD)	Right	Portugal_2002	Unitarian Democratic Coalition (CDU)	Left
Germany_2013	Pirates Party (PIRATEN)	Left	Portugal_2002	Left Block (BE)	Left
Germany_2017	Alternative for Germany (AfD)	Right	Portugal_2009	Unitarian Democratic Coalition (CDU)	Left
Great_Britain_2017	Scottish National Party (SNP)	Left	Spain_1996	Convergence and Union (CiU)	Right
Great_Britain_2017	Plaid Cymru (PC)	Left	Spain_2000	Convergence and Union (CiU)	Right
Iceland_1999	Progressive Party (F)	Right	Spain_2008	Convergence and Union (CiU)	Right
Iceland_2003	Progressive Party (F)	Right	Spain_2008	Republican Left of Catalonia (ERC)	Left
Iceland_2007	Progressive Party (F)	Right	Spain_2008	Galician Nationalist Bloc (BNG)	Left
Iceland_2009	Progressive Party (F)	Right	Sweden_1998	Centre Party (C)	Right
Iceland_2009	Civic Movement (B)	Left	Sweden_2002	Centre Party (C)	Right
Iceland_2013	Progressive Party (F)	Right	Sweden_2006	Sweden Democrats (SD)	Right
Iceland_2013	Pirate Party (Pi)	Left	Sweden_2006	Feminist Party (Fi)	Left
Iceland_2016	Progressive Party (F)	Right	Sweden_2014	Centre Party (C)	Right
Iceland_2017	Progressive Party (F)	Right	Sweden_2014	Feminist Party (Fi)	Left

Iceland_2017	Pirate Party (Pi)	Left	Sweden_2018	Centre Party (C)	Right
Israel_1996	Sfarad's Keepers of the Torah (Shas)	Right	Sweden_2018	Feminist Party (Fi)	Left
Israel_1996	National Religious Party (Mafdal)	Right	Switzerland_2007	Ticino League (Lega)	Right
Israel_2003	Sfarad's Keepers of the Torah (Shas)	Right	Switzerland_2019	Ticino League (Lega)	Right
Israel_2006	Sfarad's Keepers of the Torah (Shas)	Right	Switzerland_2019	Geneva Citizens' Movement (MCG)	Right
Israel_2013	Sfarad's Keepers of the Torah (Shas)	Right			

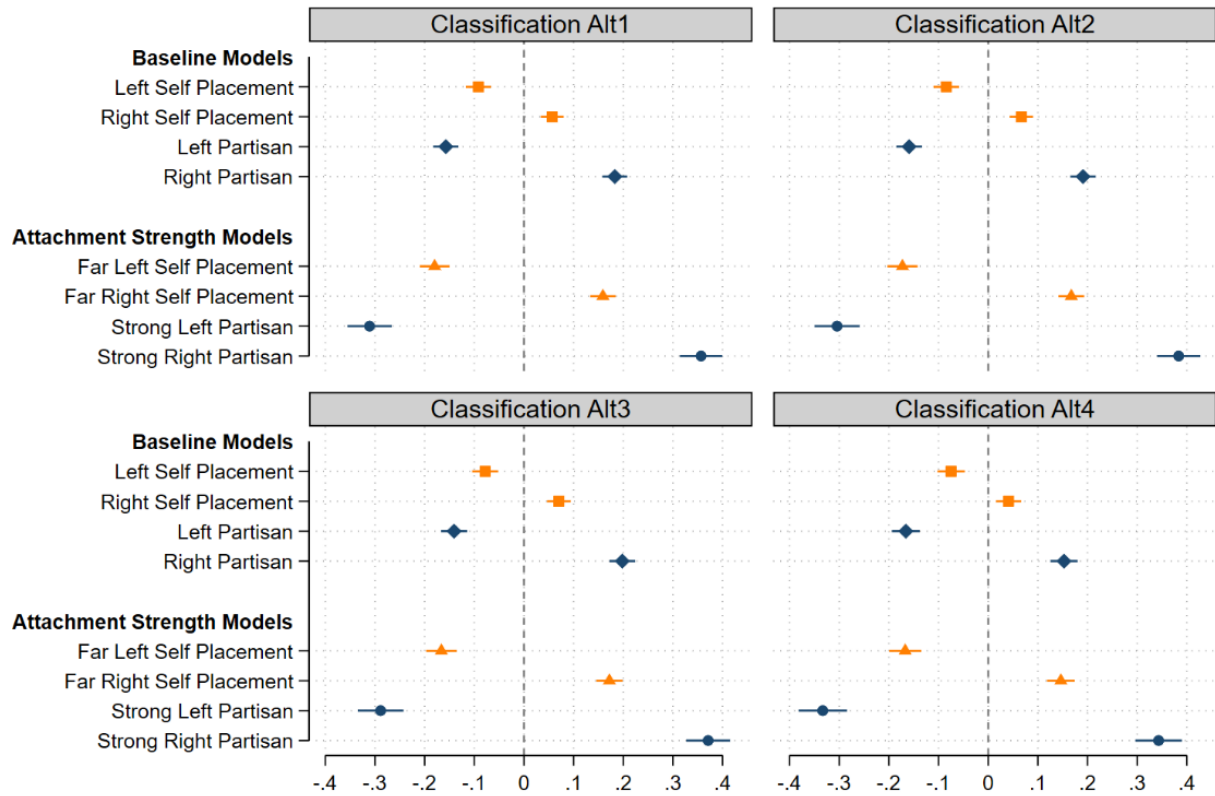
To explore the robustness of our main results to using these alternative classification rules, we re-estimated all of our models using measures of the DV and relevant IVs calculated using each of them. In no case, did our substantive conclusions change as a result. To demonstrate this, below we report sets of coefficient plots based on these re-analyses. Specifically, Figure B1 presents results based on a model in which Het1 is the dependent variable. These results are from our re-estimation of the specifications in Model 3 and Model 4 in Table 1 in the main text (i.e., Baseline Models), and Model 3 and Model 4 in Table C1 (i.e., Attachment Strength Models) in Appendix C. In addition, Figure B2 shows the estimated results from the model in which Het2 is the dependent variable. These results replicate Model 7 and Model 8 in Table 1 (i.e., Baseline Models) in the main text, and Model 7 and Model 8 in Table C1 (i.e., Attachment Strength Models) in Appendix C. Clearly, these results are consistent with those presented in the text. Most importantly, in every alternative specification, we see the same pattern of positive and negative coefficients on leftist and rightist voters that we hypothesized.

**Figure B1: Robustness Check Using Alternative Party Classification Rules (DV=Het1)**



*These estimates are derived from replications of Model 3 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 4 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 3 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 4 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol).*

**Figure B2: Robustness Check Using Alternative Party Classification Rules (DV=Het2)**



*These estimates are derived from replications of Model 7 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 8 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 7 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 8 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol).*

## Appendix C: The Conditioning Effect of Group Attachment Strength

In Table C1, we report the full estimated results of the models by which we investigate the effects of the strength of group attachment. In particular, the results illustrated in Figure 1 in the main text are derived from Model 3, Model 4, Model 7, and Model 8.

**Table C1: Strength of Group Attachment and Perceived Out-group Homogeneity**

	Expected Direction	Model 1 (Het <sub>1</sub> = Diff. in SD of Party Placements)	Model 2	Model 3	Model 4	Model 5 (Het <sub>2</sub> = Diff. in Sum of Pairwise Distances)	Model 6	Model 7	Model 8
Far Left Self Placement (ref = placement at 4-6)	(-)	-0.113** (0.012)		-0.122** (0.011)		-0.168** (0.015)		-0.176** (0.015)	
Far Right Self Placement (ref = placement at 4-6)	(+)	0.166** (0.011)		0.156** (0.010)		0.210** (0.014)		0.200** (0.014)	
Strong Left Partisan (ref = non-partisan)	(-)		-0.255** (0.017)		-0.233** (0.017)		-0.335** (0.023)		-0.320** (0.023)
Strong Right Partisan (ref = non-partisan)	(+)		0.288** (0.017)		0.289** (0.016)		0.378** (0.022)		0.383** (0.022)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	(-)			-0.046** (0.008)	-0.050** (0.008)			-0.123** (0.013)	-0.128** (0.013)
# of Right Parties	(+)			0.187** (0.009)	0.189** (0.009)			0.064** (0.020)	0.064** (0.020)
# of Left Parties	(-)			-0.103** (0.010)	-0.101** (0.010)			-0.094** (0.019)	-0.084** (0.019)
True R-L Heterogeneity Constant	(+)			0.522** (0.015)	0.520** (0.015)			0.345** (0.046)	0.357** (0.047)
		-0.278** (0.026)	-0.258** (0.026)	-0.417** (0.036)	-0.414** (0.037)	-0.546** (0.034)	-0.523** (0.034)	-0.682** (0.048)	-0.681** (0.049)
Country & Year Fixed-Effects		✓	✓	✓	✓	✓	✓	✓	✓
Observations		124875	122109	124875	122109	124875	122109	124875	122109

Standard errors in parentheses; †  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

## **Appendix D: Robustness Checks**

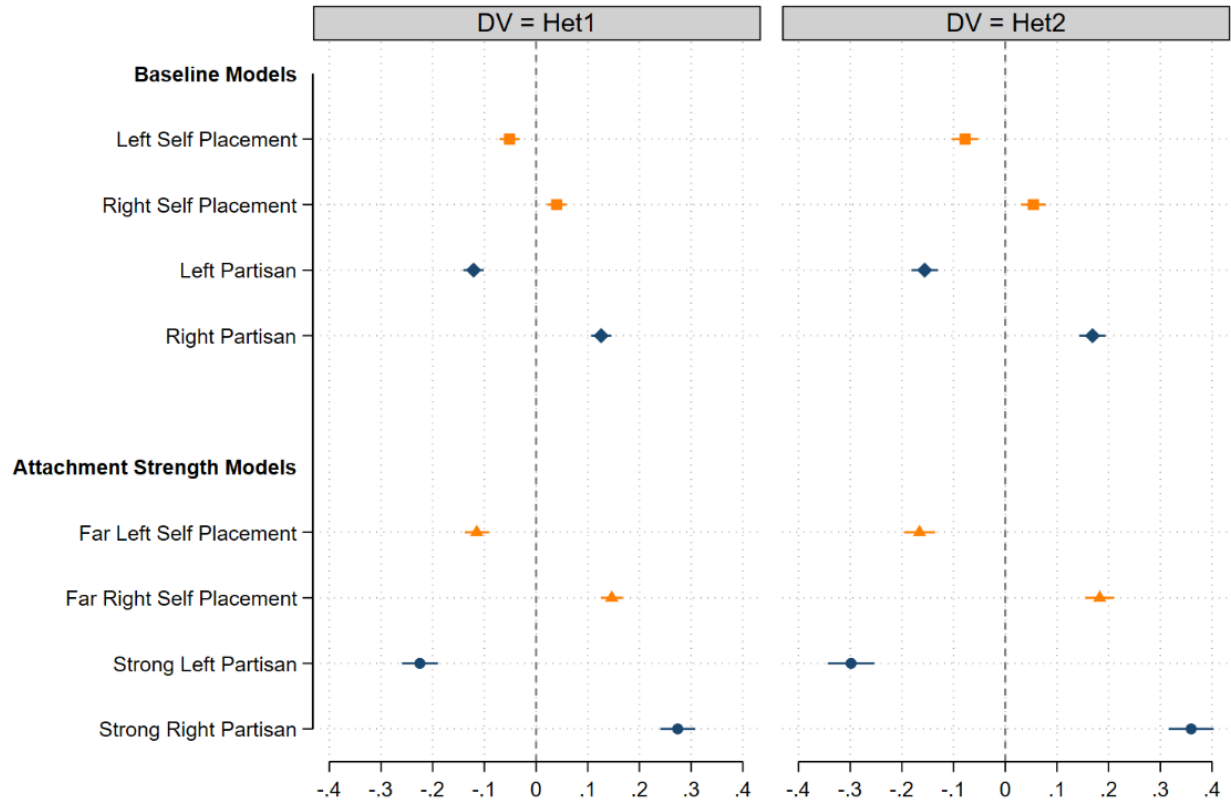
In this section, we present the results of several additional models we estimated to explore the robustness of our models to reasonable changes in the sample, measures, and specifications.

### **D1. Excluding countries with a small number of parties**

There are a number of reasons to worry that our estimates may be sensitive to the inclusion of country-surveys in which there are only a small number of parties on either the left, right or both. For example, since our main DV is all about perceived ideological heterogeneity on the left and right, if voters tend to give parties distinct positions on the left-right scale, more parties will naturally lead to more heterogeneity. Likewise, smaller number of parties used in the calculation of our measures gives each included party more weight in the measure and so may induce sensitivity to small amounts of measurement error. Further, as the number of parties on one side of the left-right spectrum gets very small, the theoretical difference between relevant partisan attachments and Left/Right attachments is diminished.

Thus, while our models control for the number of parties included on the left and right in each country-survey, it is important that we explore the sensitivity of our conclusions to including in the analysis party groups with few members. To do that, we re-estimate our main models (i.e., Model 3, 4, 7, and 8 in Table 1 and Model 3, 4, 7, and 8 in Table C1) by excluding country surveys in which the total number of parties that respondents are asked to place is smaller than 6. For presentation purpose, we simply plot the estimated coefficients of our key variables in Figure D1.1. The left panel presents the coefficient estimates from the model in which Het1 is the dependent variable. These results are from the specifications for Model 3 and Model 4 in Table 1 (i.e., Baseline Models) in the main text, and Model 3 and Model 4 in Table C1 (i.e., Attachment Strength Models) in Appendix C. In addition, the right panel shows the estimated results from the model in which Het2 is the dependent variable. These results replicate Model 7 and Model 8 in Table 1 in the main text, and Model 7 and Model 8 (i.e., Baseline Models) in Table C1 (i.e., Attachment Strength Models) in Appendix C. Clearly, excluding these country surveys does not change our main conclusion.

**Figure D1.1: Robustness Check by Excluding Countries with a Small Number of Parties**



The estimates presented in the left panel are derived from replications of Model 3 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 4 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 3 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 4 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol). Estimates presented in the right panel are derived from replications of Model 7 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 8 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 7 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 8 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol).

## D2. Models Using Centrist Partisans Only

In the models reported in the text, we identify potential left-right identifiers based on both partisanship (with a relevant left-right party) and left-right self-placement. Further, as discussed in Appendix F below, there is a small literature in political science that has shown that (at least in two -party systems) more extreme partisans tend to perceive parties on the other side of the left-right spectrum not only as more ideologically homogenous but also as more extreme (a finding we replicate in Appendix F for our multi-party setting). This finding (and indeed, much of the rest our argument) raises the concern that our findings are being driven mainly by a set of extreme party partisans, who see parties on the other side of the ideological spectrum as homogeneously extreme. While such a finding would be consistent with our argument, it would be helpful to know if the empirical results are more broadly based. Thus, in this section, we replicate the models in which we employ party identification to identify potential Left/Right identifiers focusing only on those partisan voters who place themselves between 4 and 6 on the 11-point left-right scale (i.e., only “centrist partisans of left/right parties”, which is approximately 44% of each of the samples used in the main text). The results are reported in Table D2.1. While we do see a small decrease in the size of the relevant coefficients compared to those reported in Table 1 (about 25% closer to zero, on average), we still get large and statistically significant estimates in all case, confirming that our main results are not driven by partisan extremists but seem to apply across the full range of potential Left/Right identifiers.

**Table D2.1. Robustness Checks using Centrist Partisans Only**

*(model labels correspond to the labels used for the relevant comparison columns in Table 1)*

		Model 2 (DV = Het <sub>1</sub> )	Model 4	Model 6 (DV = Het <sub>2</sub> )	Model 8
Left Partisan (ref = non-partisans)	(-)	-0.093** (0.014)	-0.087** (0.014)	-0.110** (0.018)	-0.115** (0.018)
Right Partisan (ref = non-partisans)	(+)	0.121** (0.014)	0.090** (0.014)	0.156** (0.018)	0.133** (0.018)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	(-)		-0.050** (0.012)		-0.095** (0.018)
# of Right Parties	(+)		0.191** (0.013)		-0.002 (0.028)
# of Left Parties	(-)		-0.087** (0.014)		0.019 (0.028)
True R-L Heterogeneity	(+)		0.451** (0.022)		0.541** (0.067)
Constant		-0.244** (0.037)	-0.400** (0.053)	-0.450** (0.049)	-0.618** (0.071)
Country & Year Fixed-Effects		✓	✓	✓	✓
Observations		53459	53459	53459	53459

Standard errors in parentheses; †  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

### D3. Excluding Respondents who Misplaced Parties to the Wrong Group

Given the way we calculate our dependent variables, perceived out-group heterogeneity may be overestimated when voters misplace parties of one group to the other group. To ensure the robustness of our results, in this section we replicate our empirical models by excluding respondents who misplaced more than one party to the wrong group. Note that doing so excludes roughly 18% of the total sample, and it does not change our findings and conclusions. The results are presented in Table D3.1 below.

**Table D3.1. Robustness Checks (excluding Rs who misplaced more than 1 party)**  
(model labels correspond to the labels used for the relevant comparison columns in Table 1)

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
		(Het <sub>1</sub> = Diff. in SD of Party Placements)				(Het <sub>2</sub> = Diff. in Sum of Pairwise Distances)			
Leftist Voter	(-)	-0.058** (0.010)		-0.063** (0.010)		- 0.089** (0.014)		-0.093** (0.013)	
Rightist Voter	(+)	0.027** (0.010)		0.021** (0.010)		0.041** (0.013)		0.035** (0.013)	
Leftist Partisan	(-)		-0.090** (0.011)		-0.097** (0.011)		- 0.122** (0.014)		-0.131** (0.014)
Rightist Partisan	(+)		0.140** (0.011)		0.111** (0.011)		0.183** (0.014)		0.164** (0.014)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	(-)			-0.037** (0.009)	-0.041** (0.009)			-0.129** (0.014)	-0.133** (0.014)
# of Right Parties	(+)			0.152** (0.010)	0.149** (0.010)			0.057** (0.021)	0.049* (0.021)
# of Left Parties	(-)			-0.063** (0.010)	-0.059** (0.010)			-0.090** (0.021)	-0.076** (0.021)
True R-L Heterogeneity	(+)			0.552** (0.016)	0.546** (0.016)			0.268** (0.050)	0.278** (0.050)
Constant		-0.289** (0.028)	-0.306** (0.029)	-0.402** (0.038)	-0.410** (0.039)	- 0.563** (0.036)	- 0.585** (0.037)	-0.670** (0.051)	-0.689** (0.052)
Country & Year Fixed- Effects		✓	✓	✓	✓	✓	✓	✓	✓
Observations		102821	100447	102821	100447	10282 1	10044 7	102821	100447

Standard errors in parentheses; <sup>†</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

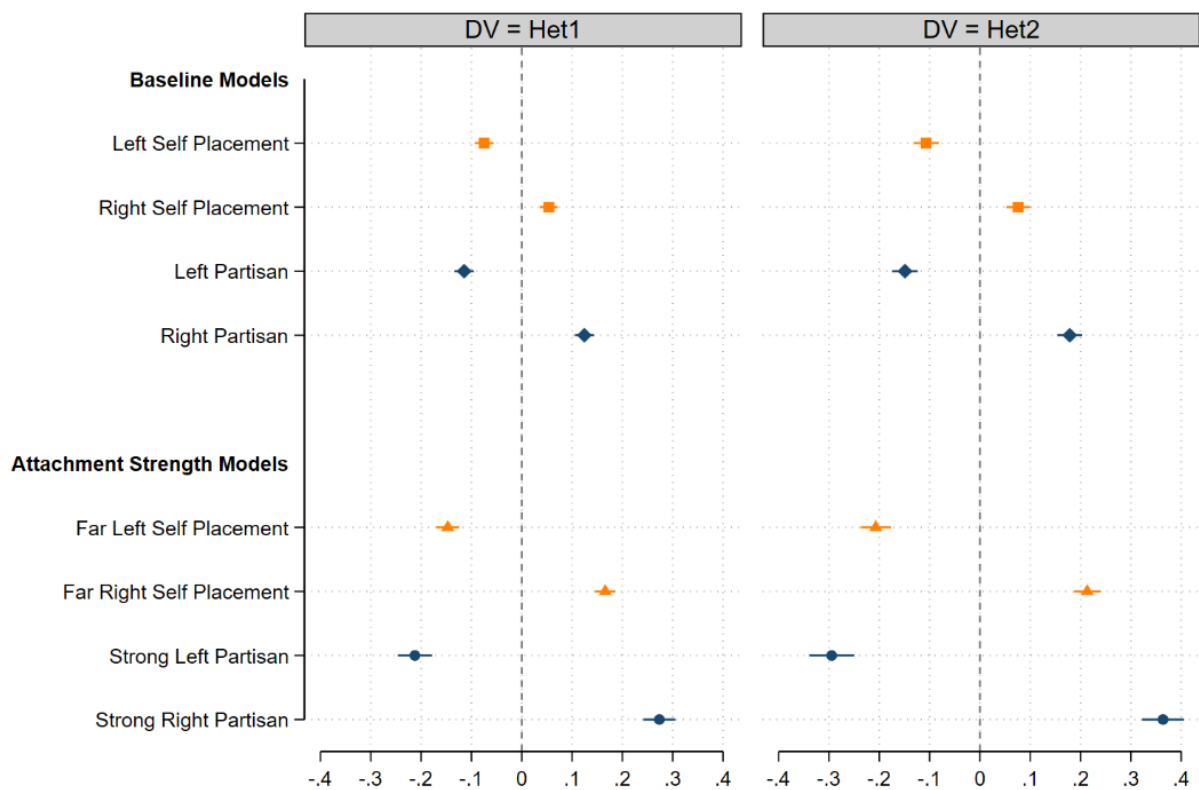
### D4. Left-Right Dyslexia

Any study that relies on respondents' placements of parties on the left-right must consider the fact that some respondents, many of whom are otherwise political informed, appear to reverse the left-right scale (something we call left-right dyslexia). Atsusaka et al (2023) has explored the pervasiveness of this phenomenon, its relevance for empirical studies of comparative political behavior, and how it can best be identified. However, in our case, where 7% of respondents

appear to do so, the existence of such individuals is not consequential. We have run all the models including and excluding such respondents and it makes no difference to the results in this case. Specifically, we identify these respondents by examining the relative accuracy of their placements given both true party positions and the reciprocal of them. Once identified, these respondents can either be excluded from the analysis, their placements reversed, or they can simply be ignored. In the main text, we use the second option, but for robustness, we replicate the main results using the other two alternative strategies. We plot the coefficient estimates of the key variables in Figure D4.1 and D4.2 below. Again, these replications focus on models specified in Model 3, 4, 7 and 8 in Table 1 (i.e. Baseline Models) in the text, and Model 3, 4, 7 and 8 in Table C1 (i.e., Attachment Strength Models) in Appendix C.

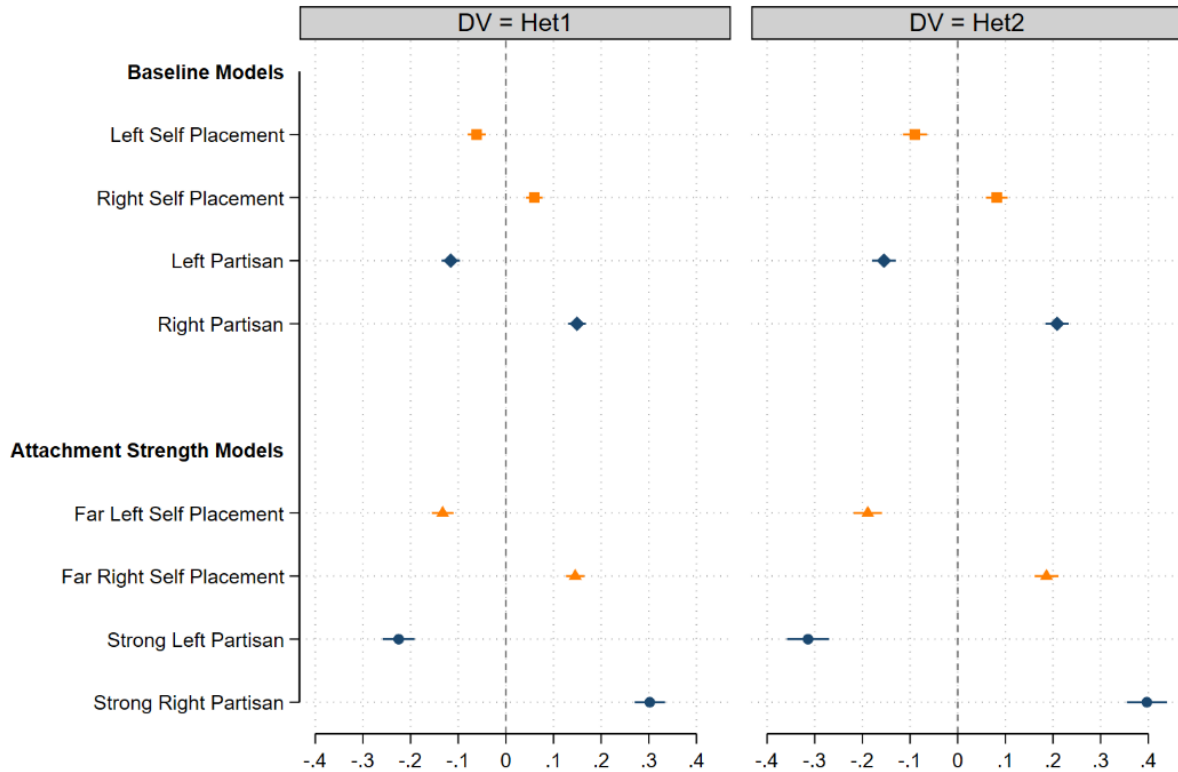
Figure D4.1 presents the results based on models in which we exclude respondents with the left-right Dyslexia, and Figure D4.2 shows the results from models where we keep the party placements of these respondents in the analyses. Clearly, the results we present in these figures suggest that there are no substantive differences with results in the main text.

**Figure D4.1: Robustness Check by Excluding Respondents with Left-Right Dyslexia**



The estimates presented in the left panel are derived from replications of Model 3 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 4 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 3 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 4 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol). Estimates presented in the right panel are derived from replications of Model 7 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 8 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 7 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 8 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol).

**Figure D4.2: Robustness Check by Including Responses with Left-Right Dyslexia**



The estimates presented in the left panel are derived from replications of Model 3 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 4 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 3 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 4 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol). Estimates presented in the right panel are derived from replications of Model 7 in Table 1 in the main text (Left Self Placement and Right Self Placemen, square symbol), Model 8 in Table 1 in the main text (Left Partisan and Right Partisan, diamond symbol), Model 7 in Table C1 (Far Left Self Placement and Far Right Self Placemen, triangle symbol), and Model 8 in Table C1 (Strong Left Partisan and Strong Right Partisan, circle symbol).

### **D5. Robustness Checks by Expanding/Restricting the Centrist Area**

One proxy we rely on to identify potential Left and Right identifiers is the respondent’s left-right self-placement. In the main text, we present results in which we categorize respondents as Left identifiers if they place themselves on 0-3 (inclusive) on a 0-10 left-right scale and Right identifiers if their self-placements fall in between 7-10 (inclusive) on the same scale. The reference group thus represents those potential non-LR-identifiers who place themselves in the centrist area between 4 and 6. As robustness checks, we replicate our empirical models by expanding the centrist area to 3-7 and restricting it to exactly 5. The results are presented in Table D5.1 and Table D5.2, and apparently these results are consistent with our main conclusion.

**Table D5.1. Robustness Checks by Expanding the Centrist Area to 3-7***(model labels correspond to the labels used for the relevant comparison columns in Table 1)*

		Model 1	Model 3	Model 5	Model 7
		(DV = Het <sub>1</sub> )		(DV = Het <sub>2</sub> )	
Left Self Placement (ref= placement at 3-7)	(-)	-0.113** (0.012)	-0.122** (0.011)	-0.168** (0.015)	-0.176** (0.015)
Right Self Placement (ref= placement at 3-7)	(+)	0.166** (0.011)	0.156** (0.010)	0.210** (0.014)	0.200** (0.014)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	(-)		-0.046** (0.008)		-0.123** (0.013)
# of Right Parties	(+)		0.187** (0.009)		0.064** (0.020)
# of Left Parties	(-)		-0.103** (0.010)		-0.094** (0.019)
True R-L Heterogeneity	(+)		0.522** (0.015)		0.345** (0.046)
Constant		-0.278** (0.026)	-0.417** (0.036)	-0.546** (0.034)	-0.682** (0.048)
Country & Year Fixed-Effects		✓	✓	✓	✓
Observations		124875	124875	124875	124875

Standard errors in parentheses; †  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ **Table D5.2. Robustness Checks by Reducing the Centrist Area to 5***(model labels correspond to the labels used for the relevant comparison columns in Table 1)*

		Model 1	Model 3	Model 5	Model 7
		(DV = Het <sub>1</sub> )		(DV = Het <sub>2</sub> )	
Left Self Placement (ref= placement at 3-7)	(-)	-0.013 (0.010)	-0.014 (0.010)	-0.021 (0.013)	-0.023† (0.013)
Right Self Placement (ref= placement at 3-7)	(+)	0.026** (0.010)	0.024** (0.010)	0.045** (0.013)	0.042** (0.013)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	(-)		-0.045** (0.008)		-0.122** (0.013)
# of Right Parties	(+)		0.190** (0.009)		0.066** (0.020)
# of Left Parties	(-)		-0.103** (0.010)		-0.092** (0.019)
True R-L Heterogeneity	(+)		0.522** (0.015)		0.351** (0.046)
Constant		-0.265** (0.027)	-0.412** (0.037)	-0.536** (0.035)	-0.678** (0.049)
Country & Year Fixed-Effects		✓	✓	✓	✓
Observations		124875	124875	124875	124875

Standard errors in parentheses; †  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

## D6. Robustness Checks by Excluding Strong Partisans from the Sample

In this analysis, we exclude voters who are strong partisans (i.e., respondents who reported that they are “very close” to a party).

**Table D6.1. Robustness Checks by Excluding Strong Partisans**

*(model labels correspond to the labels used for the relevant comparison columns in Table 1)*

		Model 1	Model 3	Model 5	Model 7
		(DV = Het <sub>1</sub> )		(DV = Het <sub>2</sub> )	
Left Self Placement (ref= placement at 3-7)	(-)	-0.023*	-0.030**	-0.042**	-0.049**
		(0.010)	(0.010)	(0.013)	(0.013)
Right Self Placement (ref= placement at 3-7)	(+)	0.025**	0.019**	0.036**	0.029*
		(0.010)	(0.010)	(0.013)	(0.012)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	(-)		-0.045**		-0.119**
			(0.009)		(0.014)
# of Right Parties	(+)		0.188**		0.058**
			(0.010)		(0.021)
# of Left Parties	(-)		-0.105**		-0.085**
			(0.010)		(0.020)
True R-L Heterogeneity	(+)		0.512**		0.376**
			(0.016)		(0.048)
Constant		-0.216**	-0.379**	-0.483**	-0.628**
		(0.028)	(0.039)	(0.037)	(0.051)
Country & Year Fixed-Effects		✓	✓	✓	✓
Observations		109971	109971	109971	109971

Standard errors in parentheses; †  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

## **Appendix E: Rubin, Hewstone, and Voci (2001) and A Useful Placebo Test**

Our indirect method of inferring the development of Left/Right attachments among western publics depends crucially on our observation that all almost all explanations of why individuals exhibit an OH effect start by assuming some level of ingroup attachment. That is why we characterized this ingroup attachment as a necessary condition for observing the OH effect and take observation of such an effect for a given ingroup and outgroup as evidence that individuals in the ingroup have developed ingroup attachments.

As we signaled in footnote 7 in the main text, however, there is one exception to this characterization of the theoretical literature on the OH effect. Specifically, in 2001 Rubin, Hewstone, and Voci suggested that when one measures the OH effect by asking direct questions about group variability in a trait, without also (or first) asking about typical levels of the trait, then respondents may answer the variability question as if it were about levels.

However, while this may be a valid critique of studies that use this measurement strategy, our measure of the OH effect, which asks directly about levels of a trait (policy extremity/position) for a collection of group members and then infers variability from those answers, is clearly not subject to this measurement critique. Thus, if we find evidence of an OH effect in our data, it cannot be due to the issue. And, since all other explanations of the OH effect invoke ingroup identification, our strategy of inferring such identifications from the evidence of the OH effect remains sound.

Despite the clear inapplicability of Rubin, Hewstone, and Voci's specific mechanism to our study, it is worth considering the possibility that some other mechanism (not as yet identified in the theoretical literature) might produce a pathway to the OH effect that does not run through in-group attachments. If such a mechanism were to exist (and be important) it would clearly a problem for a study like ours that seeks to infer group attachments from the observation of an OH effect.

One thing we can do to alleviate this worry is to construct a certain kind of placebo test. Specifically, if there really is some undiscovered mechanism that does not require in-group attachment to produce an OH effect, in our applications, we should consequently expect to see the OH effect among respondents who do not identify with Left or Right groups. In our data, we have already identified potential Left/Right identifiers and shown there is a robust OH effect among these individuals (and not among non-potential identifiers). However, if a mechanism that does not run through in-group identification is important, then we should also see an OH effect in groups of respondents that are not defined by their potential to identify with Left/Right groups.

Usefully, however, there is a simple way to test for this possibility by performing an appropriate placebo test in which we explore whether we can produce an Oh effect from random groups of respondents rather than those we have identified as potential Left/Right identifiers. Such a test clearly speaks directly to the remote possibility (given our measurement strategy) that Rubin and Badea's critique is relevant in our case, but more generally (and more importantly) provides us with the kind of reassurance that any placebo test does: we do not get effects (for

whatever reason) when the theory (i.e., the whole literature on the OH effect in social psychology) says we should not.

To execute this placebo test in our case, we (1) randomly assign respondents into three groups (i.e., pseudo\_Rightist, pseudo\_Leftist, and pseudo\_Centerist), (2) run our main model (i.e., Model 3 in Table 1) with pseudo\_Centerist as the reference group and save the results, (3) save the t-scores for the two key explanatory variables pseudo\_Rightist and pseudo\_Leftist, and (4) repeat steps 1-3 1000 times. With this, we obtain a sample of 1000 t-scores for pseudo\_Rightist and another sample of 1000 t-scores for pseudo\_Leftist. The average t-score for the variable pseudo\_Rightist is -.049 with a bootstrapped 95% confidence interval of -.109 to .012. Likewise, the average t-score and its bootstrapped 95% CI for the variable pseudo\_Leftist is .009 [-.053, .071]. Thus, the results of our placebo test clearly demonstrate that the OH effect is not observed (and not even close) among groups of respondents who are not plausible identifiers with the Left or Right -- a result that is inconsistent with any explanation (e.g., Rubin and Badea's) in which the result is driven by individuals not identified with the Left or Right.

## Appendix F: Left/Right Attachments and Perceptions of Ideological Extremity

To further expand the evidentiary basis of this conclusion, in this short section we examine another phenomenon, closely related to the OH effect, that may provide corroborating evidence: perceptions of out-group extremity. Specifically, we would argue that if a voter identifies with a Left or Right group and sees the other group as relatively homogeneous on an ideological trait running from moderate to extreme (as we have argued), then it is also likely that this individual will see the outgroup as relatively more extreme than the ingroup. This hypothesis comes from the many surveys of party identifiers in two-party systems that show that partisans of one party tend to see partisans of other parties as relatively more extreme. For example, a 2016 study of Americans from Pew shows that nearly six-in-ten Democrats (58%) place the Republican Party at one of the three most conservative points on the 0-10 scale while only one third of Democrats place the Democratic party at the most liberal points on the scale. Similarly, 69% of the Republicans place the Democratic Party on the most liberal points but only 36% of them rate the Republican party as very conservative.<sup>1</sup>

Clearly, these findings for partisan identifiers in two-party systems do not *automatically* mean we will find a similar perception for Left-Right partisans in two party systems. For example if partisan attachments are the only relevant attachments in such systems, we might just as well find that partisans of a given party perceive their party to be relatively less extreme than other parties on the same side of the ideological spectrum (at least controlling for real ideological positions), which would certainly obscure any more general tendency to rate all the parties on the left/right as more or less extreme than those on the other side of the ideological spectrum.

Thus, in this section, we present evidence of such perceptions. That said, we have not included this section in the main text, because there does not appear to be a robust literature on trait extremity in social-psychology that mirrors both the overwhelming empirical consensus that the OH effect exists and the near universal theoretical position that identification with a relevant ingroup is a necessary condition for its occurrence. Without that, it is difficult to move confidently from a finding that potential Left/Right identifiers see the out-group as more extreme to the inference that these potential identifiers must be actual Left/Right identifiers.

While we think it is intuitive that Left/Right identifiers will rate their potential out-groups as relatively more extreme than their ingroup (while non-identifiers will not do so for these groups), we offer this only as intuitive corroborating evidence.

In the rest of this section, we provide a test of this implication using the same CSES data we employ above. To measure voters' perceived extremity of the Leftist and the Rightist party groups, we first calculate how far each respondent places the parties on the left and right from the polar ends of the left-right scale. For each respondent, we measure the absolute distance between her average placement of all leftist parties and 0 and, separately, the absolute distance between her average placement of all rightist parties and 10. Next, we create the DV for the analysis below by subtracting the first number from the second. As such, greater values on this DV mean that the respondent perceives the rightist parties as relatively *less* extreme

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<sup>1</sup> These findings are found at: <https://www.pewresearch.org/fact-tank/2016/08/23/partisans-see-opposing-party-as-more-ideological-than-their-own/>

than the leftist parties. This means we expect a dummy variable identifying potential Left identifiers to have a negative effect on this DV (i.e., leftist identifiers are less likely to think the right is less extreme), while potential rightist identifiers will have a positive effect.

We test this expectation in a model in which we use the same set of explanatory and control variables as in Table 1 in the main text. The results are in Table F1 below. Overall, our findings are robust across models and consistent with the expectation that both potential Left and Right identifiers (but not non-potential identifiers) perceive outgroup parties as more ideologically extreme than ingroup parties.

**Table F1. Determinants of In-group Moderation and Out-group Extremization**

	Expected Direction	Model 1 (DV = Moderation on the Right minus Moderation on the Left)	Model 2	Model 3	Model 4
Left Self Placement (ref= placement at 4-6)	(-)	-0.277** (0.013)		-0.285** (0.013)	
Right Self Placement (ref= placement at 4-6)	(+)	0.233** (0.013)		0.218** (0.012)	
Left Partisan (ref = non-partisans)	(-)		-0.462** (0.014)		-0.479** (0.013)
Right Partisan (ref = non-partisans)	(+)		0.423** (0.013)		0.362** (0.013)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)				-0.022* (0.011)	-0.033** (0.011)
# of Right Parties	(+)			0.057** (0.013)	0.053** (0.013)
# of Left Parties	(-)			0.014 (0.011)	0.020 <sup>†</sup> (0.011)
True R-L Moderation Difference	(+)			0.906** (0.015)	0.863** (0.015)
Constant		-0.682** (0.036)	-0.704** (0.037)	-0.258** (0.051)	-0.254** (0.052)
Country & Year Fixed-Effects		✓	✓	✓	✓
Observations		124875	122109	124875	122109

Standard errors in parentheses; <sup>†</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

## Appendix G: In-group Heterogeneity and Out-group Homogeneity Over Time

In this section, we report the full estimated results for the models we used to examine the OH effect over time. In Table G1, G2, and G3 below, we report the results in the first two models (Model 3 and Model 4) from which we produce Figure 2 in the main text. Also, to ensure the robustness of the pattern presented in Figure 2, we also report results for the other two models (Model 7 and Model 8) in which we use  $Het_2$  as the dependent variable (and we illustrate the OH effect over time derived from these models in Figure G1).

**Table G1. In-group Heterogeneity and Out-group Homogeneity Over Time (Time Period =2)**  
(model labels correspond to the labels used for the relevant comparison columns in Table 1)

	Model 3	Model 4	Model 7	Model 8
	DV = $Het_1$		DV = $Het_2$	
Left Self Placement	0.032*		0.034 <sup>†</sup>	
	(0.014)		(0.018)	
Right Self Placement	0.052**		0.057**	
	(0.013)		(0.017)	
Left Partisan		-0.058**		-0.061**
		(0.014)		(0.018)
Right Partisan		0.145**		0.229**
		(0.014)		(0.018)
Period 2008-2020	0.016	0.023	0.064**	0.094**
	(0.012)	(0.015)	(0.016)	(0.020)
Left Self Placement * 2008-2020	-0.173**		-0.234**	
	(0.019)		(0.025)	
Right Self Placement * 2008-2020	0.001		0.029	
	(0.018)		(0.024)	
Left Partisan * 2008-2020		-0.128**		-0.199**
		(0.020)		(0.026)
Right Partisan * 2008-2020		-0.012		-0.043 <sup>†</sup>
		(0.019)		(0.025)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	0.035**	0.032**	0.003	0.003
	(0.006)	(0.006)	(0.009)	(0.009)
# of Right Parties	0.151**	0.148**	-0.095**	-0.101**
	(0.006)	(0.006)	(0.014)	(0.014)
# of Left Parties	-0.086**	-0.083**	0.075**	0.089*
	(0.006)	(0.006)	(0.014)	(0.014)
True R-L Heterogeneity	0.542**	0.527**	0.636**	0.647**
	(0.011)	(0.012)	(0.034)	(0.035)
Constant	-0.357**	-0.374**	-0.475**	-0.531**
	(0.025)	(0.026)	(0.032)	(0.034)
Country Fixed-Effects	✓	✓	✓	✓
Observations	124875	122109	124875	122109

Standard errors in parentheses; <sup>†</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

**Table G2. In-group Heterogeneity and Out-group Homogeneity Over Time (Time Period =3)**  
*(model labels correspond to the labels used for the relevant comparison columns in Table 1)*

	Model 3	Model 4	Model 7	Model 8
	DV = Het <sub>1</sub>		DV = Het <sub>2</sub>	
Left Self Placement	0.082** (0.017)		0.095** (0.023)	
Right Self Placement	0.052** (0.016)		0.049* (0.021)	
Left Partisan		0.009 (0.018)		-0.001 (0.023)
Right Partisan		0.145** (0.017)		0.206** (0.023)
Period 2004-2011	0.156** (0.015)	0.183** (0.018)	0.206** (0.020)	0.212** (0.024)
Period 2012-2020	0.073** (0.016)	0.082** (0.020)	0.158** (0.021)	0.186** (0.026)
Left Self Placement * 2004-2011	-0.182** (0.024)		-0.228** (0.032)	
Left Self Placement * 2012-2020	-0.218** (0.023)		-0.291** (0.031)	
Right Self Placement * 2004-2011	-0.024 (0.022)		-0.006 (0.030)	
Right Self Placement * 2012-2020	0.023 (0.022)		0.066* (0.029)	
Left Partisan * 2004-2011		-0.206** (0.025)		-0.215** (0.032)
Left Partisan * 2012-2020		-0.173** (0.024)		-0.242** (0.032)
Right Partisan * 2004-2011		-0.037 (0.024)		0.005 (0.032)
Right Partisan * 2012-2020		0.015 (0.024)		0.001 (0.031)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	0.022** (0.007)	0.023** (0.007)	-0.018* (0.009)	-0.015 <sup>†</sup> (0.009)
# of Right Parties	0.149** (0.006)	0.145** (0.006)	-0.107** (0.014)	-0.112** (0.014)
# of Left Parties	-0.104** (0.007)	-0.100** (0.007)	0.049** (0.014)	0.061** (0.014)
True R-L Heterogeneity	0.543** (0.011)	0.533** (0.012)	0.642** (0.035)	0.649** (0.035)
Constant	-0.382** (0.025)	-0.406** (0.026)	-0.496** (0.033)	-0.543** (0.035)
Country Fixed-Effects	✓	✓	✓	✓
Observations	124875	122109	124875	122109

Standard errors in parentheses; <sup>†</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

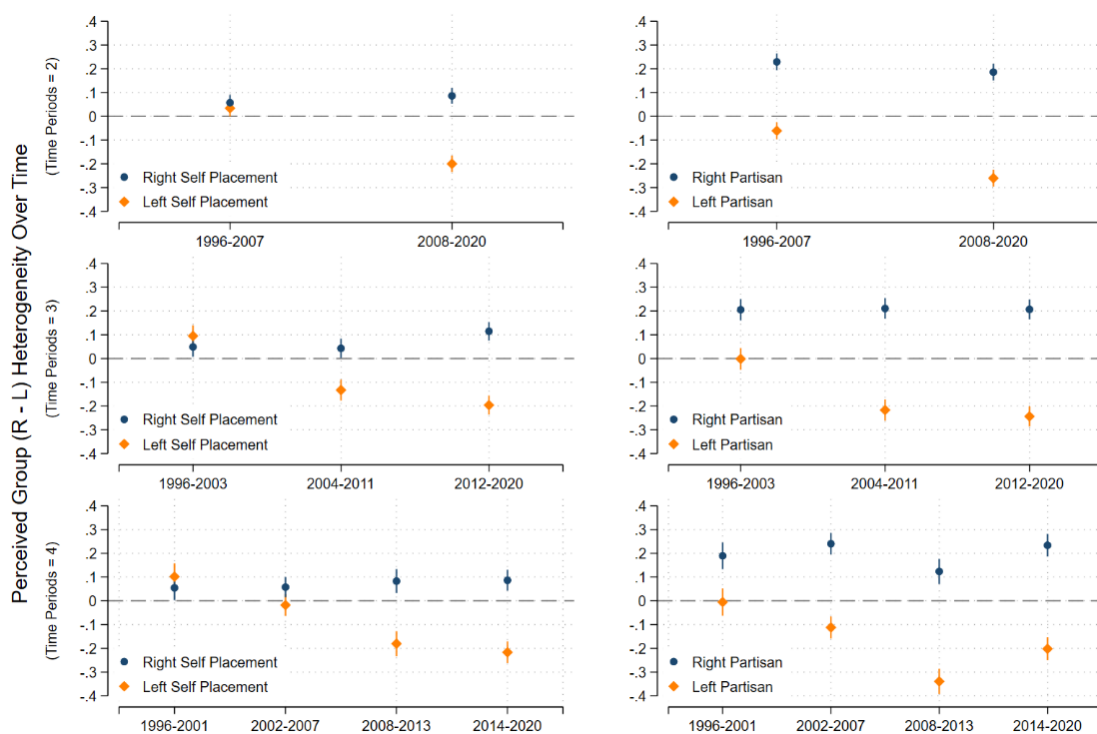
**Table G3. In-group Heterogeneity and Out-group Homogeneity Over Time (Time Period =4)**  
*(model labels correspond to the labels used for the relevant comparison columns in Table 1)*

	Model 3	Model 4	Model 7	Model 8
	DV = Het <sub>1</sub>		DV = Het <sub>2</sub>	
Left Self Placement	0.092** (0.022)		0.102** (0.029)	
Right Self Placement	0.047** (0.020)		0.055** (0.026)	
Left Partisan		0.023 (0.022)		-0.005 (0.029)
Right Partisan		0.137** (0.022)		0.189** (0.029)
Period 2002-2007	0.109** (0.019)	0.124** (0.023)	0.203** (0.025)	0.182** (0.030)
Period 2008-2013	0.090** (0.020)	0.132** (0.024)	0.184** (0.026)	0.242** (0.031)
Period 2014-2020	0.112** (0.021)	0.098** (0.025)	0.267** (0.028)	0.237** (0.033)
Left Self Placement * 2002-2007	-0.104** (0.028)		-0.120** (0.037)	
Left Self Placement * 2008-2013	-0.220** (0.030)		-0.282** (0.039)	
Left Self Placement * 2014-2020	-0.244** (0.028)		-0.318** (0.037)	
Right Self Placement * 2002-2007	0.008 (0.026)		-0.003 (0.034)	
Right Self Placement * 2008-2013	-0.011 (0.028)		0.028 (0.037)	
Right Self Placement * 2014-2020	0.018 (0.026)		0.032 (0.035)	
Left Partisan * 2008-2013		-0.139** (0.028)		-0.107** (0.037)
Left Partisan * 2008-2013		-0.260** (0.030)		-0.334** (0.040)
Left Partisan * 2014-2020		-0.168** (0.029)		-0.197** (0.038)
Right Partisan * 2002-2007		0.006 (0.028)		0.051 (0.037)
Right Partisan * 2008-2013		-0.058+ (0.030)		-0.066+ (0.039)
Right Partisan * 2014-2020		0.039 (0.029)		0.044 (0.038)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	0.027** (0.007)	0.025** (0.007)	-0.014 (0.009)	-0.015 (0.009)
# of Right Parties	0.137**	0.134**	-0.124**	-0.128**

	(0.007)	(0.007)	(0.015)	(0.015)
# of Left Parties	-0.108**	-0.104**	0.029 <sup>†</sup>	0.042**
	(0.007)	(0.007)	(0.015)	(0.015)
True R-L Heterogeneity	0.538**	0.525**	0.629**	0.633**
	(0.012)	(0.012)	(0.036)	(0.036)
Constant	-0.352**	-0.371**	-0.443**	-0.478**
	(0.027)	(0.029)	(0.035)	(0.038)
Country Fixed-Effects	✓	✓	✓	✓
Observations	124875	122109	124875	122109

Standard errors in parentheses; <sup>†</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

**Figure G1: The OH Effect Over Time (DV=Het2)**



## Appendix H: Alternative Explanations

In this section, we discuss two alternative explanations for the empirical results that we presented in the main text (i.e., showing an OH effect for potential Left/Right groups). These alternatives do not invoke identification with the Left or Right as socio-political groups, but instead rely on concepts drawn from the literature on spatial, ideological, or policy voting, that may be more familiar to most political scientists. Each, however, might (under the right conditions) produce empirical correlations similar to some of those we have found. Below, we first explain these alternatives and then show that each implies, in addition to an OH effect (in some circumstances), a set of additional implications that are at odds with some of the implications of the identity-based explanation discussed in the main text. Further, as we explain how, using the data we have, we can test between these competing implications. To preview, for both explanations, tests of the contrasting implications favor the identity-based explanation. Therefore, the empirical relationships we present in the main text are not primarily driven by these two alternative explanations but likely reflect genuine attachment to the Left or to the Right as socio-political groups.

### *Spatial Voting*

Various readers of our argument have raised this possibility that our results may not be indicative of the development of affective attachments to the Left or Right as socio-political groups but may instead be generated by a kind of spatial voting story in which voters are uncertain about the positions of the parties and differentially invest in decreasing that uncertainty over parties. While we could find only one published piece that makes a similar (though not identical) argument (e.g., Bølstad and Dinas 2017), some version of this idea is often invoked by readers. Thus, it is worth trying to be precise about the key components of the idea and to try to construct a test to distinguish it empirically from the implications of our argument.<sup>2</sup>

In this alternative explanation for the OH effect, one posits a voter with a standard spatial voting term in her utility. The voter also cares about accuracy of her perceptions of the parties' policy positions in proportion to the chances she might vote for the party.<sup>3</sup> If there is a set of parties for which she is unlikely to ever vote, she has, in this view, little incentive to expend the time and effort to distinguish these parties from one another -- other than a basic understanding that they are all generally "far away." More subtle policy differences among these parties, however, are unlikely to register. In contrast, if there is a set of parties (say all the

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<sup>2</sup> We say that Bølstad and Dinas only come close to making this argument because, while they explicitly argue (consistent with this alternative explanation) that spatial voters behave differently on the left and right side of the center in a left-right ideological space, they (like us) suggest that voters do so *because* they identify with the Left or Right as social groups (and not only because of the kind of cost-benefit-information logic outlined below). Thus, just like all the socio-psychological literature on the OH effect, they take identity with the Left or Right as socio-political groups as a prerequisite for the kind of behavior they describe. Thus, we see their results as completely compatible with (and perhaps even support for) our main conclusion that many voters have developed affective attachments to the Left or Right as socio-political groups.

<sup>3</sup> It is this later assumption, made implicitly by our readers, that we have not been able to find in any published work in political science.

leftist parties) for which she might vote, she has more incentive to invest in distinguishing their positions.

Thus, when a leftist voter is asked about the positions of the rightist parties, she may well have little specific information to distinguish them and so simply report similar (rightist) positions for them all.<sup>4</sup> In contrast, she will have invested time and energy in understanding the distinctions between the leftist parties and so will tend to spread them out (controlling, of course, for their real positions).

We think this is a plausible alternative.<sup>5</sup> However, those who make the argument overlook a critical implication of the argument that allows us to test it against our own argument. Specifically, it overlooks the fact that some voters on the left or right<sup>6</sup> will also be partisans of specific parties on the left or right. We can think of these voters as having, in addition to the spatial component in their utility for each party, some non-spatial increment of utility for each party, which we can think of simply as representing the voter's affective attachment to that party. In this case, a person who is a **strong** partisan of a specific party on the left is likely to vote for that party exclusively with little chance of voting for another leftist party. So, for such strong partisans, we would not expect them to invest any more in understanding the policy positions of all the other leftist parties than they would the rightist parties. After all, they will vote for the party they are strongly attached to no matter what these positions are. Consequently, for these voters, we would not expect a consistent OH effect. This clearly implies that an OH effect caused by this spatial voting story should be ***smaller (or perhaps absent) for individuals who are stronger partisans of specific left or right parties compared to weaker partisans or non-partisans.***

This is, of course, not what we have found. Figure 1 in the main text (and Table C1 in the Appendix C) shows clearly that the OH effect is bigger for stronger partisans of specific leftist

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<sup>4</sup> Of course, given the silence of the published literature on this point, this is quite speculative (even if plausible). One could imagine, for example, that a respondent who has little chance of voting for any rightist party and so knows little of their exact positions (except that they are somewhere on the right) would randomly place parties across the whole right side of the scale. If that is the case, however, we can rule out that alternative hypothesis since it would clearly indicate no OH effect – contrary to what we have found.

<sup>5</sup> However, a slightly different version of this argument that is not a reasonable alternative because it relies on the idea that the voter has some affective attachment to the Left or Right and so is just a restatement of our argument in a slightly different form. Specifically, one might argue that, for example, Leftist partisans engage in selective exposure to news about the leftist parties and policy (maybe because they enjoy news about the left more than news about the right) and so naturally are more informed about the various leftist parties leading to an OH effect for the same reasons described above. If this is the case, however, it is the attachment to the left (seeing themselves as a leftist) that drives the selective exposure (why else would they prefer to hear news about the leftist parties rather than the right), so this is just another way a person who becomes attached to the Left as a socio-political group may evidence an OH effect. Recall that we are agnostic about the exact mechanism that produces the OH effect as long as the mechanism invokes attachment to the Left or Right as a prerequisite as this one does. So, while there is a certainly distinct and coherent spatial voting explanation of the OH effect possible, it should not invoke selective exposure (or any other kind of partisan rationalization or partisan filter) that is the result of developing attachments to the left.

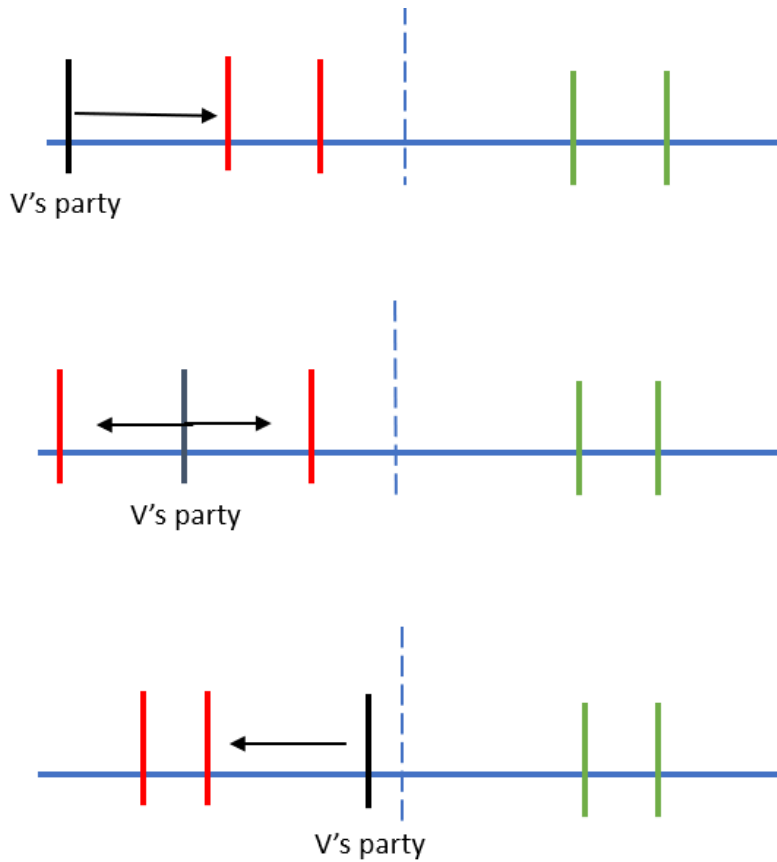
<sup>6</sup> Consistent with the argument above, here we use these terms simply to indicate a willingness to vote for parties on the left or right respectively.

parties. This is what we expected when we took attachment to a party on the left, for example, as a proxy for (potential) attachment to the Left as a socio-political group. However, it is exactly opposite what we would expect if the OH effect we find is driven by this spatial voting – information story.

*Partisan Distinctiveness*

Another possible alternative explanation for the OH effect invokes the idea that voters aim to differentiate their preferred party's stance from that of other *adjacent* parties on their side (a phenomenon called partisan distinctiveness). We illustrate this concept in Figure H1.1 below, which offers a stylized example that elucidates the fundamental assumptions and consequences of this alternative.

**Figure H1.1: A stylized example of partisan distinctiveness argument**



In the three scenarios presented in Figure H1.1, we assume that a voter aligns with a left-wing party while holding the positions of the right-wing parties constant. In the first row, if the voter identifies with an extreme left party, she will make an effort to distinguish it from the adjacent leftist parties. This is similar (but not identical) to the oft-noted empirical phenomenon in which voters who place themselves between a pair of parties on the left-right tend to see the two parties as farther apart than otherwise (e.g., Fortunato and Stevenson 2013). When

differentiating the adjacent left-leaning parties and her extreme left-supported party, she will push those adjacent left-leaning parties away from the extreme left party she supports. Consequently, if we calculate the OH effect using all the left and right parties (including the one she supports), we might well observe a spurious OH effect due to the increased perceived distance between the voter's supported party and the other leftist parties. However, importantly for the test we propose below, this spurious OH effect will clearly not occur if the position of the respondent's supported party is **excluded** from the calculation of OH effect.

Now, let's consider the second row, where we assume that a voter supports a party positioned between two other leftist parties. Similar to the argument above, this voter may be inclined to push all the adjacent leftist-parties away from her supported party, which would clearly increase the perceived spread of the leftist parties, increasing the chance of finding a (spurious) OH effect. Notice, however, that (unlike in the previous scenario) since the supported party is in a middle position among all the leftist parties, we would still observe the OH effect even if we exclude the voter's party from the calculation of left-wing heterogeneity.

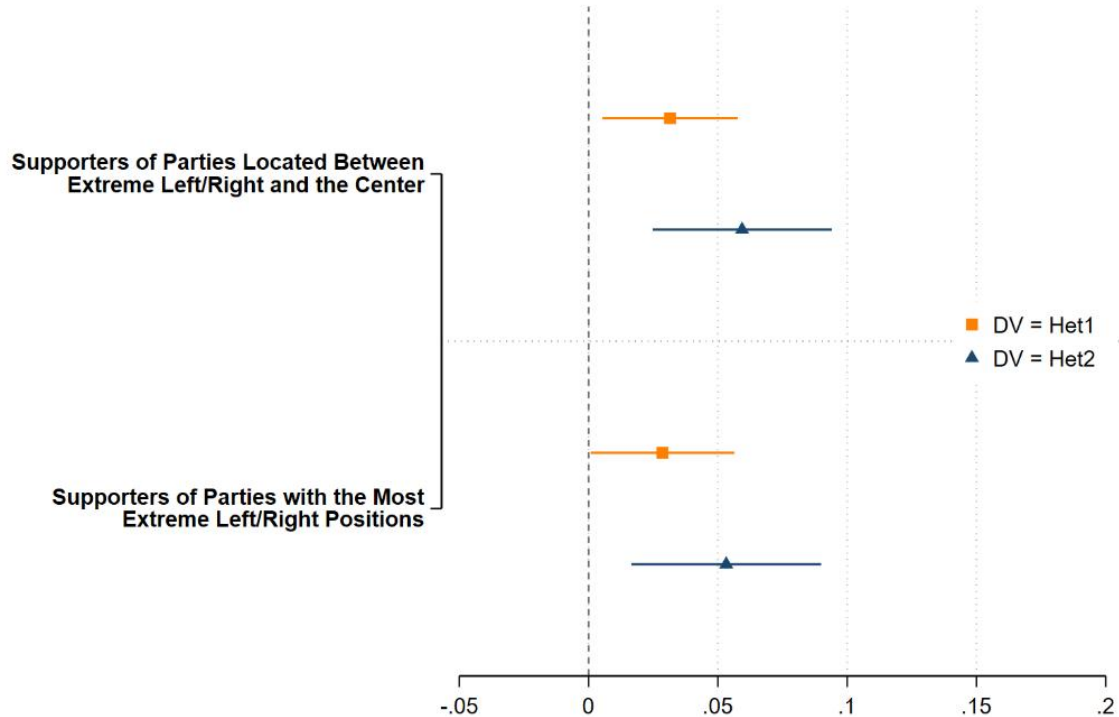
Finally, in the third row we consider that case in which the voter supports the leftist party that is closest to the center. In this case, the partisan distinctiveness argument implies that the voter will push the perceived position of the adjacent party on the left to the left, once again leading to a spurious OH effect if calculated using all leftist parties. Again, however, this conclusion changes if we instead remove the voter's supported party from our calculation of the OH effect -- since in this case we have no reason think partisan distinctiveness will create an OH effect (as illustrated by comparing the red and green lines in the figure).

All of these scenarios imply that the relationship between the left-right position of the party the voter is attached to (measured as extremity from the center of the left-right spectrum) and the size of the OH effect should be nonlinear when excluding perceptions of the position of the voter's supported party from the calculation of the OH effect. Specifically, we expect to see the largest OH effect coming from supporters of parties located in middle positions among the parties on their side of the ideological divide, with smaller OH effects for supporters of parties on the extremes and parties closest to the center.

To examine this empirical implication, we first recalculate our dependent variables  $Het_1$  and  $Het_2$  by excluding the perceived position of the party with which the respondent identifies. We then sort parties based on their positions on the left and right and categorize them into three groups: parties with the most extreme left/right positions, left/right parties closest to the center, and parties located between these two types of parties in the left/right group. With the new party typology, we further group respondents based on these classifications (i.e., the three-way categorization of the position of the party they support) and create three corresponding dummy variables that identify respondents who say they are partisans of the most extreme, middle, or most central party (of their side). Finally, we re-run our analyses by including two of the three aforementioned dummy variables and the same set of control variables included in our main models. The results are provided in Figure H1.2, where we found that instead of a curvilinear relationship as implied by the partisan distinctiveness explanation, the size of the OH effect for the supporters of the extreme parties is very similar to that for the supporters of the parties in the middle group (among both the leftist or rightist parties). While

the OH effects for these two groups are significantly bigger than the OH effect for supporters of the parties closest to the center, it is clearly NOT what the partisan distinctiveness argument suggests.

**Figure H1.2: OH Effect by Placements of Supported Parties<sup>7</sup>**



Note: reference group = supporters of parties closest to the center.

In addition to the above test, we also re-run our main models using the new dependent variables created above (i.e., perceived heterogeneity excluding the position of one's supported party) and document the results in Table H1.1 below. This robustness test clearly does not change the conclusions presented in the main text.

<sup>7</sup> Note that the results here is not comparable to the findings presented in Figure 1 in the main text. In Figure 1, the OH effect varies by respondents' left-right self-placement, but in this case, the OH effect varies by LR position of the party the voter is partisan of. Second, we do not include the position of the party the respondents identify with in our calculation in this figure but do so in Figure 1.

**Table H1.1. Robustness Check with An Alternative Dependent Variable**

*(model labels correspond to the labels used for the relevant comparison columns in Table 1)*

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
		(Het <sub>1</sub> = Diff. in SD of Party Placements)				(Het <sub>2</sub> = Diff. in Sum of Pairwise Distances)			
Leftist Voter	(-)	-0.045** (0.010)		-0.048** (0.010)		-0.085** (0.013)		-0.089** (0.013)	
Rightist Voter	(+)	0.048** (0.009)		0.040** (0.009)		0.084** (0.012)		0.077** (0.012)	
Leftist Partisan	(-)		-0.107** (0.010)		-0.109** (0.010)		-0.152** (0.013)		-0.159** (0.013)
Rightist Partisan	(+)		0.141** (0.010)		0.107** (0.010)		0.203** (0.013)		0.179** (0.013)
Cabinet Purity (% Rightist Parties - % Leftist Parties in Cabinet)	(-)			-0.045** (0.009)	-0.050** (0.009)			-0.117** (0.013)	-0.119** (0.013)
# of Right Parties	(+)			0.185** (0.009)	0.182** (0.009)			0.055** (0.020)	0.041** (0.020)
# of Left Parties	(-)			-0.100** (0.010)	-0.092** (0.010)			-0.086** (0.020)	-0.059** (0.011)
True R-L Heterogeneity	(+)			0.526** (0.015)	0.519** (0.016)			0.372** (0.047)	0.400** (0.047)
Constant		-0.228** (0.027)	-0.230** (0.028)	-0.373** (0.038)	-0.374** (0.039)	-0.494** (0.036)	-0.497** (0.037)	-0.623** (0.050)	-0.631** (0.051)
Country & Year Fixed-Effects		✓	✓	✓	✓	✓	✓	✓	✓
Observations		122119	119353	122119	119353	122119	119353	122119	119353

Standard errors in parentheses; †  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

## **Appendix I: A Pilot Survey for Directly Measuring Attachment to the Left and Right**

After completion of the main analysis reported in the text, we had the opportunity – as part of another project – to include a number of questions on four representative surveys of adults in Denmark, Italy, and Sweden (fielded in December 2021).<sup>8</sup> This allowed us to augment the analysis presented in the main text with a direct measure of attachment to the Left and/or Right as a socio-political group and so to examine directly (for these four cases) whether voters who are more attached to the Left/Right as a socio-political group evidence a greater OH effect in their left-right placements of parties.

Clearly, this is an important individual-level, direct test of the mechanism that we think produces the indirect evidence of Left-Right attachments that we have already presented. To preview our results, our analysis clearly demonstrates that individuals with stronger attachment to either the Left or the Right as socio-political groups, when directly measured using a well-validated multi-item group attachment scale, evidence a much larger OH effect in party left-right placements than those who are more weakly attached.<sup>9</sup>

### *Direct Measures of Left-Right Attachment*

Since affective attachment to the Left and to the Right are unobservable psychological constructs that we expect to vary continuously over individuals, the best measurement approach is to use a well-validated multi-item question battery that has items which allow estimation of the full range of such attachments, including both high and low intensities (Huddy 2001, 2013; Huddy Davies and Sandor 2020; Bankert 2024). Thus, we use a multi-item scale aimed at measuring an internalized sense of identification with the political Left and, separately, the Right. Usefully, appropriate question sets that are easily adapted for our purpose, have been proposed and evaluated in studies on partisan identification (Huddy 2001, 2013; Huddy Davies and Sandor 2020; Bankert 2024).

Many of the questions used in past research on social identity are derived from Mael and Tetrick's (1992) Identification with a Psychological Group Scale, which is applicable to any group, and its subsequent developments in later studies (e.g., Leach et al. 2008). We use six questions adapted from the Mael and Tetrick's scale (and its subsequent refinements) that we think best capture individuals' attachment to the Left or to the Right. Table I1 provides the wording of these questions along with their answer categories.

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<sup>8</sup> These respondents were sourced from Qualtrics Panels and matched to census targets on age and gender. Qualtrics panels sends invitations to randomly selected panel participants who have previously enrolled to be paid to answer surveys (panel sizes are in the millions). Notably, the invitations did not disclose that the survey pertained to political matters.

<sup>9</sup> Since we use a multi-item scale to capture attachment to each group, we get a continuous measure of attachment to each group (both left and right) for each respondent.

**Table I1: Items included in our 6-item battery.**

[1. Connected] When I meet a supporter of [the Left/Right], I feel...	Strongly connected to that person	Strongly connected to that person	Strongly connected to that person	Strongly connected to that person
[2. Praise]: When people praise [the Left/Right] it makes me feel...	Very good	Good	Bad	Very bad
[3. My Bloc]: When I think about [the Left/Right], I think of it as "my political bloc."	Strongly agree	Agree	Disagree	Strongly disagree
[4. Feeling]: The word that best describes my feelings about [the Left/Right] is...	Love	Like	Dislike	Hate
[5. Close]: I identify most closely with people who...	Strongly support [the Left/Right]	Support [the Left/Right]	Oppose [the Left/Right]	Strongly Oppose [the Left/Right]
[6 Common]: I have the most in common with people who...	Strongly support [the Left/Right]	Support [the Left/Right]	Oppose [the Left/Right]	Strongly Oppose [the Left/Right]

To produce estimates of the level of attachment of each respondent to the Left and Right, we used their answers to these six questions in a graded IRT model (Samejima 1969) for attachment to the Left and, separately, the Right. A careful analysis of the performance of the items showed (like all the other studies using very similar items) that the two attachment scales (Right and Left) for each country (and pooled) all worked as expected and produced unidimensional, highly coherent scales (e.g., Cronbach's alpha for the scales for each country were 0.924, 0.916, and 0.945 for the Right and 0.931, 0.911, and 0.938 for the Left).

One thing to note about this battery of questions is that they are structured with answer choices that present two progressively positive identification options and two increasingly

negative options for each question stem, without a middle category.<sup>10</sup> This allows the battery to be used to measure both positive and negative affective attachment. While negative attachments were important to the other projects for which these surveys were fielded, they are not important for our purposes. Indeed, given that our entire theoretical story concerns positive attachments, we truncate the estimated attachment scores so that our scale, like traditional partisan attachment scales, is increasingly positive as attachment to the group is greater, but is zero for both no-attachment and negative attachment.

#### *Perceptions of In- and Out-group Heterogeneity*

We measure respondents' perceptions of in- and out-group heterogeneity in the same way we did in the main text. First, we asked our respondents to place various parties in their countries on a 0-10 left-right scale and then sort parties into the Left and Right party groups based on their averaged positions (using 5 as the mid-point). To measure each respondent's perceived ideological heterogeneity of the Left and Right groups, we calculate the difference between the standard deviation of each respondent's left-right placements of the parties categorized as Right and the standard deviation of those classified as Left (i.e.,  $Het_1$  described in the main text). Greater values suggest that the Right party group are perceived to be more heterogeneous than the Left party group. Therefore, we expect attachment to the right to have a positive impact on this difference and attachment to the left a negative impact.

#### *Empirical Results*

To examine our argument, we estimate several statistical models using both country-specific and pooled data from our three-country pilot survey. In these models, we regress individual perceptions of Outgroup Homogeneity against individual attachments to the Left and Right. The estimated results for each of our countries and the pooled sample are documented in Table I2, and they clearly provide another piece of evidence that supports our expectations. Specifically, respondents with greater levels of attachment to the Right perceive rightist parties as more heterogeneous than leftist parties, whereas respondents with stronger attachment to the Left consider rightist parties as more homogenous.

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<sup>10</sup> We adopt the approach outlined by Bankert et al. 2017 to omit middle categories. This is based on the evidence indicating that these categories often capture respondents with low, yet still present, levels of the underlying trait (e.g., Krosnick and Schuman 1988; Bishop 1990).

**Table I2: Left-Right Attachments and Perceived Outgroup Homogeneity: Additional Evidence**

	Denmark	Italy	Sweden	All Countries
R's attachment to the Right	0.209** (0.068)	0.488** (0.099)	0.757** (0.092)	0.478** (0.051)
R's attachment to the Left	-0.352** (0.071)	-0.746** (0.100)	-0.430** (0.096)	-0.519** (0.052)
Intercept	0.044 (0.057)	-0.569** (0.082)	-0.360** (0.078)	0.005 (0.056)
Number of Observations	979	1089	945	3013

The model for all countries includes country fixed effects.

## References

- Bankert, Alexa. 2024. *When Politics Becomes Personal: The Effect of Partisan Identity on Anti-Democratic Behavior*. Cambridge University Press.
- Huddy, Leonie. 2001. "From Social to Political Identity: A Critical Examination of Social Identity Theory." *Political Psychology* 22(1): 127–56.
- Huddy, Leonie. 2013. "From Group Identity to Political Cohesion and Commitment." In *The Oxford Handbook of Political Psychology*
- Huddy, Leonie, Caitlin Davies, and Joseph Sandor. 2020. "Measuring the Direction and Strength of Partisan Identity." In *Research Handbook on Political Partisanship*, eds. Henrik Oscarsson and Sören Holmberg.
- Leach, Colin Wayne, Martijn Van Zomeren, Sven Zeibel, Michael L. W. Vliek, Sjoerd F. Pennekamp, Bertjan Doosje, Jaap W. Ouwerkerk, and Russell Spears. 2008. "Group-Level Self-Definition and Self-Investment: A Hierarchical (Multicomponent) Model of in-Group Identification." *Journal of Personality and Social Psychology* 95(1): 144–65.
- Mael, Fred A., and Lois E. Tetrick. 1992. "Identifying Organizational Identification." *Educational and Psychological Measurement* 52(4): 813–24.
- Samejima, Fumiko. 1969. "Estimation of Latent Ability Using a Response Pattern of Graded Scores." *Psychometrika Monograph Supplement* 34(4, Pt. 2): 100–100.

## Appendix J: The Widespread Phenomenon of OH Effect Across Countries

To empirically demonstrate that the OH effect is indeed a widespread phenomenon, we replicate our core empirical models using country-specific analyses. For each country, we estimate the effects of Left and Right attachments on perceived outgroup homogeneity. We then compute the difference between these two coefficients to evaluate whether the OH effect is present. A positive and statistically significant difference suggests that right-leaning respondents perceive the rightist group as more heterogeneous than left-leaning respondents see—an indication of the OH effect.

Given that our results (Figure 2 in the main text) show the OH effect to be more pronounced after 2008, we first restrict this analysis to post-2008 data from the CSES). The results are presented in Figure J1 below. Specifically, we replicate four models reported in Table 1 in the main text, which capture different operationalizations of Left/Right identity and outgroup homogeneity, including Model 1 (LR Identity via Self-placement with DV Het1), Model 2 (LR Identity via Partisanship with DV Het1), Model 5 (LR Identity via Self-placement with DV Het2), and Model 6 (LR Identity via Partisanship with DV Het2).

**Figure J1: Coefficient Differences between Rightist and Leftist Identities Across Countries (post-2008 sample)**

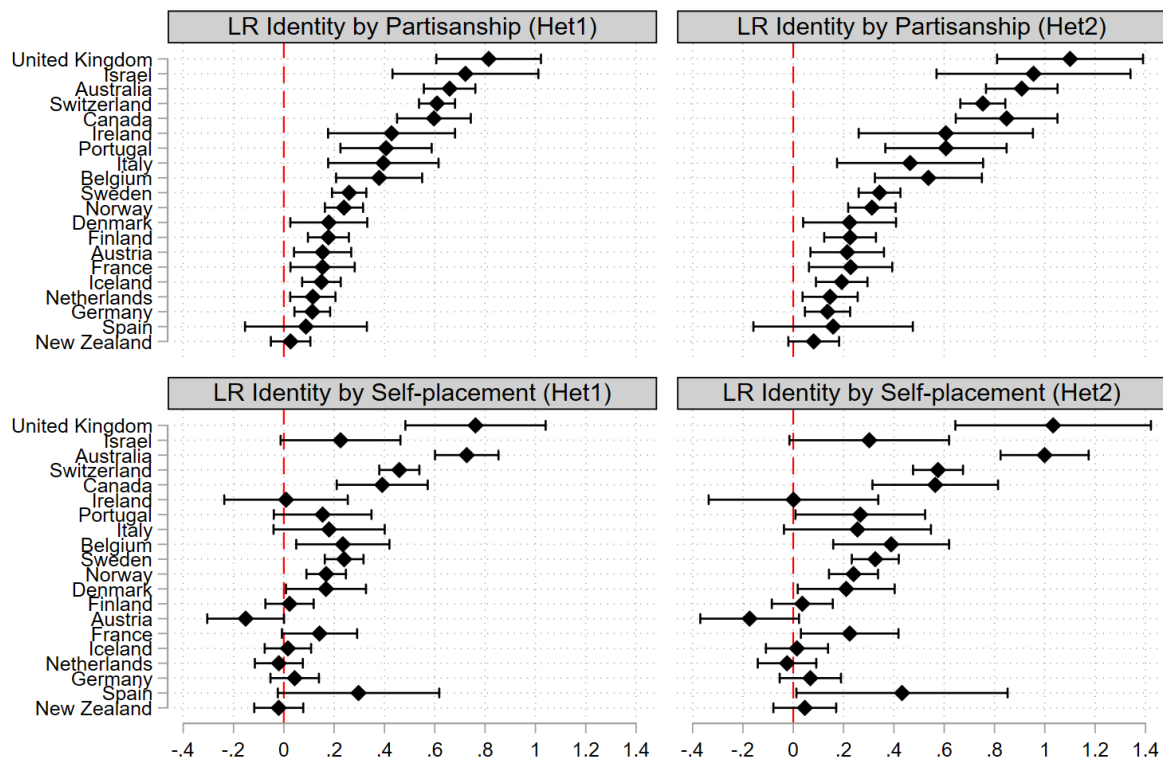
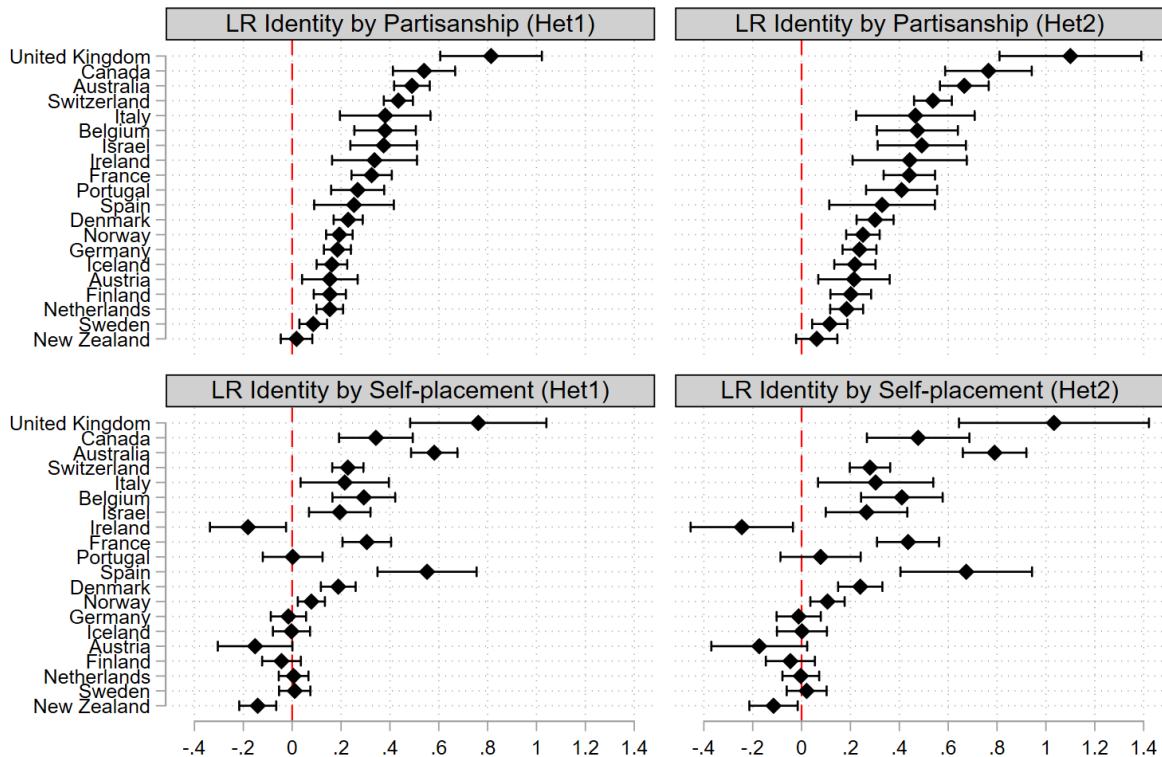


Figure J1 displays the estimated differences in coefficients along with their 95% confidence intervals. In total, we estimate 80 country-specific models (20 countries  $\times$  2 dependent variables  $\times$  2 measures of Left/Right identity). Of these, 75 estimates are in the expected direction, with 56

reaching statistical significance. Only 5 estimates fall in the opposite direction and none of these are statistically significant. Moreover, as a robustness check, we perform the same set of analyses using the full CSES sample and present the results in Figure J2. As it shows, the results are very similar: 68 estimates are in the expected direction, with 60 estimates that are statistically different from zero. Among the 12 estimates in the opposite direction, 8 are statistically insignificant. We believe these findings provide strong support for our claim that the OH effect is a cross-nationally widespread phenomenon.

**Figure J2: Coefficient Differences between Rightist and Leftist Identities Across Countries (full sample)**

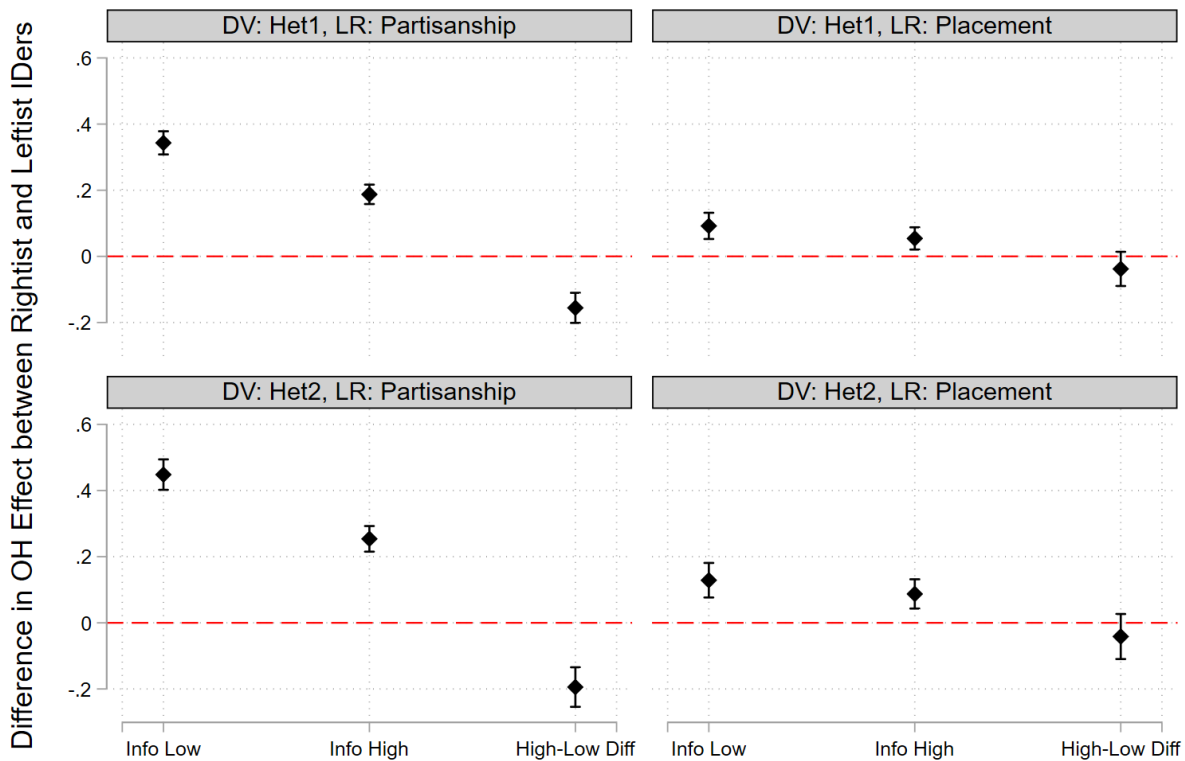


## Appendix K: Political Information and the OH Effect

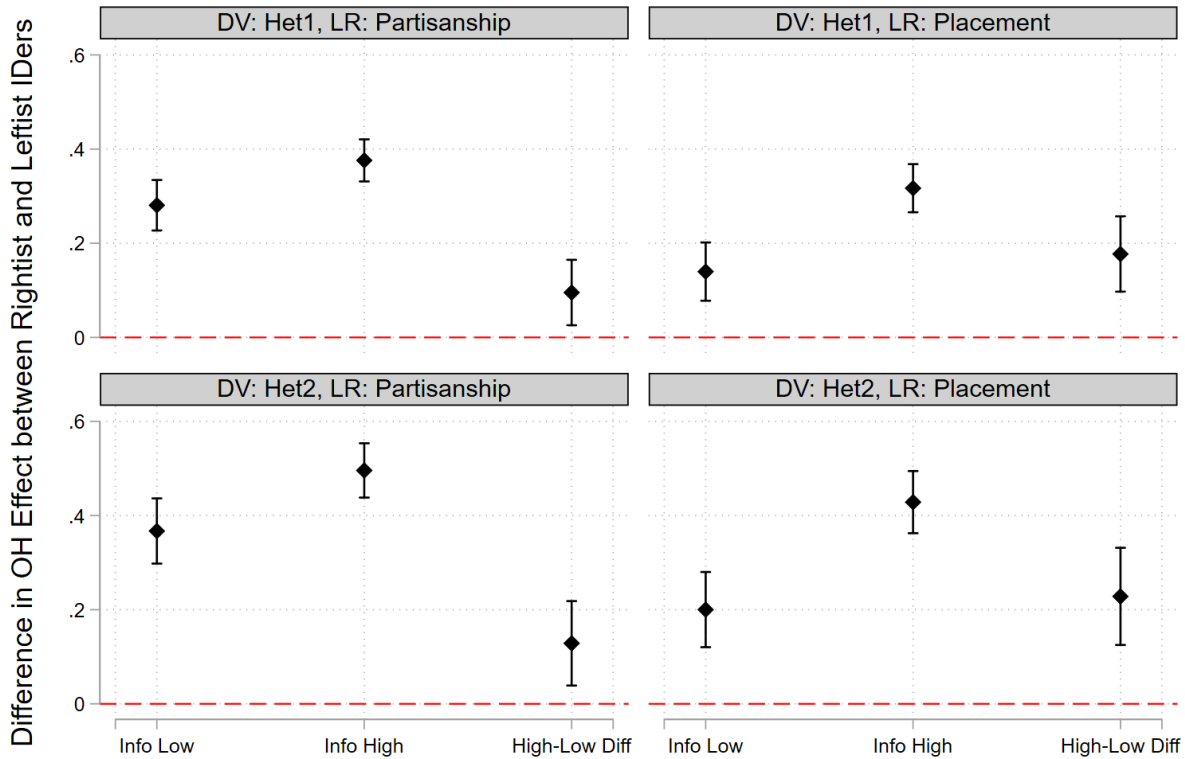
One may link the presence of the OH effects observed in this paper with the lack of political information, particularly of those related to out-group parties. That is, the OH effect might be driven by asymmetric political knowledge: voters with low-information fail to distinguish between out-group parties and, as a result, rate them similarly simply because they know less about these parties.

To examine this alternative explanation, we replicate our main models (Model 3,4,7,8 in Table 1) by adding a new variable “political information” and its interactions with our proxy measures of left-right attachments. It is important to know that in CSES surveys, political knowledge items are only available in the first four modules (i.e., Module 1-4), while political interest is available only in Module 5. As a result, we approximate respondents’ political information using political knowledge for Modules 1-4 and political interest for Module 5, and we estimate them in separate models. Finally, we rescaled both political knowledge and political interest to a 0–1 scale, and categorized respondents into two groups: high information and low information. In Figure K1 and Figure K2 below, we plot the estimated OH effects separately for high and low information voters, along with the difference between these two groups.

**Figure K1: Political Information and the OH Effect (Information = Knowledge, Module 1~4)**



**Figure K2: Political Information and the OH Effect (Information = Interest, Module 5)**



At first glance, Figure K1 appears to offer some support for this information-based reasoning. Specifically, when we employ partisanship as a proxy of left-right attachment and political knowledge as a proxy for respondent’s political sophistication (upper and lower panels on the left), we see that voters with low information exhibit a stronger OH effect than their high information counterparts, and this difference is statistically significant.

However, if the OH effect were primarily driven by information deficits, we would expect it to be present only among less politically sophisticated voters, and not among those with greater political knowledge. In other words, among high-information voters, the OH effect should be close to zero or even negative. Yet, our findings suggest otherwise. As shown in Figure K1, the estimated OH effect for high-information voters is consistently positive and statistically significant, regardless of the measure used for left–right attachment. Moreover, Figure K2, which uses political interest as the proxy for political information, shows that the OH effect persists among high-information voters and is even stronger than that observed among low-information respondents.

Taken these results together, we find limited support for the alternative explanation that the OH effect is a product of voters’ lack of political information. While we do observe the OH effect among low-information respondents, the same OH effect remains consistently positive and statistically significant even among high-information voters --- those who are expected to

differentiate more clearly between out-group parties if the OH effect were purely due to informational deficits. Additionally, in some cases our results suggest that the OH effect is even more pronounced among politically sophisticated individuals than among low-information respondents. As a result, we believe that the OH effect cannot be fully attributed to informational asymmetries.

## Appendix L: Impact of Left Right Attachments on Vote Choice

In this appendix we provide a preliminary demonstration of the usefulness of measuring psychological attachment to the Left or Right by examining their impact on vote choice. Specifically, we estimate multinomial models of vote choice in Denmark, Italy, and Sweden (and including up to 8 of the largest parties in each country). For these analyses, we directly measured respondents' psychological attachment to the Left and, separately, the Right using the multi-party battery describe in Appendix I.

Further, a fair test of the association between psychological attachments to the Left and Right can only be done while controlling for attachment to individual parties -- that is, what we want to know is whether the impact of superordinate group attachments on vote choice is detectable after having accounted for the usual partisan attachments. To do this, we measured each respondent's reported party identification (and the strength of that identification) following the scheme used in the Comparative Studies of Electoral Systems (CSES) survey program and included it in multinomial models of vote choice as a set of dummy variables indicating either no PID or three (increasing) strengths of PID.<sup>11</sup> The marginal effects of attachment to the Left or Right on support for each party in these models are provided in Figures L1-L3 while the coefficient estimates for these models are presented in Tables L1-L3 below. To ease interpretability, we order the parties by their average perceived left-right position among our respondents (the number in front of the name is the order, with 1 meaning most left).

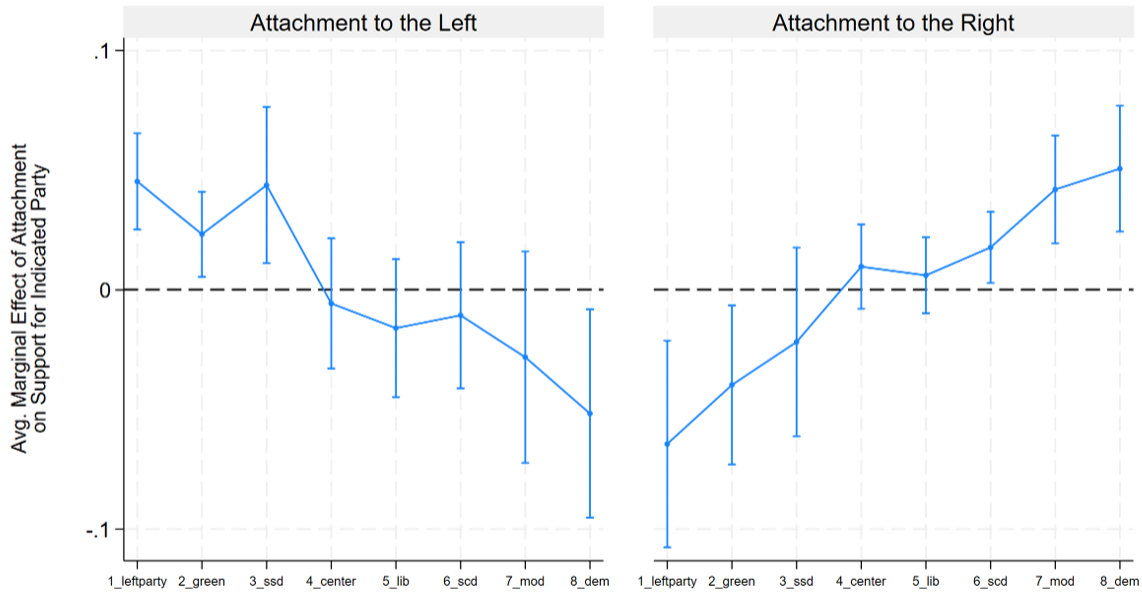
In each country, we see that attachment to the Left or Right (again, measured directly for each respondent by two multi-item question batteries) impacts the vote for each party, after controlling for attachment to individual parties, in generally sensible ways. The impact of attachment to Left (Right) tends to increase support for parties of the Left (Right). Further, the size of this effect tends to get bigger the farther left (right) our respondents believe the party to be.<sup>12</sup>

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<sup>11</sup> Following Block and Stevenson's (2025) work on multi-party identification, we also measured each respondent's strength of psychological attachment to each party in their party systems using the same battery of questions described in Appendix I, but with party and party names substituted where appropriate for ideological group names. Using this measure instead of traditional PID produces the same overall pattern of results, but with less precision, since that measure is only available for about 2/3 the respondents for which we have the traditional PID measure.

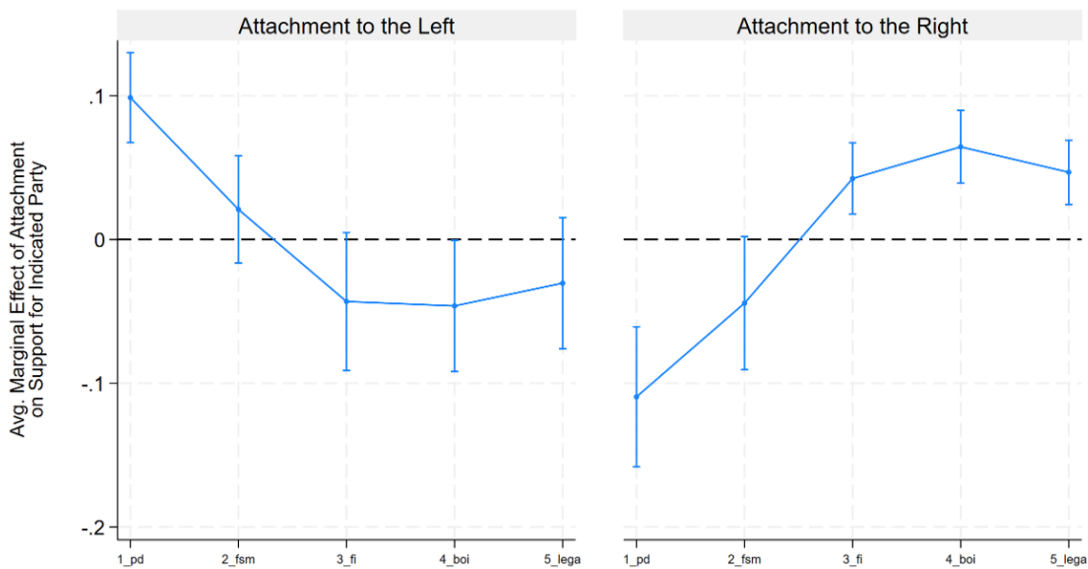
<sup>12</sup> The results also reveal intriguing exceptions worth exploration in future work -- like the result for the extremist Danish People's Party, whose support (exceptionally) is not strongly associated with our respondents' Left/Right attachments.

**Figure L.1: Impact of Strength of Psychological attachment to the Left or Right on Vote Choice, Controlling for Strength and Direction of Partisan Identification in Sweden**



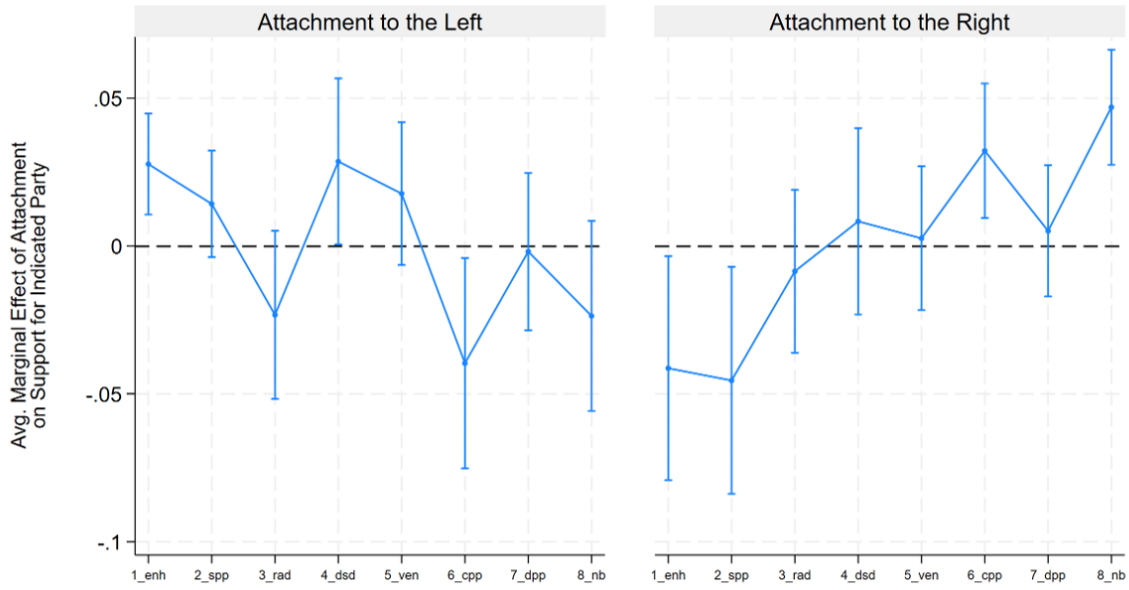
Marginal effects are from conditional logit models of vote choice controlling for traditional partisan attachments.

**Figure L.2: Impact of Strength of Psychological attachment to the Left or Right on Vote Choice, Controlling for Strength and Direction of Partisan Identification in Italy**



Marginal effects are from conditional logit models of vote choice controlling for traditional partisan attachments.

**Figure L.3: Impact of Strength of Psychological attachment to the Left or Right on Vote Choice, Controlling for Strength and Direction of Partisan Identification in Denmark**



Marginal effects are from conditional logit models of vote choice controlling for traditional partisan attachments.

**Table L1: Conditional Logit (McFadden's) Estimates of Vote Choice in Sweden**

Parties	Attachment to the Left	Attachment to the Right
1_leftparty	2.11 [0.92,4.81]	0.23 [0.05,1.11]
2_green	1.60 [0.56,4.58]	0.20 [0.03,1.18]
3_ssd	baseline	baseline
4_center	0.33 [0.065,1.72]	2.72 [0.77,9.63]
5_lib	0.16 [0.22,1.16]	2.37 [0.65,8.69]
6_scd	0.26 [0.05,1.38]	4.62** [1.47,14.6]
7_mod	0.23* [0.06,0.84]	5.17** [1.93,13.9]
8_dem	0.19** [0.07,0.52]	4.33** [1.73,10.9]
Partisan Identity		
Non-Partisan	baseline	baseline
Weak	49.0*** [30.8,78.0]	50.05*** [31.3,80.0]
Moderate	32.4*** [23.7,44.1]	31.5*** [23.1,43.0]
Strong	74.5*** [40.9,135.9]	77.1*** [41.9,141.7]
N	7208	7208
Log likelihood	-540.10	-535.40
Wald chi-square	982.70	985.90

*Entries report odds ratios from Conditional Logit (McFadden's) choice models. The numbers in square brackets are the 95% confidence interval. Significance levels: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . Parties are ordered (and numbered) from left to right based on average respondent placements.*

**Table L2: Conditional Logit (McFadden's) Estimates of Vote Choice in Italy**

Parties	Attachment to the Left	Attachment to the Right
1_pd	2.19** [1.33,3.62]	0.56 [0.24,1.33]
2_fsm	baseline	baseline
3_fi	0.34 [0.12,1.01]	3.91** [1.79,8.54]
4_boi	0.40* [0.18,0.92]	4.76*** [2.28,9.96]
5_lega	0.45 [0.18,1.16]	4.48*** [2.08,9.64]
Partisan Identity		
Non-Partisan	baseline	baseline
Weak	18.4*** [11.8,28.6]	18.0*** [11.5,28.2]
Moderate	27.1*** [19.1,38.5]	24.9*** [17.5,35.4]
Strong	20.0*** [13.5,29.6]	17.8*** [12.0,26.4]
N	4190	4190
Log likelihood	-588.5	-580.10
Wald chi-square	794.90	776.90

*Entries report odds ratios from Conditional Logit (McFadden's) choice models. The numbers in square brackets are the 95% confidence interval. Significance levels: \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001. Parties are ordered (and numbered) from left to right based on average respondent placements.*

**Table L3: Conditional Logit (McFadden's) Estimates of Vote Choice in Denmark**

Parties	Attachment to the Left	Attachment to the Right
1_enh	1.47 [0.73,2.96]	0.28* [0.08,1.00]
2_spp	1.07 [0.48,2.39]	0.18* [0.04,0.82]
3_rad	0.31* [0.11,0.85]	0.65 [0.22,1.92]
4_dsd	baseline	baseline
5_ven	0.97 [0.45,2.11]	1.00 [0.44,2.26]
6_cpp	0.28** [0.11,0.71]	1.84 [0.91,3.70]
7_dpp	0.59 [0.23,1.49]	1.08 [0.48,2.43]
8_nb	0.37* [0.15,0.92]	3.05** [1.56,5.93]
Partisan Identity		
Non-Partisan	baseline	baseline
Weak	46.8*** [31.0,70.7]	45.3*** [30.1,68.4]
Moderate	50.7*** [36.3,71.0]	47.8*** [34.2,66.8]
Strong	39.9*** [26.6,59.9]	43.0*** [28.4,65.1]
N	7344	7344
Log likelihood	-685.2	-679.1
Wald chi-square	1203.7	1179.4

Entries report odds ratios from Conditional Logit (McFadden's) choice models. The numbers in square brackets are the 95% confidence interval. Significance levels: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . Parties are ordered (and numbered) from left to right based on average respondent placements.

## References

Block, Ryan, Randolph Stevenson and Seonghui Lee (2025). *Partisan Identity in Multi-Party Democracies*. Under review, Cambridge University Press.