Appendix A: Measuring multi-party identity

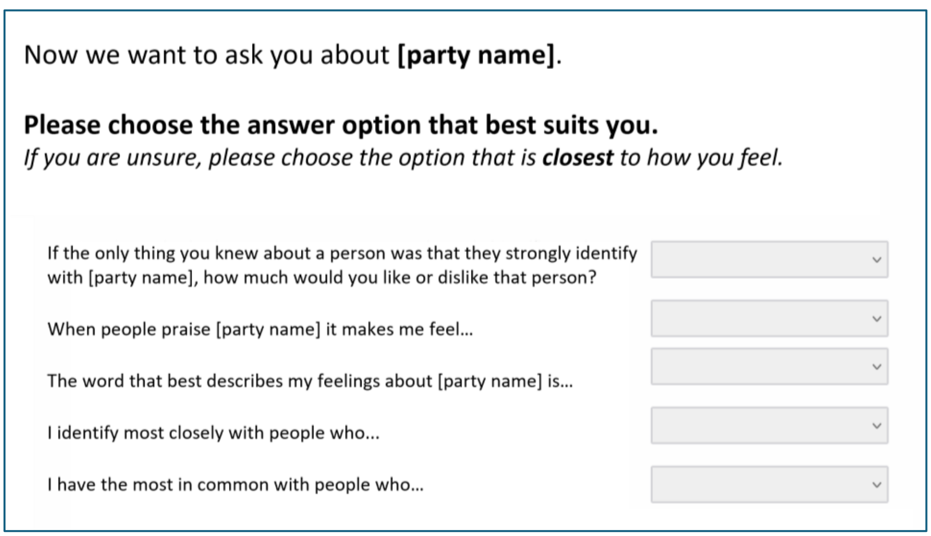
In this section of the appendix, we provide the additional information and tests discussed Chapter 3, including details about the survey battery and measurement. The section and subsection numbering for Appendix A corresponds to the numbering in the book.

A3.1 Developing the items in the Survey Batteries

A3.1.3 The Surveys

One of the key challenges of building a survey battery to measure the extent of (both positive and negative) identification with each of a fairly large number of political parties (e.g., 8-10) is how much survey time it will require and whether it will stimulate and retain the interests and effort of respondents. While recent experiments (e.g., Liu and Cernat 2018) that randomly assign the same questions to an item-by-item or matrix format find no differences in uncooperative behaviors like straight-lining or time to completion (as long as there are not more than 8 response options), other work has raised questions about the extent to which the design encourages uncooperative behaviors and whether these kinds of question discourage thoughtful responses about each item. Thus, in order to combat these possibilities, we use a modified matrix format in which we present one page for each party, with the items about that party presented in rows, and rather than a standard matrix with answer categories arrayed in the columns, we include answer categories for each item (rows) drop-down menus (see Figure A1). Our hope was that this format (compared to matrix style questions) would encourage the respondent to stop and think a bit more about each item separately and, at a minimum, would make rote straight-lining harder to do.

Figure A1: Example of screen for main task[1]


Now we want to ask you about **[party name]**.

Please choose the answer option that best suits you.
*If you are unsure, please choose the option that is **closest** to how you feel.*

If the only thing you knew about a person was that they strongly identify with [party name], how much would you like or dislike that person?

When people praise [party name] it makes me feel...

The word that best describes my feelings about [party name] is...

I identify most closely with people who...

I have the most in common with people who...

[1] To avoid confusion, this example shows the five items we actually used. In the actual surveys, all seven items from Tables 1 and 2 were included.

This format has an additional advantage. Specifically, the format better equalizes the experience of respondents who are using phones and tablets to complete the survey versus desktop or laptop computers. Specifically, in the Qualtrics survey platform (which we use), standard matrix questions are presented to mobile device users as a series of individual items with drop down answer categories that look much like the way the individual items are presented in Figure A1.

Importantly, each respondent saw a screen like that in Figure A1 for each party in the system (8 parties for Sweden and Italy, 9 for the Netherlands and Denmark).[2] We were able to randomize the order in which these items were presented for each party (we did not randomize order in which the answer categories were presented for each party (it would have been too confusing), but we did randomize response option order at the respondent level).

Given that we are proposing that respondents answer the questions in the battery in Figure A1 for as many as 11 parties, it is important to understand both how long the battery takes and whether the respondents find the task of filling it out for each party so onerous that they drop out of the survey. We take up those two questions in the next sections.

How long did it take?

Table A1 provides the mean time it took our Swedish respondents to complete the 5 items in Figure A1, compared to the mean per-item time for several other batteries of items we asked using a traditional matrix format.[3] Results for other countries tell the same story, which can be provided by the authors upon request.

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[2] For Denmark and the Netherlands there were 2 and 3 parties, respectively, that were very small. Thus, we gave everyone the battery for the 8 largest parties, and then randomly choose from the set of (2 or 3) smaller parties to give each respondent a 9th party. In the end, however, the much smaller sample for these parties (and the fact that as much as 2/3 the sample did not answer about any one of them) made the data for these parties very hard to use (and of minimal value) and so we mostly drop them from the analysis in this paper. Overall, we think it's better to choose the set of parties in which one is interested, and ask about all those parties (dealing appropriately, of course, with respondent's who do not recognize the party, as we discuss below).

[3] In the actual survey we used a slightly larger 7 item battery but have excluded 2 items from our index that were not sufficiently balanced between positive and negative answer categories. As such, in this section it makes more sense to report based on per-item timing than timing for the whole page. This is also useful because in comparing the time it takes for our main-task items and the other multi-party questions (offered in traditional matrix style) that had different numbers of items.

Table A1: Average time (in seconds) to complete each item in the main task compared to other multi-party tasks (Swedish respondents)

Task	Avg. seconds per item
Main Battery: Social Democrats	5.1
Moderates	5.0
Swedish Democrats	5.3
Center Party	4.9
Left Party	5.1
Christian Democrats	5.1
Liberals	5.0
Greens	5.0
Prob of ever voting for party (PTV)	3.2
Party like/dislike scale (thermometer)	5.6
Party left-right placement	5.7
Party role in cabinet	7.0

The 4 batteries at the bottom are in a matrix format (parties in rows and scale points in columns) and so times are per-party asked about in these batteries. The main battery for each party used a different answer format that requires respondents to use a drop down for each question in the main battery.

Clearly, our hypothesis that respondents would take longer to answer items in the dropdown format is refuted by these data. It turns out that each item in the main tasks takes about 5 seconds, which puts it in the middle of the pack for how long it took our respondents to answer these kinds of items.

Did respondents drop out?

Figure A2 plots the hazard rate for dropping out of the survey before answering each question, with the eight (one per-party) pages in which we presented our main battery marked in red.[4] The hazard rate, in this case, is just the probability of dropping out of the survey on a given page, given you had not dropped out before that page.[5, 6]

The first thing to notice about Figure A2 is the clearly declining hazard rate overall. This is exactly what we should expect to see in most surveys: those less committed to the survey will tend to drop out earlier, leaving those most committed to the survey in the pool for later questions – thus the probability of dropping out at the j^{th} question, given you have made it to question $j-1$, should be

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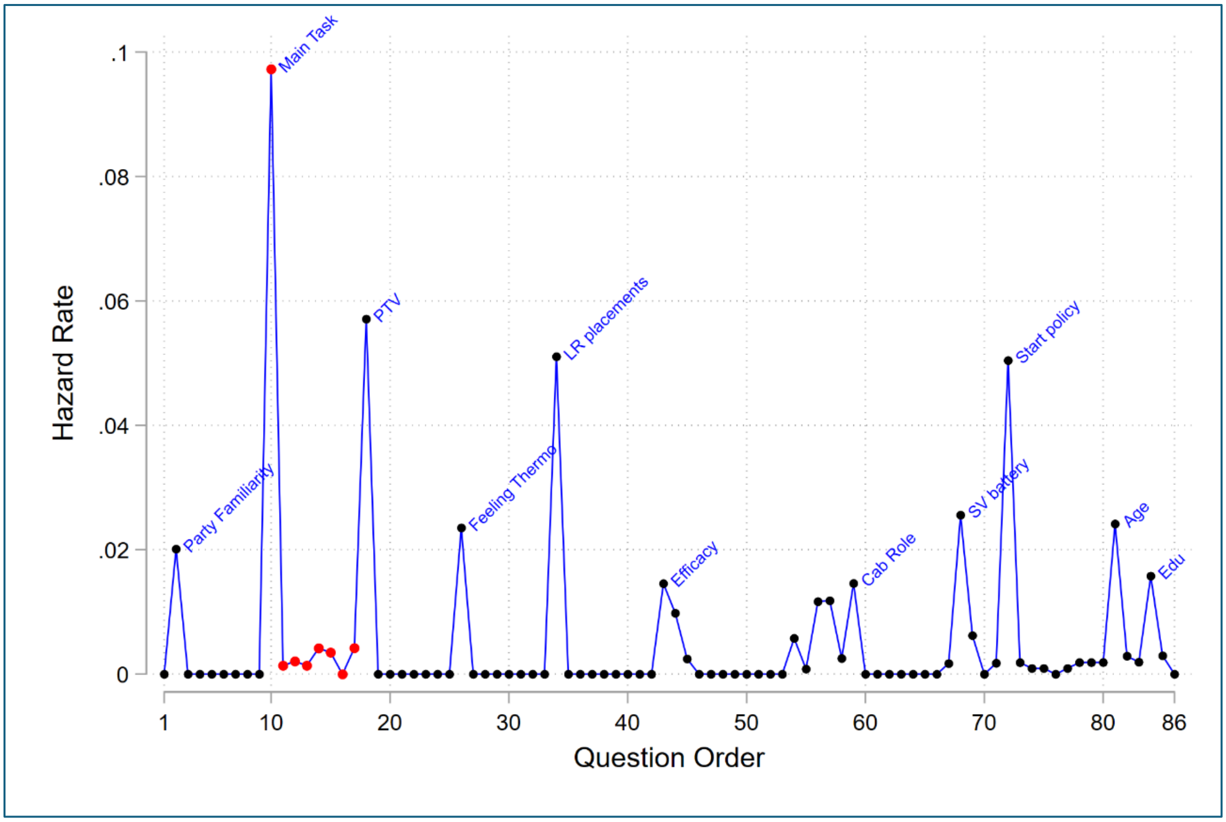
[4] Using hazard rate analysis to examine question performance is described in Lee, Haime, and Stevenson (2019).

[5] Since we required respondents to answer each question (with appropriate instructions and caveats designed to make them feel comfortable doing so even in situations in which they may be poorly informed), we have no trouble distinguishing between individuals who drop out of the survey and those that skipped a question.

[6] Note that it was possible for a respondent to drop out in the middle of answering our main battery since they got a different page for each party. So, one could answer about some of the parties and then drop out without answering about the rest. This was not possible on the traditional matrix style batteries that listed parties as rows and answer categories (for a single question) as columns.

declining for each question. Importantly, however, this generally declining hazard rate can make it appear that our main questions lead to a greater chance of dropping out relative to other kinds of questions that occurred later in the survey. As such, these results suggest that the items in our main task induce respondents to drop out at similar rates as other kinds of multi-party questions commonly asked in election surveys.

Figure A2: Hazard rate for dropping out of the survey at a given question (Swedish Respondents)



The hazard rate for a given question is the probability of dropping out on any given question, given you have made it that far. The dots each represent a screen on which our main battery was presented for each of our 8 parties. party familiarity is our question asking the extent to which the respondent is familiar with each party; PTV is the "probability of ever voting for a party"; Cab Role asks respondent whether each party is the PM , in the Cabinet, or the Opposition; SV battery is a set of questions about whether the individual would cast a strategic vote; Start policy is the first question of 9 questions that ask the respondent to place herself on various policy scales. Hazard rates for the Party Familiarity, PTV, Feeling Thermometers, LR placements, and Cabinet Role questions are depicted for each party in the battery. Thus, if the respondent dropped out without answering the battery, it will only register for the first party (followed by 7 questions for which the hazard rate is 0).

Finally, it is important to note that the hazard rates depicted in Figure A2 for our main task are relevant to all seven items in our original battery. Above, we made the argument for reducing this battery to five questions. Thus, both overall timing and dropout rates for our main battery can likely be improved.

A3.2 Estimating and evaluating the partisan attachment vector.

Since we build our attachment scale using items with ordered and polytomous responses, we use Samejima's (1969) graded response IRT model. Applied to measure respondent *i*'s attachment to party *j*, this model specifies that for an item, k, with response categories $r \in \{1, \ldots, R\}$,[7] the conditional probability that individual i gives a response to item k that is r or greater as follows:[8]

$$P^*_{k,r}(\theta_{ij}) = \frac{Exp[\alpha_k(\theta_{ij} - \boldsymbol{\beta}_k)]}{1 + Exp[\alpha_k(\theta_{ij} - \boldsymbol{\beta}_k)]}. \tag{1}$$

Where θ_{ij} is respondent *i*'s latent level of attachment to party *j*, our primary quantity of interest. Since we asked the same items for each party, we suppress the party subscript *j* when indexing item parameters (so, one can read our item index "k" as "jk" throughout this discussion).

The difficulty (or threshold) parameters are collected into the vector $\boldsymbol{\beta}_k = \{\beta_{k2}, \beta_{k3}, \beta_{k4}\}$ for item *k*. These represent the level of attachment to a party that is needed to respond with response r or greater to item *k* with probability 0.5 (for r = 2, 3, or 4).[9] Thus, larger values of this parameter mean that a respondent would need to be more attached to party *j* for her to choose that answer category (or a more extreme one). The discrimination (or slope) parameter for item k, α_k, indicates how well an item distinguishes individuals at different levels of attachment (for party *j*).

Given equation (1), the probability that an individual gives a specific response, $r \in \{1, \ldots, R\}$, to item *k* about party *j* is:

$$P_{k,r}(\theta_{\mathrm{ij}}) = P^*_{k,r}(\theta_{ij}) - P^*_{k,r+1}(\theta_{ij}) \tag{2}$$

We estimated the model using the graded response model in the MIRT package in R, with default parameters. We had no problems with convergence and estimates for all models were in expected ranges and were well-behaved. Details of the estimation procedure and calculation of appropriate standard errors can be found in Chalmers (2012, 2015, 2018).

Finaly, to produce estimates of party attachment for each respondent, we use expected a posteriori (EAP) methods (Bock & Mislevy 1982; Thissen et al. 1995). EAP is a Bayesian estimation method which uses the likelihood function for an individual's response pattern, a set of quadrature points

[7] We coded our answer categories so that higher numbers indicate greater positive attachment and lower numbers greater negative attachment.
[8] We simplify notation by assuming all items have R categories (since R = 4 for all our items).
[9] This probability is 1 for r = 1 so it is not included.

(61 in our models) and their associated weights, and a multivariate normal prior to compute the mean of the posterior distribution.

A3.2.1 Pooling or not?

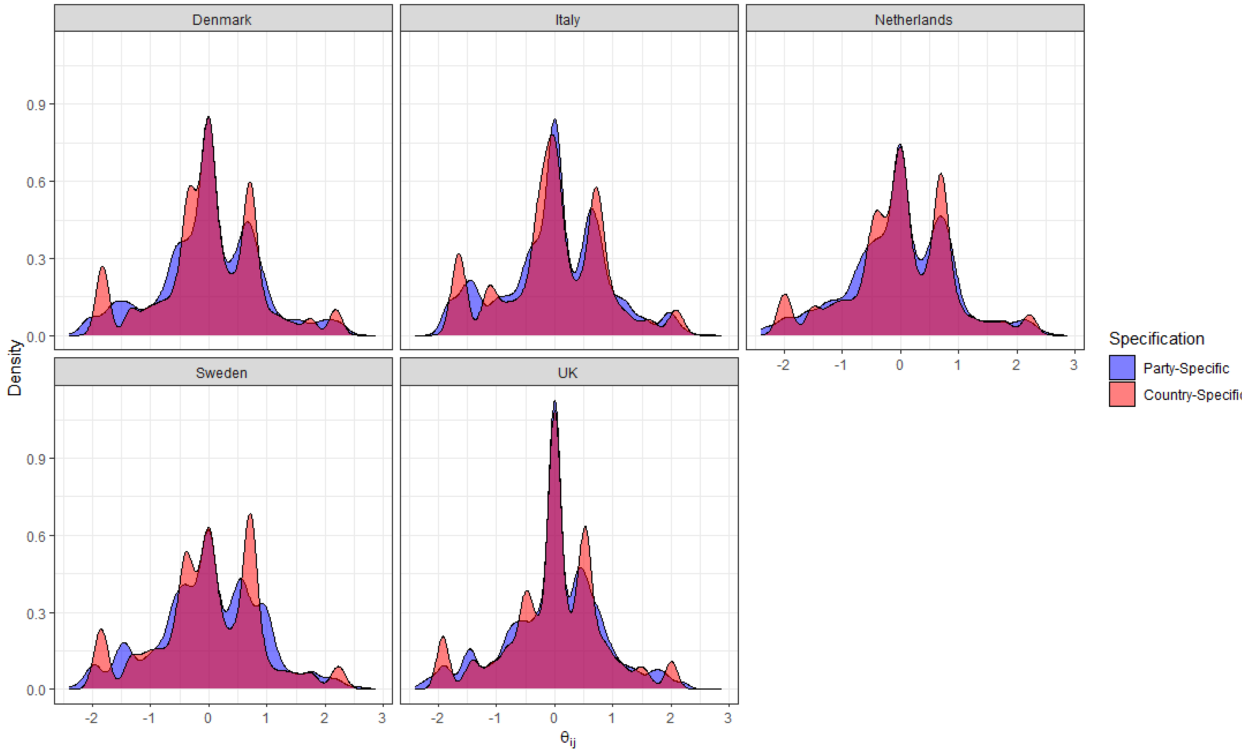
Given we have data for multiple parties across several countries, there are several "levels" at which we can estimate the IRT models. First, we can estimate separate graded IRT model for each party. This is clearly the most flexible model, since it produces party-specific item parameters, which allows for the possibility that our items work differently for different parties. For example, if more ideologically extreme parties have higher difficulty parameters (for the same item) compared to more centrist parties, respondents would need to give more extreme item responses when asked about extremist parties compared to centrist parties, in order to obtain the same level of (estimated) attachment. Of course, this also means that we may estimate different thetas for two parties even when the underlying response pattern to the items for both parties is identical.

Alternatively, we could estimate the IRT models by pooling respondents at the country-level. Identical response categories for different parties within the same country would then produce identical attachment estimates. However, the cost of that choice is that the models do not allow the kind of party specific differences in how the questions are answered that the party-specific models allow.

Finally, we could fully pool all the responses and estimate a single model that applied across countries and parties. This specification would provide the most precise IRT parameter estimates but makes very strong assumptions about the cross-national and cross-party comparability of our items and how respondents understand them. While this may be justified for parties within the same country, it seems less likely to hold across countries. As such, we only consider national level pooling and the party-specific approaches below.

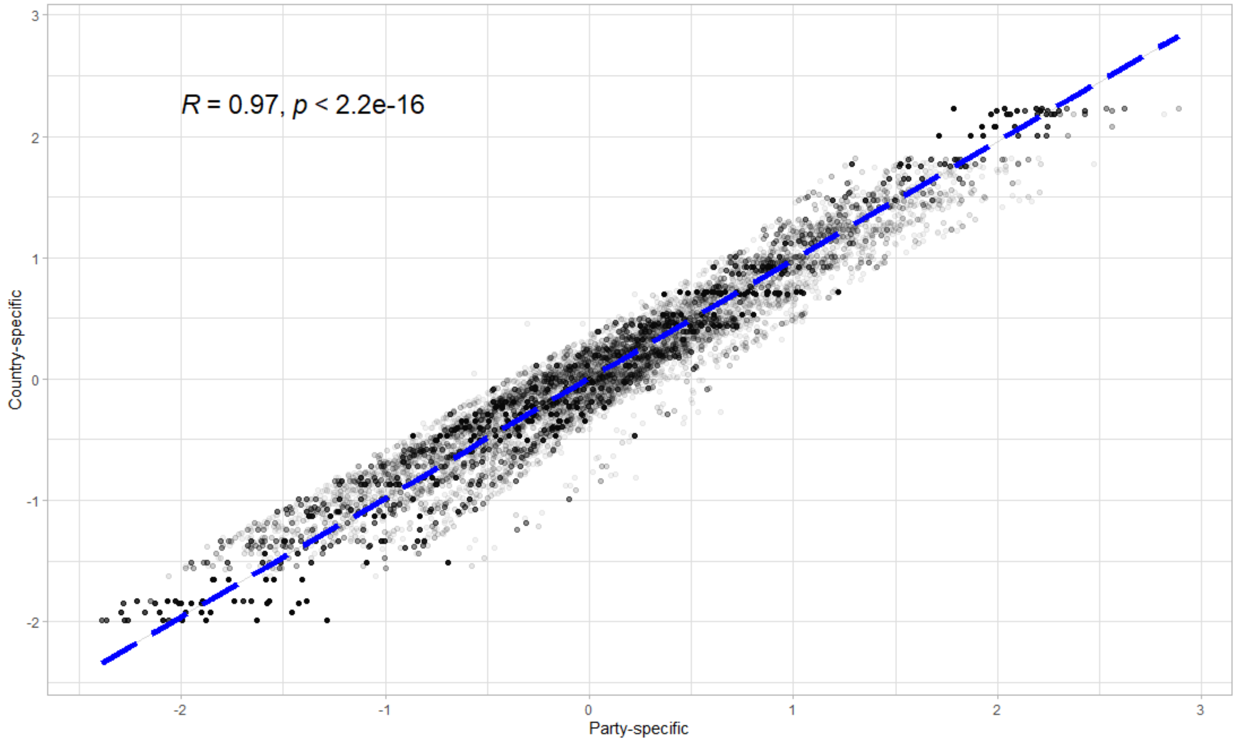
Figure A3 shows the empirical distributions of the thetas produced by the party-specific and country-pooled models (across all parties within each country).

Figure A3: Density of θ_{ij} produced by different specifications



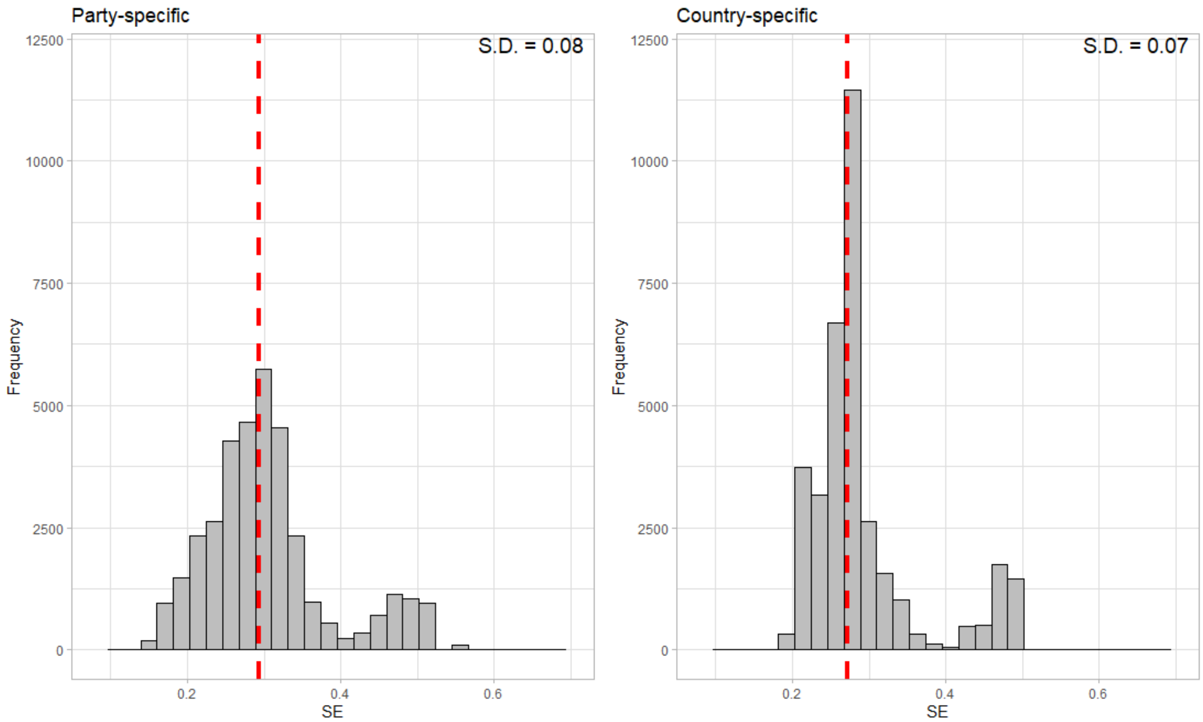
The first thing to notice is that there is substantial overlap in these distributions. However, the distribution of the pooled thetas has steeper peaks and less spread along the range of the latent trait (with the exception of Italy). The party-specific models produce more fine-grained theta estimates, especially on the negative side of the range, which reflects some (modest) differences in the underlying item parameters for specific parties within countries. That said, these two sets of thetas are very highly correlated (ρ = .97), as shown in Figure A4. This reassures us that both methods produce very similar results.

Figure A4: Scatterplot of thetas produced by different specifications



Given the similarity in the pooled and party-specific thetas, our instinct is to choose the more flexible, party-specific method. However, there might be an efficiency cost to be paid for this approach, since we are estimating a lot more item parameters. As it turns out, however, the large samples we have for each party (~1100) insulate us to some extent from these issues. Specifically, in Figure A5, we provide a histogram of the estimated standard errors of the EAP estimates of each of our θ_{ij}'s from both methods. The typical standard error is the same in both figures (the dashed lines in the figure indicate the location of the median standard error) though, as we would expect, the party-specific distribution includes a few more large standard errors. That said, there is not a significant difference in the empirical variances of these two distributions.

Figure A5: Standard errors of thetas



A3.2.2 Which respondents should we use to estimate the IRT models?

One issue that needs to be addressed when asking respondents about the various parties in their systems is that some voters will not recognize some parties. In order to measure this, we asked each respondent to tell us the extent to which they were familiar with each of the parties. The answer categories were “Very familiar” (1), “Familiar” (2), “Somewhat familiar” (3), “I've heard of the party, but that is all” (4), and “I've never heard of the party” (5). Since we required all respondents to answer our PSI battery for each party, regardless of whether they told us they were unfamiliar with the party, we need to decide whether to include these respondents when we estimate our IRT we estimated our IRT model for that party.[10]

Below we provide a straightforward analysis that makes it quite plain that the answer patterns for individuals who we asked to complete our PSI battery despite saying they were unfamiliar with a given party do not look (in any way) like those of the other respondents. Further, they show very strong evidence of survey satisficing behavior that, more than just adding noise to our data, is likely to bias our results. Thus, we chose to exclude unfamiliar respondent-party observations from the

[10] For those who were unfamiliar with a party, we included text in the survey recognizing that they had told us they were unfamiliar with the party, and then providing guidance on what they should do when answering the survey battery about the party. Specifically, on the page introducing the task we said: “Now, we are going to ask you a set of questions about each of the [#] major political parties in [country]. *Even if you are not familiar with one of the parties, please answer each question in the way that feels best to you.*” And, on the next page we included: “Now, we want to ask you about [party name]. Please choose the response option that fits you best. *If you are uncertain, please just choose the option that seems **closest** to your how you feel.*”

calculation of the any θ_{ij} for which respondent *i* was unfamiliar (coded 4 or 5) with party *j*. Further, we impose the additional assumption (well justified by the results below), that such individuals have no attachment to parties for which they are unfamiliar and so set $\theta_{ij} = 0$ for those cases.[11, 12]

Table A2 provides a summary of how many parties each respondent reported to be unfamiliar in each country. We can see that the vast majority of respondents in report familiarity with almost all the parties.

Table A2: Percentage of parties with which respondents were unfamiliar

	Denmark		Italy		Netherlands		Sweden		UK		Total	
# of unfamiliar parties	fam= 5	fam= 4 or 5	fam= 5	fam= 4 or 5	fam= 5	fam= 4 or 5	fam= 5	fam= 4 or 5	fam= 5	fam= 4 or 5	fam= 5	fam= 4 or 5
0	92.2	55.4	93.9	65.6	93.1	65.8	95.9	72.9	85.0	38.5	91.9	59.1
1	3.7	13.2	3.9	13.5	4.1	7.7	2.5	7.7	10.2	16.6	5.0	12.0
2	2.4	9.2	0.8	5.9	1.0	7.4	0.7	5.5	3.0	16.3	1.6	9.0
3	0.7	7.0	0.4	3.8	0.4	4.2	0.3	4.4	0.9	12.1	0.6	6.4
4	0.5	4.1	0.4	2.6	0.4	4.5	0.2	3.2	0.5	8.8	0.4	4.7
5	0.2	3.5	0.3	4.2	0.3	1.3	0.1	2.4	0.2	3.4	0.2	3.0
6	0.1	2.0	0.2	4.4	0.2	2.0	0.1	1.4	0.2	2.6	0.2	2.5
7	0.0	1.9			0.1	1.9	0.1	1.3	0.1	1.5	0.1	1.3
8	0.2	1.0			0.1	2.1	0.1	1.3			0.1	0.8
9	0.1	2.6			0.3	3.1					0.1	1.1

"fam" is our measure of how familiar a respondent is with a given party. The code "4" was given to respondents who said they "I've heard of the party, but that is all" and "5" was chosen by those who said they "I've never heard of the party". This chart includes all valid respondents in each country.

In order to decide what to do with the responses of respondents who are unfamiliar with a given party, we examined whether responses for these unfamiliar parties are structured in some way.[13] Specifically, we compared the pairwise correlations between our estimated θ_{ij}'s for different parties between the familiar and unfamiliar respondents. If we order the parties in this correlation matrix from left to right (using average perceived left-right placements of the parties among our sample),

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[11] This is decision is consequential when we want to characterize quantities about the whole distribution of partisan identification in a country (e.g., how many pure independents?) because if we were to simply exclude these respondent-parties (rather than set their θ_{ij}'s to 0), we would underestimate the number of non-partisans with respect to these parties.

[12] This analysis also serves as a kind of "placebo" test of our measurement strategy. That is, we would be worried about a survey battery that produced well-structured answers about parties with which respondents were not familiar.

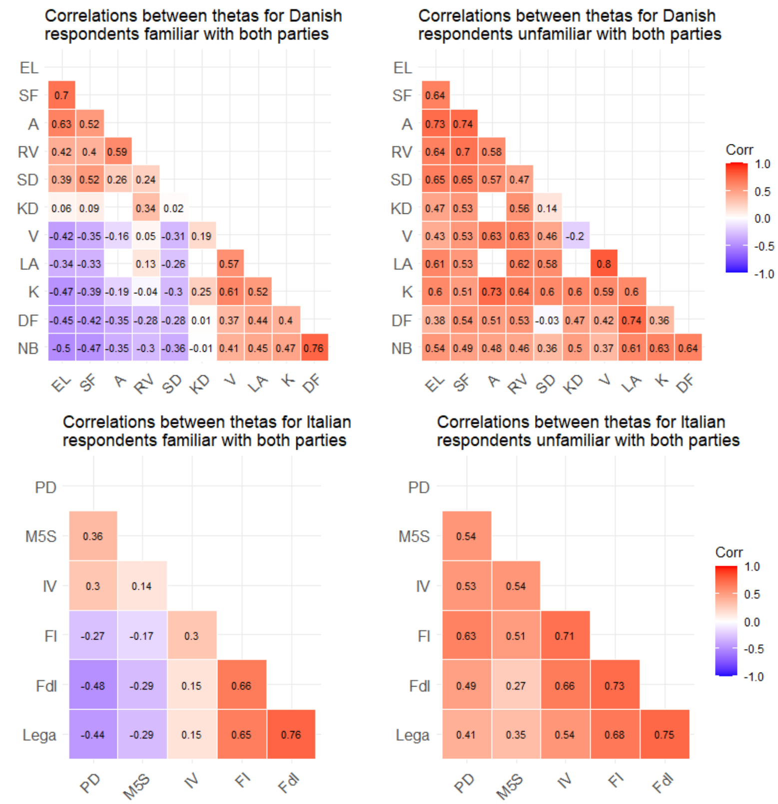
[13] Some might expect our estimated theta's for respondents unfamiliar with a party to be zero. However, that will only be true if such respondents, when asked to actually answer questions about a party they have not heard of (or not heard much about), answer randomly or in ways similar to independents. If, in contrast, such respondents answer in systematic but meaningless ways -- like always choosing the same answer for each party and/or each item in the battery – then the relevant thetas will not tend to be zero. For example, if such respondents always choose the 4th response in our battery, we would estimate a (likely significant) negative theta for each party (we did randomize the order of our response categories at the respondent level but not at the item or party level since that would have been very difficult for respondents to follow).

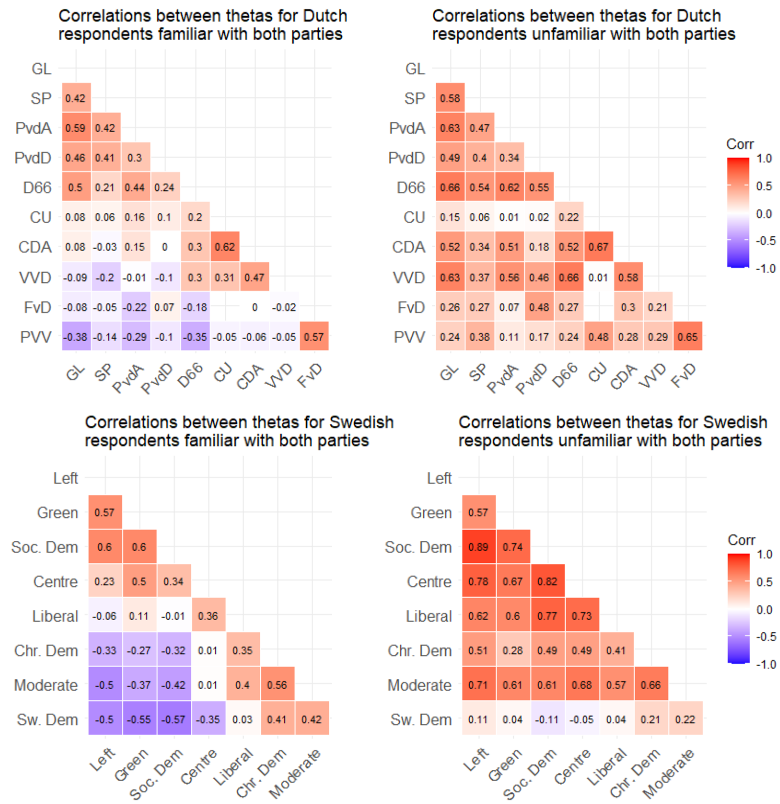
then we expect to see positive correlations among parties on the same side of the midpoint of the scale that are also decreasing with the average perceived left-right distance between the parties. We also expect to see negative correlations for party pairs that span the left-right divide.

We provide this information in Figure A6 below. As we expected, for familiar pairs of parties we get quite sensible patterns of correlations that are generally decreasing (including becoming negative) as the ideological spread between the two parties is greater. In stark contrast, all significant correlations for the unfamiliar parties are positive, strongly suggesting that many such respondents were simply choosing the same answers for all these parties. We see similar patterns for the other countries.[14]

[14] It is also worth noting that, when it comes to the Swedish Democrats, which had become a bit of a phenomenon by the time of the survey (they are a far-right party that, at the time of our survey, were doing very well electorally and whose ascendance had sent shockwaves through the system), we do see a bit of signal coming through the noise – even for the respondents who told us they were not familiar with the party. That is, they seemed to change their answer patterns for this one party (note the order in which they saw the battery for each party was random).

Figure A6: Correlations between estimated θ_{ij}'s for respondents familiar or unfamiliar with both parties





Given the evidence that respondents unfamiliar with a party about which they were asked to answer likely satisficed in their answers for these parties, it not only seems prudent to exclude these respondent-party pairs when producing our IRT estimates, but also to assume these respondents have no real partisan attachment to the parties with which they claim unfamiliarity. Thus, we set θ_{ij} to 0 in these cases.[15] Importantly, we include these individuals (and estimate corresponding θ_{ij}'s) for any parties with which such respondents are familiar.[16]

A3.2.3 Measurement properties and internal validity of the party attachment vector

We now explore the internal validity of the estimated *party identity vector* for each respondent – demonstrating that our items produce a clearly unidimensional scale in which all the included items load very strongly. We also explore the cross-national (and cross-party) consistency of our

[15] We recognize that we are treating this 0 as known with certainty despite the fact that the answer to the familiarity question may have some noise in it. Bringing that, likely small amount of, noise through all of our subsequent analyses is both impractical and almost certainly unnecessary.

[16] If we excluded these respondent-parties (rather than setting their θ_{ij}'s to 0), we would underestimate the number of non-partisans with respect to these parties.

measures (are we measuring the same thing across parties and countries?). In each case, we do this for the set of θ_{ij}'s estimated with party-specific IRT models and excluding (for purposes of the IRT estimation) those unfamiliar with the party.

Is θ_{ij} an internally valid unidimensional scale?[17]

Since our measure relies on IRT models with a single factor, we require that the items we use form a unidimensional scale. We validate this assumption using a variety of methods, including confirmatory factor analysis and IRT diagnostic tests. First, we show some traditional scale validation results. Table A3 shows the inter-item correlations between each item in our scale using the full sample (all countries together). We can see that the items all have high, positive correlations with each other. We get similar results when we subset by party. The overall Cronbach's α of the full sample is .91, with the party α's ranging from .84 to .96.

Table A3: Inter-item correlations of scale items

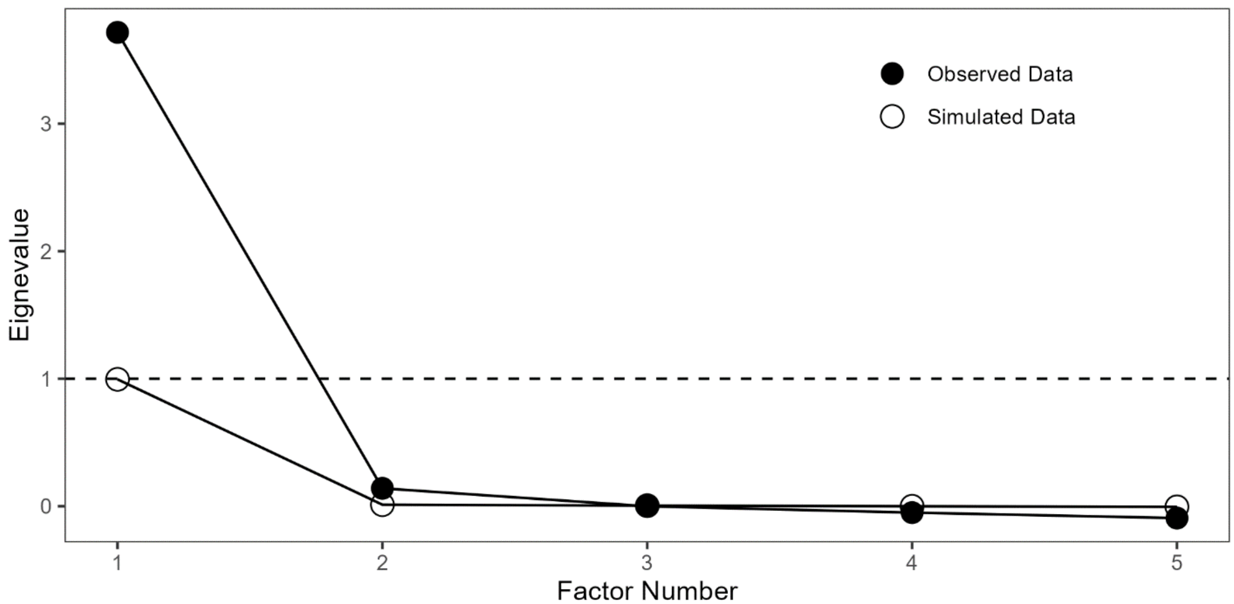
	like	praise	feeling	close	common
like	1.00	0.73	0.66	0.62	0.65
praise	0.73	1.00	0.70	0.65	0.68
feeling	0.66	0.70	1.00	0.66	0.69
close	0.62	0.65	0.66	1.00	0.73
common	0.65	0.68	0.69	0.73	1.00

Next, we use confirmatory factor analysis (CFA) to assess the dimensionally of the scale. Figure A7 shows a scree plot using parallel analysis. Parallel analysis compares the factors which exist in the observed data to factors which are created using random data with the same number of observations as the actual data. The factors which should be retained must have observed eigenvalues which are larger than the simulated eigenvalues. Additionally, retained factors should have eigenvalues which are greater than 1. We can see that only the first factor meets these criteria, which provides more evidence for the scale being unidimensional. For space considerations, Figure

[17] To save space, we only show results for the full sample in this section. The results are quite similar when we look at the scales for each party.

A7 shows the results from a fully pooled model, but the results are the same when we use party-level models, which can be provided upon request. In the separate party-level CFA models, the items all load on to a single factor, which explains between 87.8% to 97.6% of the variance.

Figure A7: Parallel analysis scree plot

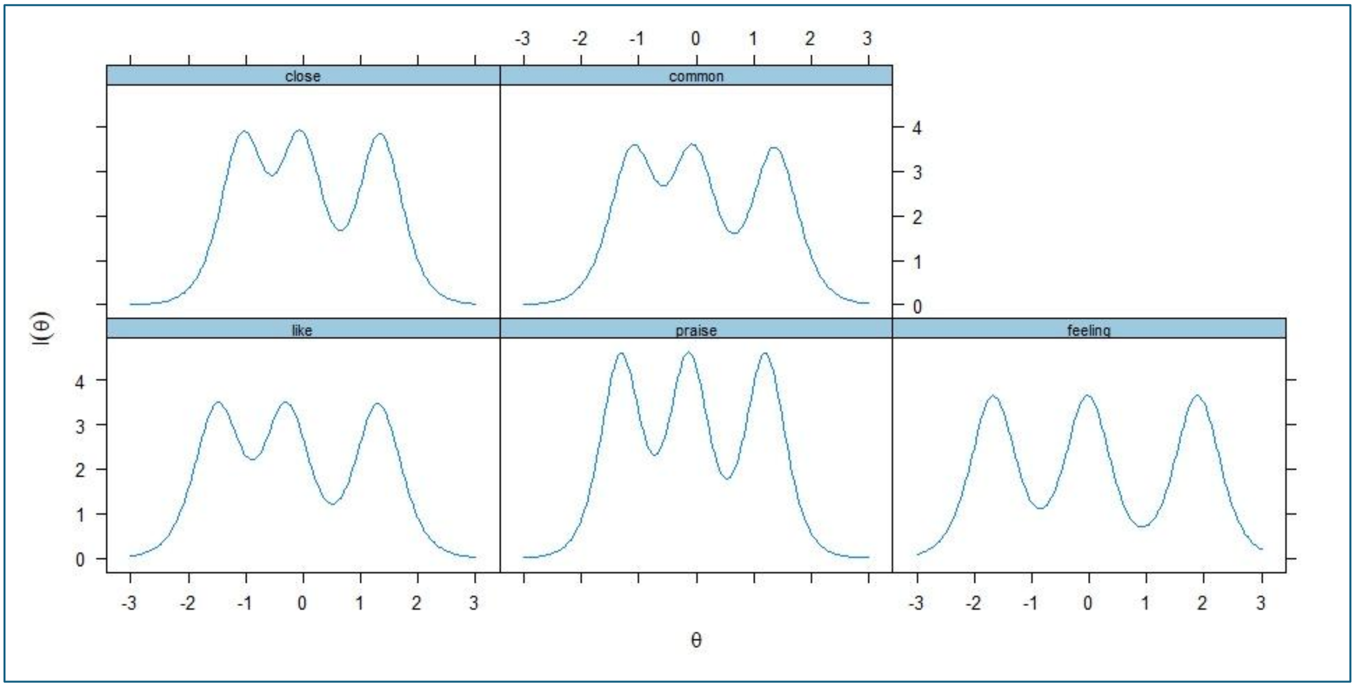


How well do the items cover θ_{ij}?

The range of θ_{ij} is approximately -3 to 3, where larger values indicate stronger positive PSI, negative values indicate stronger negative PSI, and values near 0 indicate no partisan attachments. To accurately estimate θ_{ij} using our items, they should cover a wide range of values of θ_{ij} and we should have sufficient information that we can discriminate over the whole range of the scale.

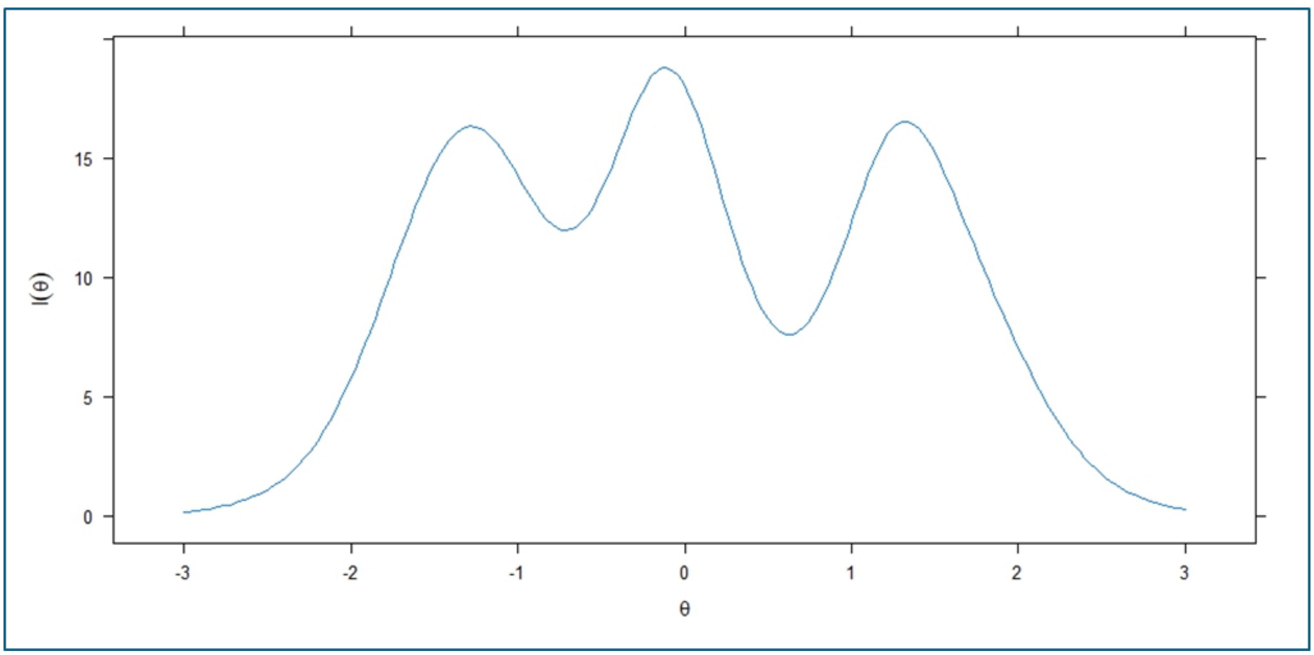
Figures A8 and A9 show the item information function and total information function curves for IRT that produced our estimated attachment scores for the Moderate Party in Sweden. We show results for this party as an example, but the curves for the other parties look similar.

Figure A8: Item information functions for Swedish Moderate Party



In IRT analysis Item and Total Information functions allows us to assess the coverage of the latent trait captured by, respectively, each item included in the scale (Figure A8) and for the scale as a whole (Figure A9).

Figure A9: Total information function for Swedish Moderate Party



Looking at the total information function for the Moderate Party, which sums information for all five items asked about this party, we see peaks on both the positive and negative sides, as well as one around 0. This indicates that the scale (for this party) provides information about affirmational, negational, and the lack of PSI.

Another set of useful statistics for evaluating our party attachment scales are their marginal reliability. Marginal reliability in IRT is a single, overall measure of a scale's reliability, similar in concept to Cronbach's Alpha in Classical Test Theory but derived from the IRT model's parameters. It essentially tells us the proportion of the observed variance in the estimated latent trait that comes from true scores, as opposed to measurement error. Unlike the Test Information Function, which shows information (or precision) at specific trait levels, marginal reliability provides an average measure of precision across the entire population distribution of the latent trait. Like the Cronbach's Alpha, scores of about .8 or above are considered good evidence of a reliable scale.

Table A4 provides the marginal reliabilities for each of our party-specific scales.

Table A4: Marginal Reliability of party scales

Denmark		Italy		Netherlands		Sweden		UK	
Party	MR	Party	MR	Party	MR	Party	MR	Party	MR
Alternative	0.891	Brothers of Italy	0.897	CDA	0.878	Centre Party	0.899	Conservative	0.881
Chr. Democrats	0.899	Democratic Party	0.915	CU	0.902	Chr. Democrats	0.871	Green Party	0.894
Con. People's Party	0.893	Five Star Movement	0.914	D66	0.899	Green Party	0.899	Labour	0.895
Danish People's Party	0.892	Forza Italia	0.912	FvD	0.859	Left Party	0.919	Liberal Democrats	0.882
Social Liberal Party	0.842	Italia Viva	0.888	GL	0.909	Liberals	0.884	Plaid Cymru	0.870
Liberal Alliance	0.891	Lega	0.881	PvdA	0.893	Moderate Party	0.914	Reform UK	0.869
New Right	0.871			PvdD	0.886	Social Democrats	0.918	SNP	0.890
Red-Green Alliance	0.901			PVV	0.901	Sweden Democrats	0.906		
Social Democrats	0.901			SP	0.904				
Socialist People's Party	0.892			VVD	0.902				
Venstre	0.900								

Given what we see from the information curves illustrated above (and the many others for other parties that are available from the authors and look very much like the ones illustrated here), as well as the quite high marginal reliabilities for all of our scales, we can conclude that the items in the scale, and the scale as a whole, cover a wide range of θ_{ij} and are able to distinguish respondents with different levels of the underlying trait. This gives us confidence that our scale is able to discriminate between strong and weak partisan identifiers (on both the positive and negative sides), as well as non-party identifiers.

Appendix B: Exploring structure in $\vec{\boldsymbol{\theta}}_{ij}$

In this appendix section, we use both multivariate IRT (MIRT) models and hierarchical clustering methods to explore structure in our estimated partisan attachment vectors (θ_i's). We begin by estimating a constrained MIRT model in which we constrain each item for party j in our partisan attachment battery to load on only one common factor (and we include as many factors as parties). As one might expect, given the information in Section A of this online appendix, each set of items for each party loads very strongly on its own dimension (which we subsequently label with the party name). While this is almost equivalent to estimating an IRT model separately for each party (as we do in the text), it has the advantage (for our purpose in this appendix) that we can use this model to easily estimate the correlations between the thetas for each pair of parties. Further, by ordering the parties in these correlation matrices from left to right, we can assess the extent to which patterns of co-partisanship seem to be structured by the left-right in each of our countries.

B.1 Factor covariance structure from MIRT

In this section, we report analyses that uses confirmatory multi-dimensional IRT models (MIRT) to estimate the extent to which our theta's for different parties are correlated. Specifically, instead of estimating IRT models for each party completely separately, MIRT models allow for simultaneous estimation of both the θ_{ij}'s for all J parties in a country and the correlations between the θ_{ij}'s across the J parties. [18]

Tables B1-B5 provide the correlations between our estimated θ_{ij}'s for different parties. Black numbers are positive correlations and red are negative. Parties are ordered according to their average placement (among our respondents) on the left-right.

Table B1: Correlations between strength and direction of identity with different parties in Sweden

	V	MP	SAP	C	L	KD	M
MP	0.596						
SAP	0.626	0.610					
C	0.262	0.542	0.390				
L	0.020	0.210	0.071	0.445			
KD	−0.244	−0.196	−0.248	0.074	0.390		
M	−0.449	−0.309	−0.359	0.080	0.422	0.586	
SD	−0.495	−0.542	−0.565	−0.390	−0.042	0.347	0.368

Clearly, this pattern of correlations confirms our hypothesis that co-partisanship is more likely to develop among parties that are closer together on the left-right scale. Looking at the first column,

[18] It is also possible to use MIRT models to produce the predicted thetas for each party for each respondent. To do so, however, we need to model how a respondent's attachment to each party might impact her answer to questions (in our PSI battery) about the other parties. Our current estimation strategy is a special case of such models in which we assume (at the estimation stage) that the only theta that matters to respondent *i*'s answers to a battery question about party *j* is θ_{ij}. We can relax that in several different ways. The simplest model is a confirmatory model in which we maintain the restriction that respondent *i*'s answer to a given battery question about party *j* is only directly driven by θ_{ij} (modelled in a confirmatory graded MIRT model by designating as many factors as there are parties and then only allowing questions about a given party to load on the corresponding factor). Thus, this is quite close to what we reported in the text, but since we estimate all the factors in the same model, we can use that model to also directly estimate the covariance structure of the J factors (parties) for each country. In other kinds of models, e.g., compensatory MIRT models, the θ_{ij}'s for all parties directly impact the answers to questions about the other parties. This is accomplished by changing the $a_i*\theta_{ij}$ term in the model in Equation (1) to a vector so that there is a potentially non-zero slope parameter on θ_{ij} for each party. Thus, the answer of a respondent asked a question about whether she is attached to, for example, the Swedish Social Democrats will depend on not only θ_{iSSD} but also $\theta_{iModerates}$, $\theta_{iLeftParty}$, etc… It is not at all clear that this is what we want in a model of partisan attachment.

for example, identify with the Left Party, which is considered the most left party in Sweden by our average respondent, is strongly correlated with identity for the Greens and Social Democrats, less correlated with the more centrist (or center right) Centre and Liberal parties, and increasingly negatively correlated with (identity for) the three rightist parties.

This pattern is quite consistently replicated for the other Swedish parties and, indeed, for each of the parties in the other countries (Tables B2-B5 below)

Table B2: Correlations between strength and direction of identity with different parties in Denmark

	EL	SF	ALT	RV	SD	KD	V	LA	DKF	DF
SF	0.706									
Alt	0.562	0.483								
RV	0.477	0.443	0.527							
SD	0.364	0.549	0.216	0.231						
KD	0.124	0.117	0.091	0.287	−0.012					
V	−0.375	−0.298	−0.144	0.126	−0.308	0.195				
LA	−0.165	−0.224	0.008	0.150	−0.219	0.037	0.433			
DKF	−0.405	−0.305	−0.147	0.063	−0.255	0.267	0.646	0.406		
DF	−0.434	−0.390	−0.242	−0.239	−0.273	0.007	0.387	0.368	0.395	
NB	−0.433	−0.409	−0.220	−0.223	−0.345	0.063	0.402	0.387	0.457	0.767

Table B3: Correlations between strength and direction of identity with different parties in Italy

	PD	M5S	IV	FI	FdI
M5S	0.353				
IV	0.350	0.174			
FI	−0.188	−0.142	0.364		
FdI	−0.439	−0.268	0.205	0.662	
Lega	−0.360	−0.253	0.185	0.675	0.757

Table B4: Correlations between strength and direction of identity with different parties in the Netherlands

	GL	SP	PvdD	PvdA	D66	CU	CDA	VVD	FvD
SP	0.454								
PvdD	0.520	0.434							
PvdA	0.640	0.462	0.347						
D66	0.552	0.246	0.293	0.509					
CU	0.113	0.045	0.036	0.168	0.216				
CDA	0.124	−0.005	0.023	0.200	0.379	0.643			
VVD	−0.046	−0.182	−0.082	0.049	0.386	0.239	0.543		
FvD	−0.037	0.027	0.114	−0.158	−0.118	−0.042	0.012	−0.066	
PVV	−0.373	−0.123	−0.064	−0.287	−0.334	−0.066	−0.055	−0.034	0.577

Table B5: Correlations between strength and direction of identity with different parties in the UK

	GPEW	Plaid	SNP	Lab	LibDem	Con
Plaid	0.647					
SNP	0.536	0.724				
Lab	0.426	0.437	0.494			
LibDem	0.531	0.573	0.535	0.491		
Con	−0.074	0.144	0.073	−0.162	0.131	
Reform	−0.147	0.071	0.088	−0.191	−0.011	0.513

B.2 Cluster analysis of $\vec{\boldsymbol{\theta}}_i$: The case of Sweden

While the analysis in the last section clearly shows that respondents' perceptions of the left-right positions of the parties strongly structure their multipartisan identities, aggregate correlations do not allow us to probe more subtle structure in these identities. Thus, to dig deeper, we turn to hierarchical clustering methods that will allow us to discover clusters of common voter types in the data.

Hierarchical clustering methods simply ask which observations in the data (where an "observation" for purposes of this discussion is the J-vector of estimated thetas for one respondent) are more or less similar to each other. Since θ_i is just a point in J-dimensional space (where J is the number of parties in the country), we are essentially trying to find clusters of similar θ_i's in that space. If the estimated θ_i's have little structure, we would expect them to be spread randomly (perhaps uniformly) over this J-dimensional space. However, if our hypothesis that partisan attachments are structured by left-right ideology is true, then we should see various clusters of observations that define political meaningful types.[19]

More specifically, we rely on hierarchical agglomerative linkage clustering, in which each of our observations starts out as N separate clusters of size one. The two closest observations are then merged into one cluster, producing N − 1 total clusters. Next, the two closest clusters are merged so that there are N − 2 total clusters. This process of agglomeration continues until all the observations are merged into one final cluster consisting of all the observations.[20] Thus, we end up with a hierarchically organized set of cluster groups: one of these cluster groups has only one cluster, another cluster group has 2 clusters, another cluster group will have 3 clusters,… and so

---

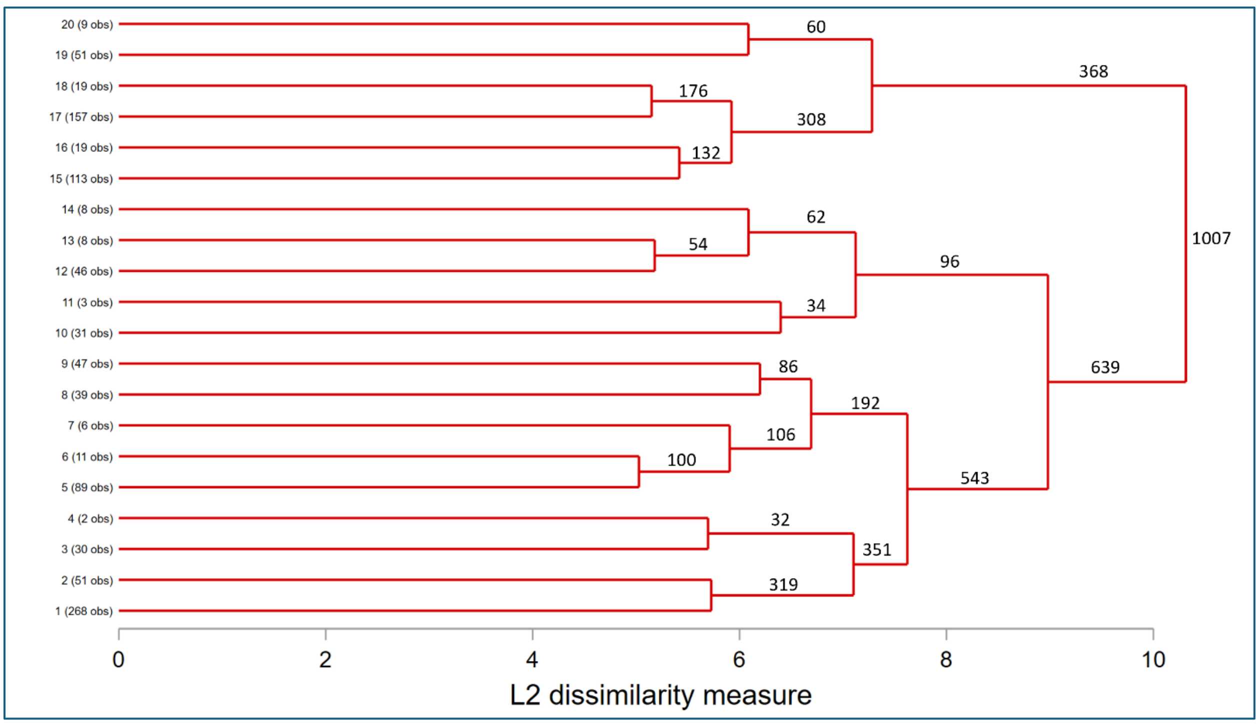
[19] Of course, we can also look for structure that corresponds to something other than LR ideology. We looked at a number of possibilities, including levels of political sophistication, but found little that warranted further exploration.

[20] One can define "close" in different ways. The method that worked best in our data is called "complete linkage" and defines the two closest groups as the two groups whose farthest two observations are closer than any other two groups. Distance between groups is determined by L2 dissimilarity, which is just Euclidean distance.

on, until the final cluster group has N clusters. In each cluster group, each of the N observations is in one (and only one cluster). Thus, we can examine all the cluster groups to choose a particular one to explore – specifically, we want one that has enough observations in each cluster to make meaningful generalization but that has enough clusters to describe any important, substantively meaningful, variation in the clusters. In the resto of this section, we use these techniques to examine the structure of partisan attachments in Sweden, but do not report for all the other countries since the nature of the analysis requires quite a lot of space per country and is ultimately quite repetitive – because, the analyses for other countries are quite similar.

After some exploratory analysis, we settled on a cluster group that divided all the Swedish observations into 20 clusters, and then explored each of these clusters (that had at least 5 observations) to determine exactly how the thetas in the cluster were similar. Ultimately, that exercise revealed that the left-right ideology of the parties, as we expected, appears to explain quite nicely why our algorithm (which had no information about left-right ideology) grouped some θ_i's together. Figure B1 provides the 20-cluster Dendrogram for our Swedish data.

Figure B1: 20-cluster dendrogram for Sweden



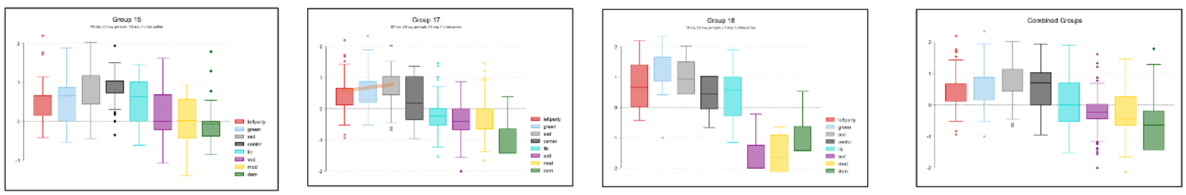
Numbers are numbers of observations in the cluster. The L2 dissimilarity measure is Euclidian distance.

On the left side of the diagram, the algorithm finds the 20 groups (using all observations) that are most similar within each group and different across groups. Group labels are listed for these 20 groups as numbers 1-20 followed by the number of observations in each group. The dissimilarity between two groups is calculated using an L2 dissimilarity measure, which is just Euclidean distance (in this case, in 8-dimensional space). The value of L2 for any two groups is the point where the vertical line connecting those two groups crosses the x-axis.

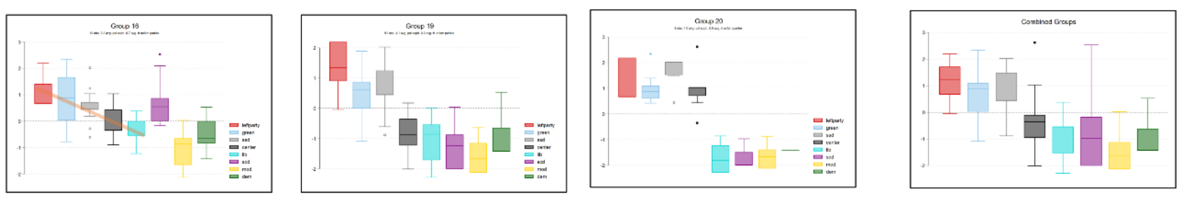
A simple way to explore the nature of the partisan identities that make up the different clusters in Figure B1 is to examine the distribution of the thetas for all the respondents in each of our 20 clusters after ordering the parties from left to right. Figure B2 does this for a set of clusters that we have grouped together because they clearly define a variety of types of *leftist* respondents.

Figure B2: Clusters of leftist partisan identities

Leftist (oriented toward the center): 289 respondents (29%)



Leftist (oriented toward the extremes): 79 respondents (8%)



The clustering algorithm is clearly grouping respondents in these clusters who have a shared partisan identity that includes positive identification with one or more parties of the left. Further, these positive attachments are structured in two different ways: for some of these respondents (the bottom panel), partisan attachment tends to increase with increasing leftist extremity, while for other leftist respondents, attachment strength is decreasing with extremity.

In Figures B3 and B4, we show examples of specific voters in our samples who fall into the clusters above. The voter shown in Figure B3 is broadly positively attached to leftist parties, with the strongest being for the Left Party. Further, they show a strong negative attachment to all of the parties of the right. The voter shown in Figure B4 is an example of someone who could be considered a “spatial” identifier, since the ordering of their attachments closely matches the order of the parties which they are ideologically proximate to. This voter is most attached to center-left parties, and becomes decreasingly attached to parties as they move away from their ideal point.

Figure B3: Example of a leftist partisan identifier

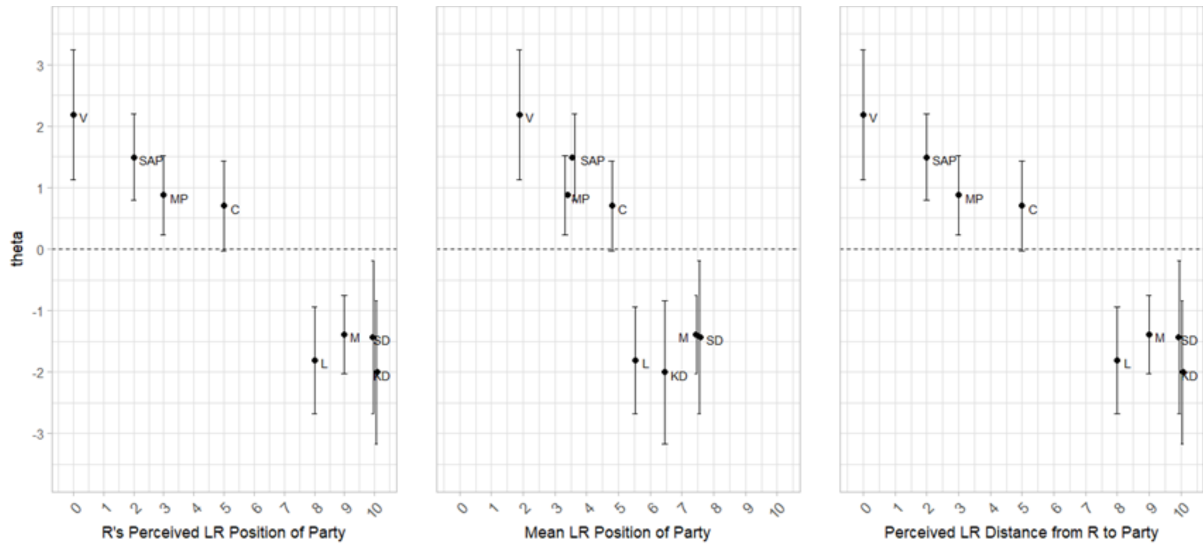
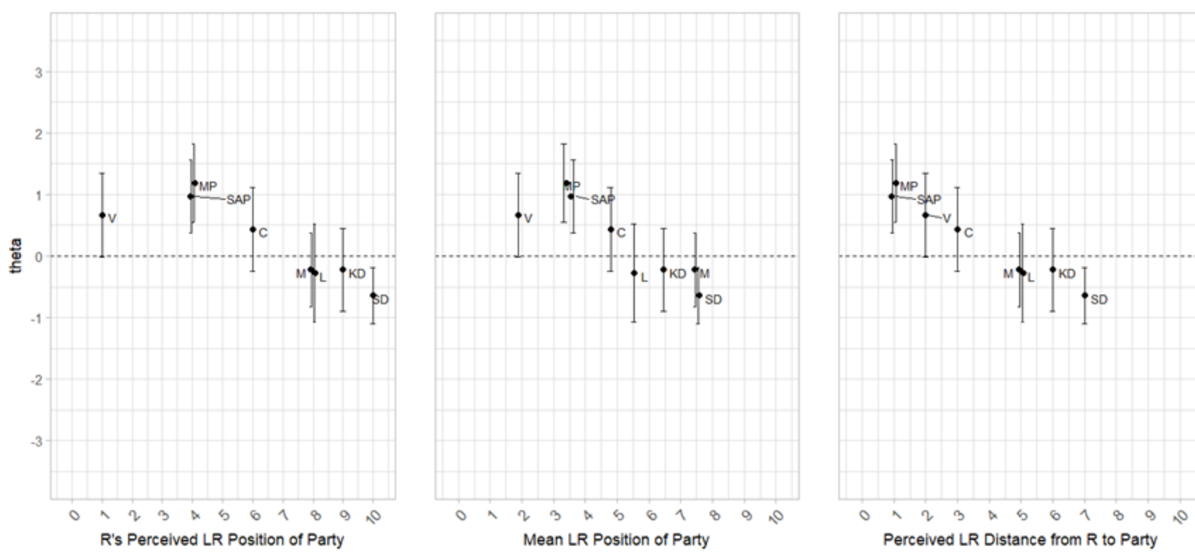


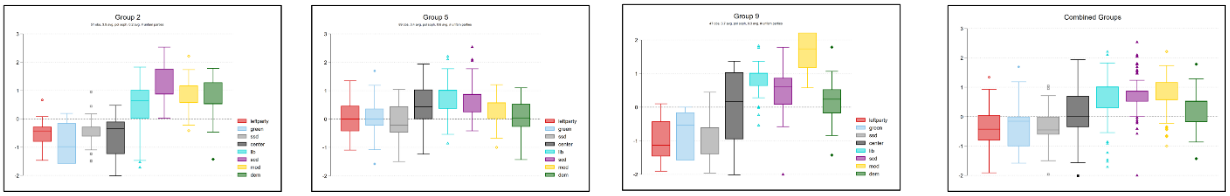
Figure B4: Example of a center-leftist partisan identifier



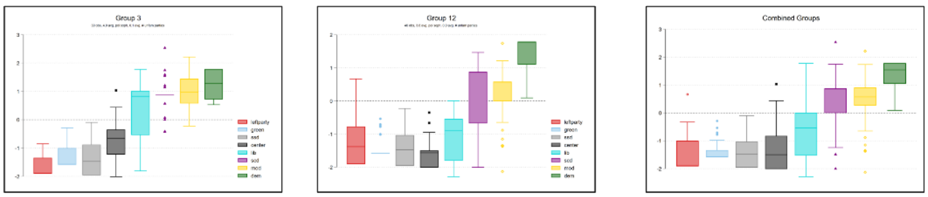
A symmetric set of respondent types is also apparent on the right. The thetas for respondents in the clusters capturing these types are graphed in Figure B4.

Figure B5: Clusters of rightist partisan identities

Rightist Identifiers (oriented toward the center): 187 respondents (19%)



Rightist Identifiers (oriented toward the extremes): 76 respondents (8%)



Figures B6 and B7 show examples of rightist voters in these clusters. In Figure B6, the voter has a strong positive attachment to the parties who are furthest to the right and strong negative attachments to all other centrist and leftist parties. In Figure B7, the voter is similar to the one shown in B6, but is an independent of parties they perceive as being centrist.

Figure B6: Example of a rightist partisan identifier

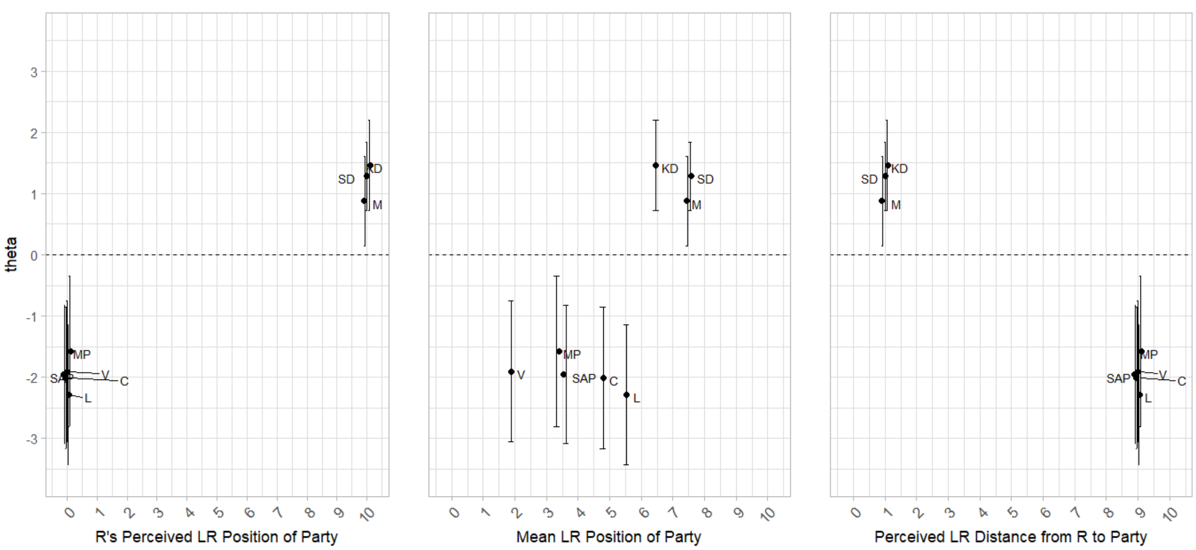
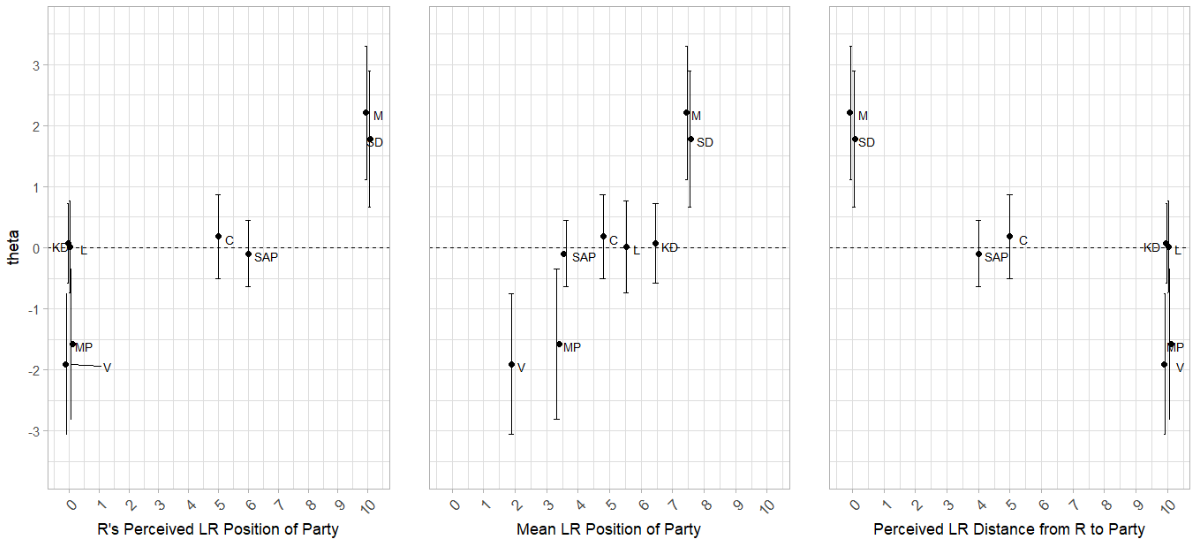


Figure B7: Example of a rightist partisan identifier



The clustering algorithm picks out groups of similar thetas that, *ex post*, we can confidently describe as consisting of leftists or rightists. Further, we saw the same two varieties of such "block partisans": those who more strongly identify with more extreme parties (on their side of the left-right divide) and those who identify more strongly with the more center parties on their side.

In addition, looking more closely at the estimates one can identify some other relevant, if subtler, ways in which respondents' patterns of partisan attachment differ from each other. For example, different leftists include different center parties in the block to which they are attached. Some leftists have positive attachments to all the leftist parties and neither the Center Party nor the Liberals. Other broadly attached leftists include one or both of these parties in their affections. Likewise, respondents who are positively attached to the parties on the left (right) differ a lot in the extent to which they are simultaneously negatively attached to the parties on the right (left). With one exception, each type of partisan described in the figures (i.e., leftists and rightists oriented to the center or extremes) includes clusters in which respondents are fairly indifferent to parties on the other side, as well as ones negatively attached to these parties. The one exception is the rightists oriented toward the extreme, for which there is no significant group of these respondents who are also not negatively attached to the parties of the left.

Besides broad leftists and rightists respondents (attached to multiple parties), we also find a set of centrist identifiers that are positively attached to the Center Party and/or the Liberals but whose attachments fall off to both sides of the center, as shown in Figure B8. An example is given in Figure B9, which shows a centrist idenfier who is most positively attached to the Centre Party and increasingly negatively attached to parties as they move towards the extremes.

Figure B8: Clusters of centrist partisan identities

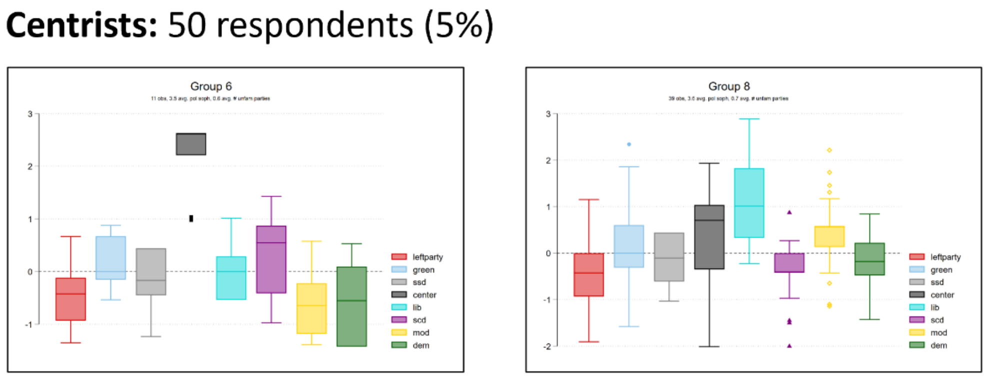
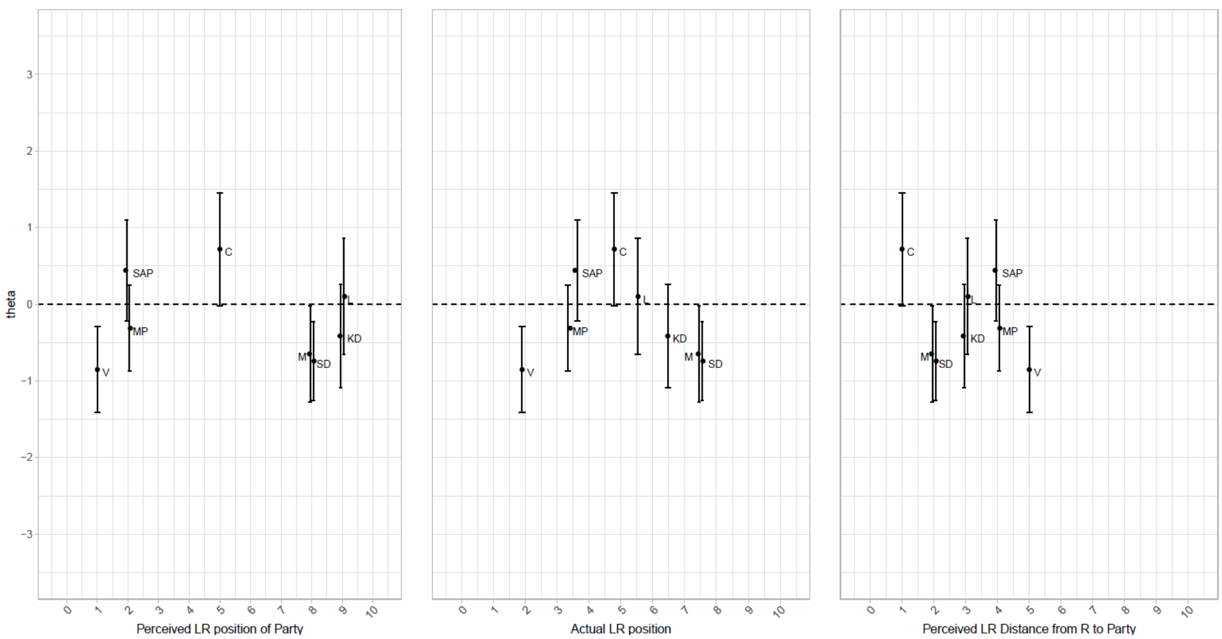


Figure B9: Example of a centrist partisan identifier



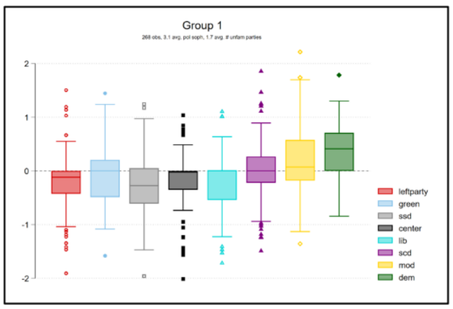
It is also worth noting that while some of these respondents negatively identify with the most extreme parties on both sides, there is much less negative attachment in general among these centrists, suggesting that respondents with strong positive attachments (only) for centrist parties do not develop strong negative attachments to the main left and right parties. This is consistent with the theoretical intuition discussed above, that shared positive partisan identities (and the absence of negative identities) will be strongest among parties who respondents see as allies and cooperative partners. Since the center parties in Sweden do often cooperate across the left-right divide (supporting minority cabinets on the left and supporting or joining cabinets on the right) this may impede development, among these respondents, of strong negative attachments to the other parties.

We see something similar if we look back at the leftist and rightist who were more oriented toward the center. Comparing the combined panel for the center-oriented to the more extreme oriented partisans, there is clearly less negative attachment on the right (left) among the more center oriented leftist (rightist) than there is among the more extreme oriented.

Finally, we have one other important group, which is those who mostly do not identify with any party, or perhaps with a single party.[21] This cluster also includes respondents with some rightist identification, so it may account for some of the asymmetry in the number of left and right identifiers in the graphs above.

Figure B10: Clusters of non-partisan identities

Non-Identifiers: 268 respondents (28%)



The analyses above provide a valuable assessment of the extent to which multi-party PSI is structured by left-right ideology. The results suggest that the left-right dimension in multi-party democracies plays an important role in structuring multiple party attachments and that a number of sensible voter types can be identified with our estimated θ_i vectors. These include both center and extremist oriented general leftists and rightist, pure centrists, and non-partisans.[22] Further, this analysis adds that of the last section by identifying that our partisan attachment vectors describe a set of coherent voter types that are structured not only by how the voters place the parties on the left-right, but also their attraction to parties that are more or less extreme.

[21] It's important to note that a clustering algorithm like the one we use here is not going to do well distinguishing between a vector of thetas that are all 0 and a vector that are all 0, except for one. So, it is likely that some of the cases assigned to this cluster are one-party identifiers.

[22] Several additional clusters of respondents (of our 20) are not presented above. These include a few respondents who gave very strong negative answers for all parties, as well as small clusters of respondents who only have one strong positive identification.

Appendix C: Comparing patterns of multi-party identity

C.1 Comparing the single party measure of PID and the statistical significance of the corresponding estimate of θ_{ij}

Here, we provide the additional figures from Section 4.1 (Figure 9) for each country. As shown by Figures C1-C4, we can see that the consistency between single-party ID and our measure holds in each country. The only exception comes from the UK, where Labour, the Liberal Democrats, and Plaid Cymru do not match the other parties. For Plaid Cymru, there are very few traditional partisans of the in our sample since it is only active in Wales. For Labour and the Lib Dems, this might be an after-effect of the massive defeat suffered by the Conservatives, where people switched their PID answer due to short-term dissatisfaction with the party.

Figure C1: Correspondence between traditional single party identification with a given party in Denmark and the significance of theta for that party.

Alternative	Theta ~sig.	Theta sig.
Trad. non-partisan	75%	25%
Trad. partisan	0%	100%

Conservative People's Party	Theta ~sig.	Theta sig.
Trad. non-partisan	77%	23%
Trad. partisan	10%	90%

Christian Dems	Theta ~sig.	Theta sig.
Trad. non-partisan	82%	18%
Trad. partisan	33%	67%

Danish People's Party	Theta ~sig.	Theta sig.
Trad. non-partisan	71%	29%
Trad. partisan	22%	78%

Soc Dems	Theta ~sig.	Theta sig.
Trad. non-partisan	75%	25%
Trad. partisan	19%	81%

Unity List	Theta ~sig.	Theta sig.
Trad. non-partisan	78%	22%
Trad. partisan	9%	91%

Liberal Alliance	Theta ~sig.	Theta sig.
Trad. non-partisan	75%	25%
Trad. partisan	33%	67%

New Right	Theta ~sig.	Theta sig.
Trad. non-partisan	78%	22%
Trad. partisan	5%	95%

Social Liberal Party	Theta ~sig.	Theta sig.
Trad. non-partisan	77%	23%
Trad. partisan	27%	73%

Socialist People's Party	Theta ~sig.	Theta sig.
Trad. non-partisan	73%	27%
Trad. partisan	17%	83%

Venstre	Theta ~sig.	Theta sig.
Trad. non-partisan	74%	26%
Trad. partisan	15%	85%

Figure C2: Correspondence between traditional single party identification with a given party in Italy and the significance of theta for that party.

Forza Italia	Theta ∼sig.	Theta sig.
Trad. non-partisan	69%	30%
Trad. partisan	15%	84%

Fratelli d'Italia	Theta ∼sig.	Theta sig.
Trad. non-partisan	73%	27%
Trad. partisan	10%	90%

Italia Viva	Theta ∼sig.	Theta sig.
Trad. non-partisan	78%	22%
Trad. partisan	0%	100%

Movimento 5 Stelle	Theta ∼sig.	Theta sig.
Trad. non-partisan	76%	24%
Trad. partisan	11%	89%

Lega	Theta ∼sig.	Theta sig.
Trad. non-partisan	73%	27%
Trad. partisan	2%	98%

Partito Democratico	Theta ∼sig.	Theta sig.
Trad. non-partisan	75%	25%
Trad. partisan	12%	88%

Figure C3: Correspondence between traditional single party identification with a given party in the Netherlands and the significance of theta for that party.

CDA	Theta ∼sig.	Theta sig.
Trad. non-partisan	74%	26%
Trad. partisan	30%	70%

CU	Theta ∼sig.	Theta sig.
Trad. non-partisan	76%	24%
Trad. partisan	0%	100%

D66	Theta ∼sig.	Theta sig.
Trad. non-partisan	73%	27%
Trad. partisan	18%	82%

FvD	Theta ∼sig.	Theta sig.
Trad. non-partisan	71%	29%
Trad. partisan	0%	100%

GL	Theta ∼sig.	Theta sig.
Trad. non-partisan	69%	31%
Trad. partisan	15%	85%

PvdA	Theta ∼sig.	Theta sig.
Trad. non-partisan	71%	29%
Trad. partisan	17%	83%

PvdD	Theta ∼sig.	Theta sig.
Trad. non-partisan	86%	14%
Trad. partisan	29%	71%

PVV	Theta ∼sig.	Theta sig.
Trad. non-partisan	75%	25%
Trad. partisan	16%	84%

SP	Theta ∼sig.	Theta sig.
Trad. non-partisan	71%	29%
Trad. partisan	7%	93%

VDD	Theta ∼sig.	Theta sig.
Trad. non-partisan	74%	26%
Trad. partisan	19%	81%

Figure C4: Correspondence between traditional single party identification with a given party in the UK and the significance of theta for that party.

Conservative	Theta ~sig.	Theta sig.
Trad. non-partisan	82%	18%
Trad. partisan	18%	82%

Green Party	Theta ~sig.	Theta sig.
Trad. non-partisan	87%	13%
Trad. partisan	22%	78%

Labour	Theta ~sig.	Theta sig.
Trad. non-partisan	92%	7%
Trad. partisan	44%	56%

Liberal Democrats	Theta ~sig.	Theta sig.
Trad. non-partisan	90%	11%
Trad. partisan	48%	42%

Plaid Cymru	Theta ~sig.	Theta sig.
Trad. non-partisan	82%	18%
Trad. partisan	88%	13%

Reform UK	Theta ~sig.	Theta sig.
Trad. non-partisan	75%	25%
Trad. partisan	9%	91%

SNP	Theta ~sig.	Theta sig.
Trad. non-partisan	78%	22%
Trad. partisan	17%	83%

Now, we provide the tables for each country from Section 4.2 for Table 6. In Tables C1-C4, we show the same basic findings in the other countries as we do in Denmark, with the exception of the UK where we expect (and find) less multi-party identity. Across all these countries, we find that a great many traditional, single-party partisans have more than one partisan identity in our data, while rates of multi-party partisanship among traditional independents I much lower. we find less multi-party identity among traditional non-partisans.

Table C1: Correspondence between traditionally measured independence and single-party partisanship and independence, single-party partisanship, and multi-party partisanship in Italy

Number of θ_{ij}^{+} that are statistically different from zero

	0	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
Trad. Partisan	21.2%	21.7%	24.8%	22.5%	6.4%	2.2%	1.3%	100%
	194	199	227	206	59	20	12	917
Trad. Independent	59.2%	15.2%	9.4%	10.3%	2.7%	1.8%	1.3%	100%
	132	34	21	23	6	4	3	223

Table C2: Correspondence between traditionally measured independence and single-party partisanship and independence, single-party partisanship, and multi-party partisanship in the Netherlands

Number of θ_{ij}^{+} that are statistically different from zero

	0	1	2	3	4	5	6	7	8	9	Total
Trad. Partisan	16.5%	34.1%	21.4%	15.7%	7.7%	3.3%	0.7%	0.6%	0.0%	0.1%	100%
	141	292	183	134	66	28	6	5	0	1	856
Trad. Independent	47.7%	26.5%	11.9%	7.3%	2.6%	2.0%	1.3%	0.7%	0.0%	0.0%	100%
	72	40	18	11	4	3	2	1	0	0	151

Table C3: Correspondence between traditionally measured independence and single-party partisanship and independence, single-party partisanship, and multi-party partisanship in Sweden

Number of θ_{ij}^{+} that are statistically different from zero

	0	1	2	3	4	5	6	7	8	Total
Trad. Partisan	13.1%	23.8%	27.3%	20.4%	10.7%	3.4%	1.1%	0.0%	0.2%	100%
	119	217	248	186	97	31	10	0	2	910
Trad. Independent	41.2%	20.6%	12.4%	14.4%	7.2%	3.1%	1.0%	0.0%	0.0%	100%
	40	20	12	14	7	3	1	0	0	97

Table C4: Correspondence between traditionally measured independence and single-party partisanship and independence, single-party partisanship, and multi-party partisanship in the UK

Number of θ_{ij}^{+} that are statistically different from zero

	0	1	2	3	4	5	6	7	Total
Trad. Partisan	31.1%	38.5%	18.3%	6.9%	2.0%	1.2%	0.7%	1.3%	100%
	316	391	186	70	20	12	7	13	1015
Trad. Independent	62.0%	28.2%	8.0%	1.8%	0.0%	0.0%	0.0%	0.0%	100%
	101	46	13	3	0	0	0	0	163

C.2 Patterns of co-partisan Identity

In this section, we begin by describing the procedure we used to create our measure of positive co-partisanship. We then provide the results found in Section 4.3.1 for the other countries.

As mentioned in the main text, we start to build our co-partisanship measure by taking all of the 2-dimensional sub-vectors from each respondent's partisanship vector to create party-dyads. We then calculate the magnitude of these sub-vectors, which is represented for parties j and k as $||\overrightarrow{\boldsymbol{\theta}^{+}}_{i(jk)}||$. Next, we calculate the angle of the vector $\lambda_{i(jk)}$ by taking its arctangent, which we then convert from radians to degrees. With the angle in hand, we apply a formula which transforms the angle into a number between 0 and 1, where 1 is a 45-degree angle and 0 is a 0- or 90-degree angle. This formula is $1 - (abs(\lambda_{i(jk)} - 45)/45)$. Finally, we multiply the transformed angle by the magnitude of the vector to get our measure of co-partisanship.

Tables C5 - C8 show the results from the analysis from Section 4.3.1 for each country. We see the same basic patterns in each country, to varying extents.

Table C5: Proportion of positive co-partisans for pairs of parties in Denmark

	EL	SF	ALT	RV	SD	KD	V	LA	DKF	DF	NB
	3.20	3.76	3.94	4.46	4.8	5.31	6.02	6.35	6.38	6.84	7.05
EL		8.4%	15.1%	9.3%	6.7%	**3.7%**	**2.0%**	**3.2%**	**0.6%**	**3.2%**	**2.7%**
SF			5.1%	3.8%	4.1%	**1.4%**	**0.6%**	**1.1%**	**0.6%**	**1.3%**	**0.7%**
ALT				7.6%	5.1%		**2.7%**		**2.2%**	**3.0%**	**3.8%**
RV					3.6%	**5.5%**	**3.4%**	**5.6%**	**2.5%**	**2.7%**	**3.2%**
SD						**2.9%**	**1.1%**	**1.9%**	**0.8%**	**3.0%**	**1.5%**
KD							3.7%		3.2%	1.4%	3.5%
V								10.4%	7.3%	9.0%	8.6%
LA									8.5%	8.8%	10.4%
DKF										6.4%	6.5%
DF											16.1%

Cell entries are the proportion of respondents who had a statistically significant theta (applying a Holm correction for multiple comparisons) for both the row and column party. The bolded numbers in the bolded border are for party dyads that cross the center of the LR scale (based on average perceived party placements, which are the numbers in the second row of the column titles). This table uses θ_i^+, which sets all negative values of θ_i to zero. Cells are blank for party-pairs which contain two parties that were randomly assigned, so the respondent did not see both parties.

Table C6: Proportion of positive co-partisans for pairs of parties in Italy

	PD	M5S	IV	FI	FdI	Lega
	3.12	3.97	4.59	7.05	7.64	7.65
PD		13.0%	9.4%	**5.5%**	**4.6%**	**4.4%**
M5S			7.8%	**7.8%**	**7.0%**	**7.4%**
IV				**7.9%**	**7.9%**	**8.0%**
FI					22.5%	22.0%
FdI						24.0%

Cell entries are the proportion of respondents who had a statistically significant theta (applying a Holm correction for multiple comparisons) for both the row and column party. The bolded numbers in the bolded border are for party dyads that cross the center of the LR scale (based on average perceived party placements, which are the numbers in the second row of the column titles). This table uses θ_i^+, which sets all negative values of θ_i to zero.

Table C7: Proportion of positive co-partisans for pairs of parties in the Netherlands

	GL	SP	PvdD	PvdA	D66	CU	CDA	VVD	FvD	PVV
	3.20	3.76	3.94	4.46	4.80	5.31	6.02	6.35	6.38	6.84
GL		4.2%	4.8%	4.9%	6.5%	**2.3%**	**3.1%**	**2.6%**	**2.5%**	**1.9%**
SP			4.9%	3.9%	4.5%	**2.3%**	**2.7%**	**2.0%**	**2.1%**	**2.7%**
PvdD				2.6%	5.2%	**3.5%**	**3.0%**	**3.1%**	**3.5%**	**3.8%**
PvdA					5.6%	**2.6%**	**2.9%**	**2.3%**	**1.9%**	**1.5%**
D66						**8.9%**	**9.8%**	**11.6%**	**4.5%**	**4.1%**
CU							11.1%	8.2%		5.5%
CDA								11.4%	4.5%	5.6%
VVD									4.4%	8.3%
FvD										13.0%

Cell entries are the proportion of respondents who had a statistically significant theta (applying a Holm correction for multiple comparisons) for both the row and column party. The bolded numbers in the bolded border are for party dyads that cross the center of the LR scale (based on average perceived party placements, which are the numbers in the second row of the column titles). This table uses θ_i^+, which sets all negative values of θ_i to zero. Cells are blank for party-pairs which contain two parties that were randomly assigned, so the respondent did not see both parties.

Table C8: Proportion of positive co-partisans for pairs of parties in the UK

	GPEW	Plaid	Labour	SNP	Lib Dems	Con	Reform
	3.80	3.86	4.11	4.11	4.42	6.40	6.40
GPEW		3.2%	4.8%	5.1%	3.8%	**2.5%**	**3.0%**
Plaid			3.2%	4.2%	8.2%	**2.5%**	**1.2%**
Labour				8.0%	4.8%	**3.3%**	**3.8%**
SNP					4.5%	**4.6%**	**5.7%**
Lib Dems						3.3%	3.0%
Con							9.1%

Cell entries are the proportion of respondents who had a statistically significant theta (applying a Holm correction for multiple comparisons) for both the row and column party. The bolded numbers in the bolded border are for party dyads that cross the center of the LR scale (based on average perceived party placements, which are the numbers in the second row of the column titles). This table uses θ_i^+, which sets all negative values of θ_i to zero.

C.3 When out measure identifies a different party than traditional PID as the one to which a respondent is most identified, is the traditionally identified party close to the top?

One drawback of the analysis which examines the correspondence between traditional PID and multi-party PID is that it only asks if we estimate a significant theta for the same party that the traditional one does but does not tell us if our estimate of theta for that party is the largest theta we estimate for that voter. To do that we need to ask how often each of our respondents' largest (most positive) estimated theta is for the same party as their traditional PID. Further, when it is not, is the theta for the party of their traditional PID very close to the largest theta?

Define each respondent's "top set" of θ_{ij}'s as all of her estimated θ_{ij}'s that are within some small distance from her maximum positive θ_{ij}. With this, we can examine what percentage of the parties to which our traditional partisans are (traditionally) attached are in this top set? Finally, because it is likely that the correspondence between traditional PID and our highest (or close to highest) thetas will be different for different strengths of attachment, we present our results separately for $\theta_{ij} > 1$ and $\theta_{ij} > 2$.

Table C9, provides this information from all countries and parties (except in the UK) together for a top set defined as all θ_{ij}'s within a distance of .2 of i's maximum θ_{ij}. This distance is small relative to the standard deviation of all the positive thetas (0.57), as well as the average distance between each θ_{ij} and the maximum θ_{ij}'s for that respondent (0.62).[23]

Table C9: Proportion of traditional partisan i's secondary partisan attachments that are within 0.2 units of i's maximum θ_{ij}, by strength of traditional partisanship: for θ_{ij}'s > 2

Number of parties in R's top-set, including the party with the highest θ_{ij}	**PID = 1**	**PID = 2**	**PID = 3**	**Total**
1 (475 Rs, 90.3%)	87.3%	89.9%	89.5%	89.3%
2 (40 Rs, 7.6%)	71.4%	88.2%	81.3%	82.5%
3 (8 Rs, 1.5%)	0.0%	50.0%	75.0%	62.5%

PID > 0 are increasingly strong ***traditional*** *partisans.*

Table C9 shows that that for 90% of traditional partisans who are also strong partisans by our measure (with a top theta > .2), there is only one party in their top set, and that for ~90% of those respondents, that party is both the party identified by the traditional measure and the one we estimate as the highest theta. In another 8% of cases there are 2 parties in the top set and in 83% of those cases, the party identified as the traditional target of their PID is in that set of 2.

Table C10 shows that the same pattern of results holds when we include weaker partisans (i.e., θ_{ij} >1) as well. Taken together, these results confirm that when we estimate a theta that is relatively large for a respondent who has also identified a party in the traditional PID question, this is almost always the same party – and when it is not, our estimate of θ_{ij} for the traditional PID party is usually quite close to the maximal one.

[23] Those results are for $\theta_{ij} > 0$, which is the relevant set of thetas here. Also note that we obtain substantively similar results when we decrease this distance to as little as .05.

Table C10: % of the parties of traditional partisans that are within 0.2 units of i's maximum θ_{ij} by strength of traditional partisanship: θ_{ij}'s > 1

Number of parties in R's top set, including the party with the highest θ_{ij}	PID = 1	PID = 2	PID = 3	Total
1 (1641 Rs, 81.7%)	76.9%	78.7%	85.6%	80.7%
2 (280 Rs, 13.9%)	62.4%	65.1%	75.4%	66.8%
3 (72 Rs, 3.6%)	63.0%	48.4%	85.7%	61.1%

*PID > 0 are increasingly strong **traditional** partisans.*

C.4 Overall Levels of partisanship across countries

In Table C11, we show the average levels of total partisanship in each country. We calculate this by taking the Euclidean norm of the partisanship vector, which represents its length, or magnitude. Since respondents in each country do not have the same number of parties in their "vectors," we normalize the norms by dividing them by the square root of the number of dimensions (parties) of the vector. We take the average of the vector lengths to describe total partisanship for each country. The first column is positive partisans only, the second is negative, and the third is all.

Table C11: Average total partisanship for each country

	Mean Pos. Vector Length	Mean Negative Vector Length	Full Vector Length
Denmark	0.54	0.50	0.78
Italy	0.52	0.48	0.79
Netherlands	0.54	0.50	0.79
Sweden	0.57	0.53	0.83
UK	0.49	0.47	0.74
Total	0.53	0.50	0.79

Looking at this table, we can see that the UK has less total partisanship overall, which we expected. Sweden has a greater amount of total partisanship compared to the other countries. In addition, positive partisanship appears to be stronger than negative partisanship, on average.

Appendix D: Additional analyses and information for empirical tests

D.1 Additional demonstrations that our estimates of θ_I produce evidence of motivated reasoning

Another way we can assess motivated reasoning is by examining how individuals place themselves on the left-right, relative to the placements of the parties. Nasr (2021), for example, uses party like/dislike scales to show that, on average, voters perceive themselves as ideologically closer (on the left-right scale) to parties that they like and more distant from parties they dislike. If our measure is measuring PSI, then we should also be able to use it to replicate this finding (replacing like/dislike ratings of the parties with our estimates of θ_i). We follow Nasr's operationalization of perceived ideological distance as being the absolute difference between a respondent's LR self-placement and their LR placement of a given party. Similarly, actual ideological distance is measured as the absolute difference between a respondent's LR self-placement and the mean LR placement of a given party across the whole sample.

Table D1 shows the results from two linear regressions with individual- and party-level random effects. Column (1) shows that as our measure of a respondent's PSI with a party gets bigger, perceived ideological distance shrinks, which suggests that individuals with a stronger positive attachment to a party see themselves as more ideologically proximate to that party. Likewise, individuals with a stronger negative attachment see themselves as less ideologically proximate. Further, this relationship still holds when we control for the actual ideological distance between an individual and a given party. With this, we are able to replicate Nasr's findings, which provides further evidence that our measure is able to come to the same conclusions about partisan motivated reasoning.

Table D1: Perceived ideological distance (to party j) and partisan social identity

	(1)	(2)	(3)
Theta	-1.558^{***}	-1.127^{***}	-1.102^{***}
	(0.012)	(0.011)	(0.012)
Actual Distance		0.701^{***}	0.694^{***}
		(0.006)	(0.006)
R's Pol. Soph. Score			0.180^{***}
			(0.019)
Theta * R's Pol. Soph. Score			-0.096^{***}
			(0.014)
Intercept	3.323^{***}	1.486^{***}	1.503^{***}
	(0.053)	(0.043)	(0.043)
Observations	44,254	44,254	44,253

Note: *p<0.1; **p<0.05; ***p<0.01

D.2 Details of the Individual level analysis of the sources of co-partisanship at the party dyad level using data from surveys in Denmark 2019, 2021

The analysis in Section 4.3.2 in the main text uses data at the party dyad level for Denmark from two surveys. The first is the survey we fielded in late 2021-early 2022 that is described in the text and from which we can calculate measures of average levels of co-partisanship (across respondents) for each of the 45 Danish party dyads. The second is a survey that several of the authors commissioned in Denmark in 2019. While this survey did not include our multi-party attachment batteries, it did ask respondents their perceptions of the Danish parties' policy positions on nine prominent issue dimensions, as well as five broader values dimensions. It also asked respondents to rate the extent to which each pair of Danish parties tended to cooperate with one another, and whether or not sixteen different social groups tended to support or oppose each party.

Respondents were asked to place parties of nine policy and five value dimensions. The specific policy/value areas are economic inequality, cultural diversity, the civil rights versus national security tradeoff, the state's role in managing the economy, gender equality, taxation and public services, pensions, immigration, financial market regulation, the legalization of cannabis, public surveillance, military spending, renewable energy, and cooperation with the EU. Using these placements, we created an overall measure of the policy distance between each pair of parties as the Euclidean distance between the parties in this 14-dimensional space.

Table D2 provides these distances, expressed as the percentage of the maximum distance across all party dyads, and we can immediately see that the measure produces the patterns we would expect. For example, the largest policy/values distance between two parties is between the eco-socialist Enhedslisten (enh) and the far-right Nye Borgerlige (nb). Likewise, the two closest parties on the left are the Socialist People's Party (spp) and the green-leftist party, The Alternative (alt), and on the right the center right Conservative People's Party (cpp) and Vestre (ven).

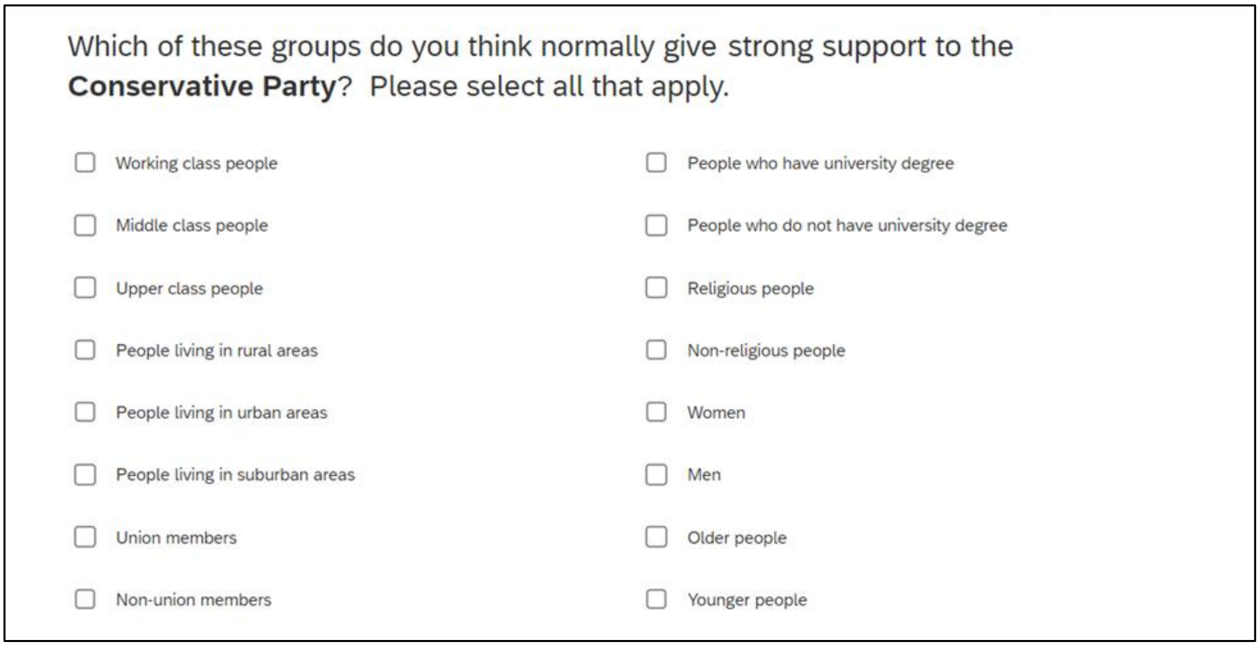
Table D2: Extent of policy and values dissimilarity for party dyads in Denmark (2019)

	enh	spp	alt	sdp	rad	ven	lib	cpp	dpp	nb
enh		0.16	0.18	0.43	0.43	0.90	0.90	0.93	0.92	1.00
spp			0.13	0.27	0.30	0.76	0.77	0.79	0.77	0.86
alt				0.33	0.28	0.75	0.74	0.78	0.80	0.85
sdp					0.22	0.53	0.59	0.56	0.54	0.63
rad						0.49	0.49	0.52	0.59	0.61
ven							0.19	0.07	0.28	0.16
lib								0.22	0.41	0.24
cpp									0.27	0.16
dpp										0.23
	2.24	3.15	3.51	4.29	4.30	6.12	6.52	6.56	7.04	7.38

Larger cell values indicate more dissimilarity in the perceived policy and value positions of the party dyads – specifically, the Euclidean distance between the indicated parties, expressed as the percentage of the maximum distance across all *dyads. Cells are colored so that darker green colors are more SIMILARITY (so less dissimilarity and smaller numbers). Data is from an original survey fielded by (some of) the authors in 2019. The number at the bottom of the table are the average perceived left-right party positions from the same survey.*

Similarly, in the 2019 survey we asked respondents which social groups they thought tended to support which parties. Specifically, they saw the (Danish version) of the question, as shown in Figure D1.

Figure D1: Example of Survey Questionnaire for Social Group Attributes (British Example)


Which of these groups do you think normally give strong support to the **Conservative Party**? Please select all that apply.

- ☐ Working class people
- ☐ Middle class people
- ☐ Upper class people
- ☐ People living in rural areas
- ☐ People living in urban areas
- ☐ People living in suburban areas
- ☐ Union members
- ☐ Non-union members
- ☐ People who have university degree
- ☐ People who do not have university degree
- ☐ Religious people
- ☐ Non-religious people
- ☐ Women
- ☐ Men
- ☐ Older people
- ☐ Younger people

Thus, if a respondent chooses "working class people" in this question, we code them as perceiving that the Conservative Party gets strong support among working-class individuals. Conversely, if they do not choose "working class people," it indicates that they see the Conservative Party as not having strong support from this demographic group.

When we aggregate these data to the party level, we get, for each party, the percentage of our respondents who thought the group strongly supported the party. Thus, these 16 percentages, directly analogous with our discussion of policy/values above, are a point (for each party) in 16-dimensional space and we can thus calculate the perceived dissimilarity in any two parties' social group support as the Euclidean distance between them. Table D3 provides these distances, expressed as the percentage of the maximum distance across all party dyads.

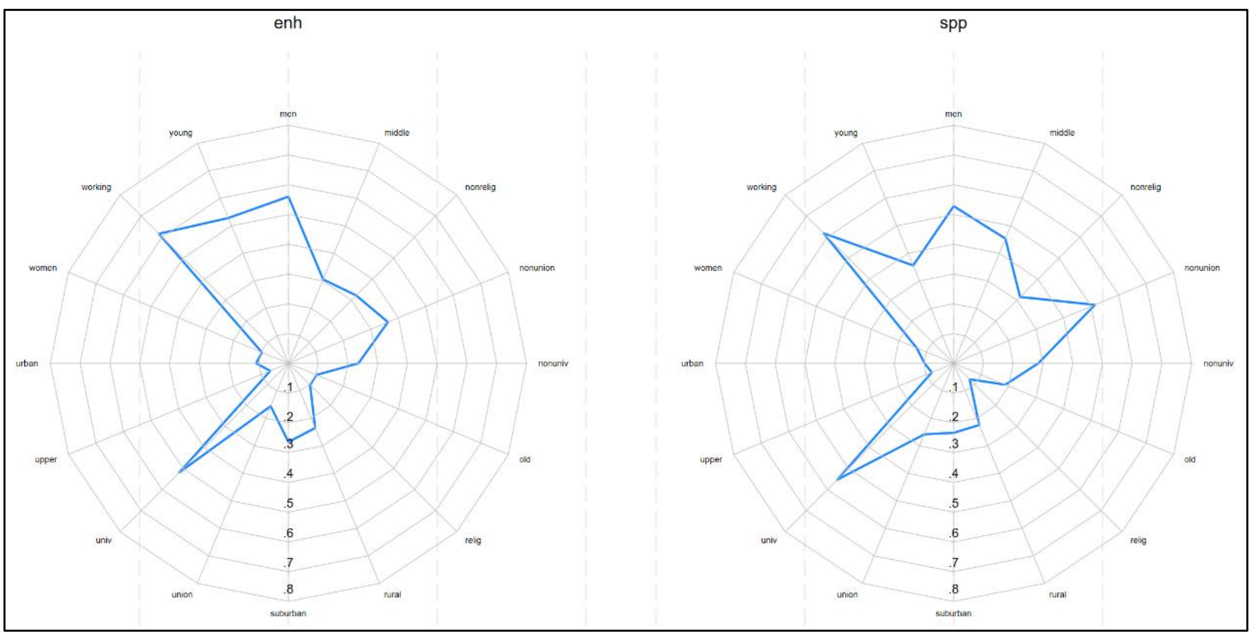
Table D3: Extent of dissimilarity in perceived social group support for party dyads in Denmark (2019)

	enh	spp	alt	sdp	rad	ven	lib	cpp	dpp	nb
enh		0.26	0.36	0.61	0.56	0.97	0.77	0.96	0.87	0.69
spp			0.48	0.40	0.52	0.89	0.78	0.90	0.78	0.67
alt				0.82	0.38	0.83	0.53	0.79	0.86	0.53
sdp					0.76	0.93	1.00	1.00	0.72	0.82
rad						0.64	0.42	0.59	0.80	0.49
ven							0.56	0.40	0.57	0.48
lib								0.42	0.85	0.41
cpp									0.70	0.44
dpp										0.50
	2.24	3.15	3.51	4.29	4.30	6.12	6.52	6.56	7.04	7.38

Cell numbers run from 0 to 1, with a 1 meaning the most dissimilarity in the perceived social group support across all party dyads and numbers less than one indicating the percentage of that highest dissimilarity reached by the pair. Cells are colored so that darker green colors are more SIMILARITY (so less dissimilarity and smaller numbers). Data is from an original survey fielded by (some of) the authors in 2019. The number at the bottom of the table are the average perceived left-right party positions from the same survey.

Again, we see some sensible patterns in this table. To take one illustrative example, it tells us that the far-left Socialist People's Party and Enhedslisten draw from very much the same social groups. We can see this in more detail, in Figure D2, by looking at the percentage of respondents to our 2019 Danish survey who told us that each social group supported these two parties.

Figure D2: Perceived social group support for the Socialist People's Party and Enhedslisten, Denmark (2019)



Clearly, the distribution of perceived social group support is quite similar for these two parties and should make sense to observers of Danish politics: the perceived supporters of both parties tend to be university educated, young working (vs. middle or upper) class men.

D.3 Partisan rationalization about the outcomes of elections

Table D4 shows the full results from Figure 18 in Section 5.2.3 in the main text. We can see that attachment to a party affects an individual's perception about the share of the vote that party received, which a greater effect for some parties compared to others.

Table D4: Do respondents perceive parties to which they are more closely attached as holding more seats in the legislature? 2024 UK Sample

θ_{ij}	2.38*
	(0.43)
GPEW	0.00
	(0.55)
Labour	0.00
	(0.55)
Lib Dems	0.00
	(0.55)
Plaid	0.00
	(0.55)
Reform UK	0.00
	(0.55)
SNP	0.00
	(0.55)
θ_{ij} * GPEW	−0.85
	(0.65)
θ_{ij} * Labour	1.45*
	(0.60)
θ_{ij} * Lib Dems	−0.84
	(0.62)
θ_{ij} * Plaid	−1.85*
	(0.73)
θ_{ij} * Reform UK	2.14*
	(0.64)
θ_{ij} * SNP	−0.47
	(0.66)
Intercept	0.00
	(0.39)
Observations	8,246
Adjusted R^2	0.03

The dependent variable is the difference between the respondent's perceived vote share for party j and the actual vote share for party j. The baseline party is the Conservative Party.

D.4 Participation Index from section 5.1.3

The index of political participation are factor scores from a 2-parameter logistic IRT model estimated on nine engagement items using the whole sample. It includes dichotomous responses to the question, “During the last 2 years, have you done any of the following? Have you… contacted a politician, government, or local government official? worked (paid or volunteer) for a political party or political action group? worn or displayed a campaign badge, sticker, sign, or poster? signed a petition? taken part in a lawful public demonstration? boycotted certain products for political reasons? posted or shared anything about politics online? donated money to a political campaign or cause? attended a political meeting or campaign event?

D.5 Performance index for UK from section 5.2.1

In our 2024 UK survey, we were able to include a number of questions probing respondents’ beliefs about the health of both the retrospective and prospective economy (covering retrospective and prospective growth, retrospective and prospective inflation, and retrospective and prospective unemployment) as well as retrospective and prospective crime (a particularly prominent issue in the UK at the time of our survey). Since the Labour government had come to power approximately six months before our survey was in the field, that was the time frame over which we asked the retrospective economic questions (6 months). We used the same timing for the prospective questions (but for the next six months). Scaling these eight questions (using IRT methods) produced a very strong unidimensional scale, which we used in the analysis, though one comes to the same conclusions from analyses of the individual questions making up the index or from a simple additive index.

D.6 Political sophistication index from section 5.2.4

We build our measure of political sophistication from four items about the respondent’s reported level of political interest, the percentage of the parties in the system that she recognized, her confidence that she can understand the political news, and the percentage of party dyads in her country that she could correctly put in left-right order. We first recoded variables so that higher numbers are those that indicate greater political sophistication, the rescaled the variables to range from 0 to 1 by dividing each by the maximum possible score for the variable. From this we first created a simple sum score, with a possible range of 0 to 4. Next, since we have a mix of continuous and discrete variables, we created an aggregate index using a polychoric factor analysis. The range of the factor score is -3 to 2.

The coding of political interest, confidence, and familiarity with the left-right in politics are respondent-level characteristics, so their coding is straight forward and described above. Two of our variables, however, are measured at the respondent-party level and so must be aggregated over respondents prior to building out index. This was done as follows:

The party familiarity variable was originally coded so that 1 = familiar, 5 = not at all familiar. To get a score for each respondent rather than each respondent-party, we first reverse coded the variable so that “5” means most familiar and the summed the scores over parties for each respondent. Further, since we had different numbers of parties, we divided this number by the maximum possible summed score for that country (i.e., if there were 8 parties, the max score for a given respondent was 8*5=40.

Each respondent placed each party on the left-right dimension and so we first made a dyadic version of this variable, so that each row in the data was a respondent-party dyad. With that we calculated the percentage of all party-dyads in a country that the respondent placed in the correct left-right order, where we took the “correct” position for each party (and therefore the correct order) to be the mean position across all respondents. These respondent level scores were then merged back into the respondent level data discussed above.

The scale properties for all countries combined and for each country individually were almost identical, so we used the former in the analysis reported in the main text. The combined scale, as well as each country specific scale, was strongly unidimensional (e.g., in the combined scale, the first eigenvalue is 15 times larger than the second) and has good scale properties (e.g., Cronbach’s alpha is .72 for the combined scale).

One comes to the same conclusions (in all the analyses that use this variable) if one substitutes a simple additive index.

D.7 Our measure of traditional PID (section 4.1)

Our version of the traditional PID question follows the scheme used in the CSES surveys. Specifically, we ask:

A. *Do you usually think of yourself as close to one of [your country’s] political parties? (which one)*
B. *Follow up to (A), If “yes”: Do you feel very close to [name of party], somewhat close, or not very close?*
C. *Follow up to (A), If “no”: OK, but do you feel a little closer to one of the political parties than the others? (which one)*

Respondents were coded 0 if they said *no* to (A) and (C), 1 if they responded *no* to (A) and *yes* to (C), 2 if they responded yes to (A) and “not very close” to (B), 3 if they responded yes to (A) and “somewhat close” to (B), 4 if they responded yes to (A) and “very close” to (B). This resulted in a scale from 0 to 4. However, since we had few cases with 2 (only 12 across 4 countries) and the theoretical rational for the ordering between 1 and 2 (given the questions) is weak, we collapsed these two categories for a scale that runs from 0 to 3.

In common with other measures of PID, the CSES question emphasizes self-categorization (i.e., “Do you think of yourself as…”), but because of the multi-party systems in which it is applied, it necessarily differs for other measures (like the ANES measure) in the target of the categorization. Instead of “do you think of yourself ***as a*** [party name],” we get “Do you think of yourself as close to one of…political parties?” Since the term “close” is undefined, the CSES question, on its face, allows for interpretations that are less focused on self-categorization and group belonging (e.g., is it psychological closeness? policy closeness?). As Carius-Munz (2020, p.55) concludes, "Most likely this question format is understood by respondents to refer to a strong sympathy for a party and nothing else. Yet for some individuals a strong sympathy could be connected with a positive cognitive evaluation of the party and its policies, while for others it may be a deeply grounded bond to the party and its core values. With both these interpretations of the question being possible, it cannot be determined *ex post* which one a survey participant had in mind when they provided the response." To put this another way, traditional questions are asked in a way that allow respondents to answer the question, as asked, by mixing their evaluations of parties (PPE) with their affective attachments to the parties (PSI). Thus, even if the traditional measure could give us the same amount of information about partisan attachments as our estimated θ_{ij}'s, it's not likely that the two measures are measuring the same thing for all respondents -- since our measure is built from a multi-item battery in which the items are aimed at measuring PSI specifically (even if, as we have emphasized, voters may nevertheless bring in evaluative elements).

In addition, the traditional CSES question only asks for the *one* party to which the respondent feels closest (so assigning a zero for the respondent's attachment to all other parties). So, even if we think the traditional measure taps the exact same concept as θ_{ij} (which it likely does not), we might still expect that estimates of the θ_{ij}'s will give us more information than traditionally measured PID.

Indeed, if we allow multiple PIDs exist, we have to consider what a respondent would say in answer to the traditional CSES type questions if they are equally "close" to more than one political party. It is certainly possible that some of these kinds of voters would answer "no" in this situation (or perhaps choose one of the parties they are equally close to but indicate less strong attachment to it?).

D.8 Creating a proxy of θ_{ij} using existing survey measures

Since our measure of multi-party identity comes from a battery of items that have seldom been asked in previous surveys, in this section we explore the usefulness of a proxy measure that can be constructed from items available in the Comparative Study of Electoral Systems (CSES) surveys. These questions are asked at the respondent-party level and include: the traditional PID question, party feeling thermometers, and the respondent's perceived LR distance from each party. Vote choice is also available and could be used, but we do not include it in our proxy measure because it only marginally improves the estimates built from the other variables and because many researchers will want to use that variable in some other way (often aa a DV). To create our proxy measure and compare it to the estimates of θ_{ij} that we used in this Element, we included in all of our surveys questions that mirrored the three questions from the CSES above (we also included other measures sometimes used in cross-national surveys like the probability one would ever vote for a given party (PTV) and those are helpful if available, but because they are not in the CSES we do not include them here).

The first step is to use IRT methods to scale answers on the three questions above for each party. As we did in section A.3.2.3, we can summarize the reliability of these scales with their marginal reliability and interpret the size of that statistic as we would a Cronbach's alpha. We do that in Table D5 below:

Table D5: Marginal Reliabilities of party proxy scales

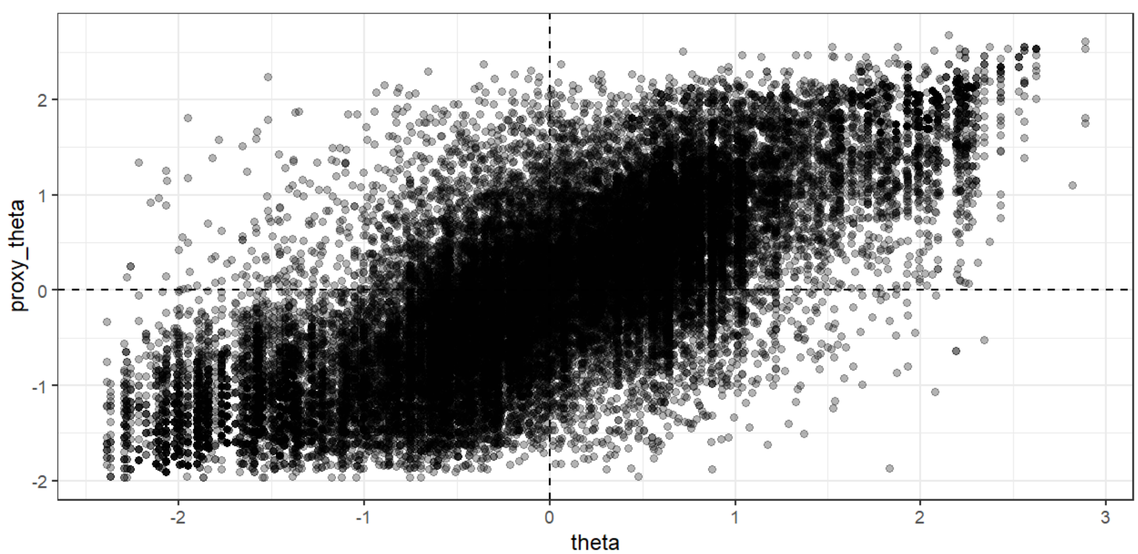
Denmark		Italy		Netherlands		Sweden		United Kingdom	
Party	MR	Party	MR	Party	MR	Party	MR	Party	MR
Alternative*	0.756	Brothers of Italy	0.828	CDA	0.801	Centre Party	0.795	Conservative	0.869
Chr. Democrats*	0.851	Democratic Party	0.854	CU*	0.681	Chr. Democrats	0.828	Green Party	0.851
Con. People's Party	0.851	Five Star Movement	0.841	D66	0.840	Green Party	0.776	Labour	0.848
Danish People's Party	0.822	Forza Italia	0.805	FvD*	0.744	Left Party	0.859	Liberal Democrats	0.853
Social Liberal Party	0.718	Italia Viva	0.671	GL	0.806	Liberals	0.740	Plaid Cymru	0.740
Liberal Alliance*	0.745	Lega	0.790	PvdA	0.832	Moderate Party	0.856	Reform UK	0.851
The New Right	0.824			PVV	0.836	Social Democrats	0.862	SNP	0.795
Red-Green Alliance	0.849			PvdD	0.800	Sweden Democrats	0.810		
Social Democrats	0.838			VVD	0.855				
Socialist People's Party	0.831			SP	0.849				
Venstre	0.842								

Questions about parties with an "*" were only asked to about 1/3 of the respondents compared to other parties.

In addition, we can examine the total information functions for each of these party attachment scores, which we do not present here but that show good coverage across the scale for each party. Likewise, analyses similar to those in section A.3.2.3 show the scale is unidimensional and is measuring the same thing across parties.

This IRT for the proxy variables produce estimated party attachments for each of our respondents that can be directly compared to those we get using our attachment battery. Figure D3 provides the relevant comparison.

Figure D3: Scatterplot of our direct measure against the CSES proxy



Clearly, there is a strong positive relationship between theta (our measure) and our proxy for it and the r-squared for the relevant bivariate regression is 0.58. The only important deviation from the linear relationship between these measures is that the proxy does a worse job differentiating respondents who are either strong positive or negative partisans and so the range of that scale is compressed relative to the direct measure. One can see this in the greater number of cases above vs. below the 45-degree line on the bottom left side of the graph and the greater number of cases below vs. above the 45-degree line on the upper right side of the graph. This makes sense, given that, after our pre-test revealed the need for it, we specifically included an item in our direct measure with somewhat extreme answer categories (e.g., "love" and "hate") to capture differences between such extreme and less extreme partisans.[24]

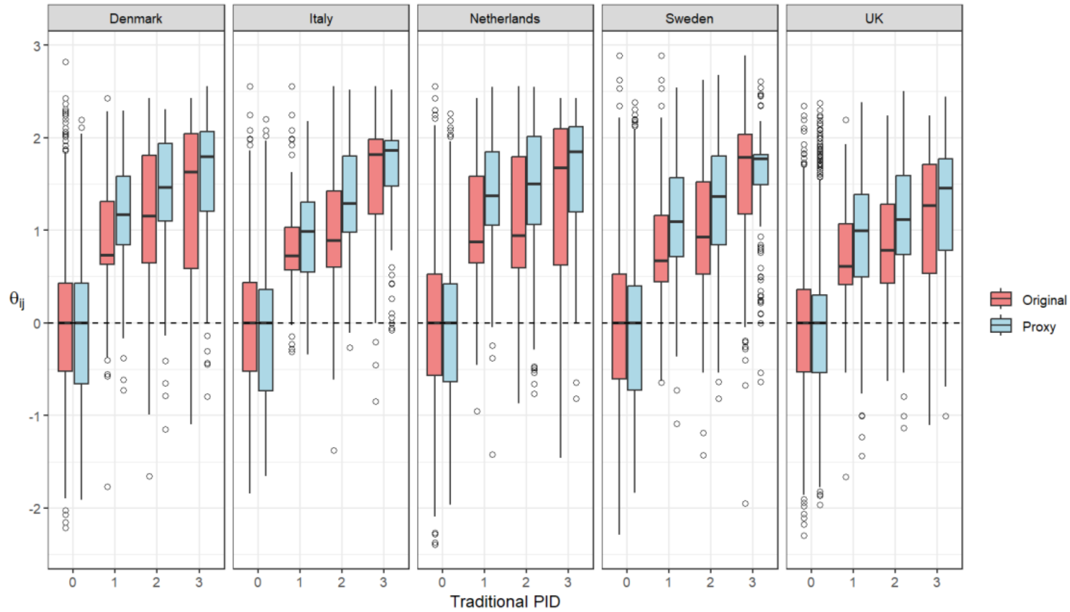
In addition to adding vote choice to the proxy measure (which does not add much), we have also explored interacting all the variables with measures of political sophistication and political interest but found that these additions, while adding a lot of complexity, did little to improve either the scale properties of the proxy or its correlation with our direct measure.

Of course, the most important question to ask about a proxy variable is whether we get the same or different conclusions when we use it to explore substantive questions. Thus, below we replicate three of the analyses that we presented in the main text. In each, we can draw largely the same conclusions from using our proxy measure, though in each case with (marginally) less confidence and with less precision at the extremes, suggesting that this kind of proxy may work fairly well in exploring the concept of multi-party identification in pre-existing surveys.

Figure D4 replicates the analysis in Section 4.1 (Figure 10) and compares how both our estimates of θ_{ij} and the proxy measure correlate with traditional PID in each country. There is a strong correspondence between the proxy measure and the strength of traditional PID, but it is not as effective as θ_{ij} at capturing strength of attachment at the extremes. It also provides far less coverage for negative partisanship.

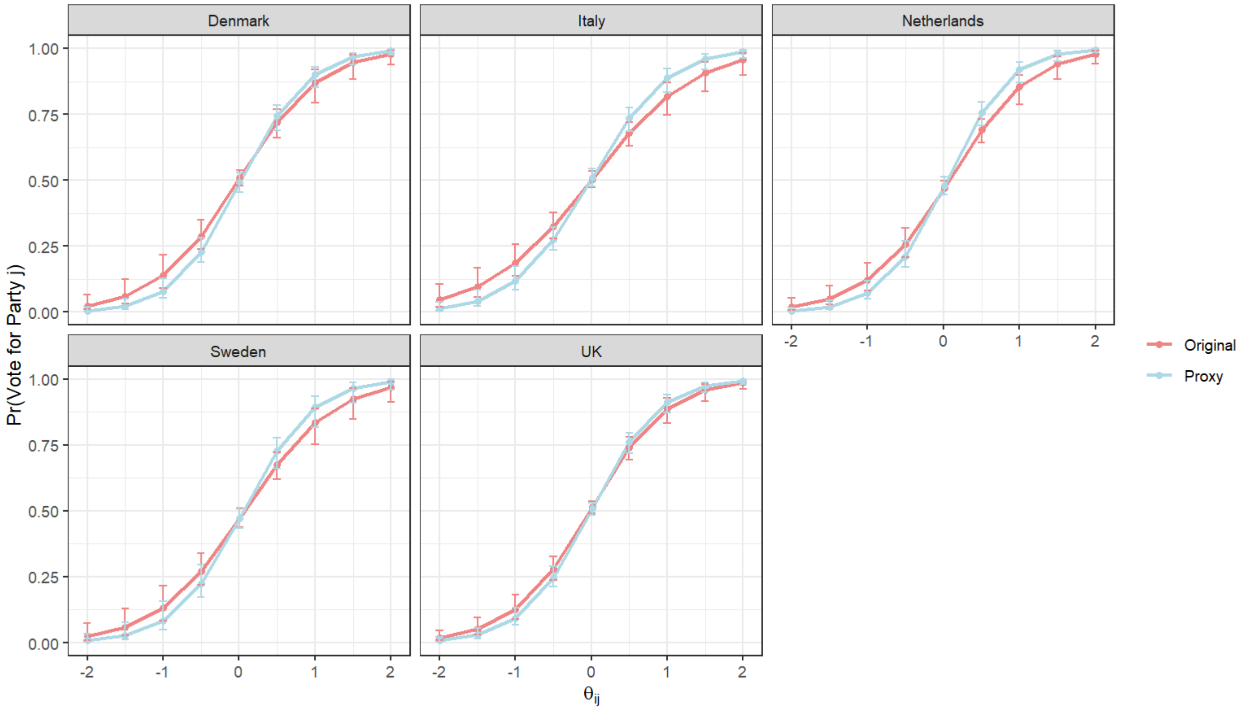
[24] One issue that when using this proxy measure is what to do with respondents who do not recognize a given party. In our balanced scale, it made sense to set attachment to these parties to zero, but that may make less sense for unbalanced scales (like this proxy) in which it is less justified to treat a zero as an indication of non-partisanship with respect to the party (rather than average partisanship for the party). That said, in the CSES respondents were allowed to skip questions and so many of them very likely skipped parties they did not recognize.

Figure D4: Comparison of θ_{ij} and the proxy measure against traditional PID



Next, Figure D5 replicates our analysis of the vote choice of traditional independents using the proxy measure (Figure 18 in the main text). Here again, we get largely the same substantive conclusions but can also reveal a somewhat more limited ability to distinguish the impact of attachment on vote choice at the extremes of the attachment distribution (the flatter curves in this area compared the center of the scale).

Figure D5: Predicted probability of voting for party j across the range of θ_{ij} and its proxy for traditional independents.



Finally, in Figures D6 and D7, we replicate Figures 22 and 23 from section 5.2.4, which examine partisan rationalization about which parties are in the cabinet for positive and negative partisans respectively. In the original analysis, we found substantial rationalization among positive partisans along the whole range of θ_{ij}, conditioned exactly as expected on levels of political sophistication. We did not find such rationalization, however, for negative partisans. Just as in the previous examples, we draw the same substantive conclusions when we use the proxy measure though the effects are marginally muted with the proxy measure (and somewhat more uncertain).

Figure D6: Positive PSI and beliefs about whether non-cabinet parties are in the cabinet with the original and proxy measures

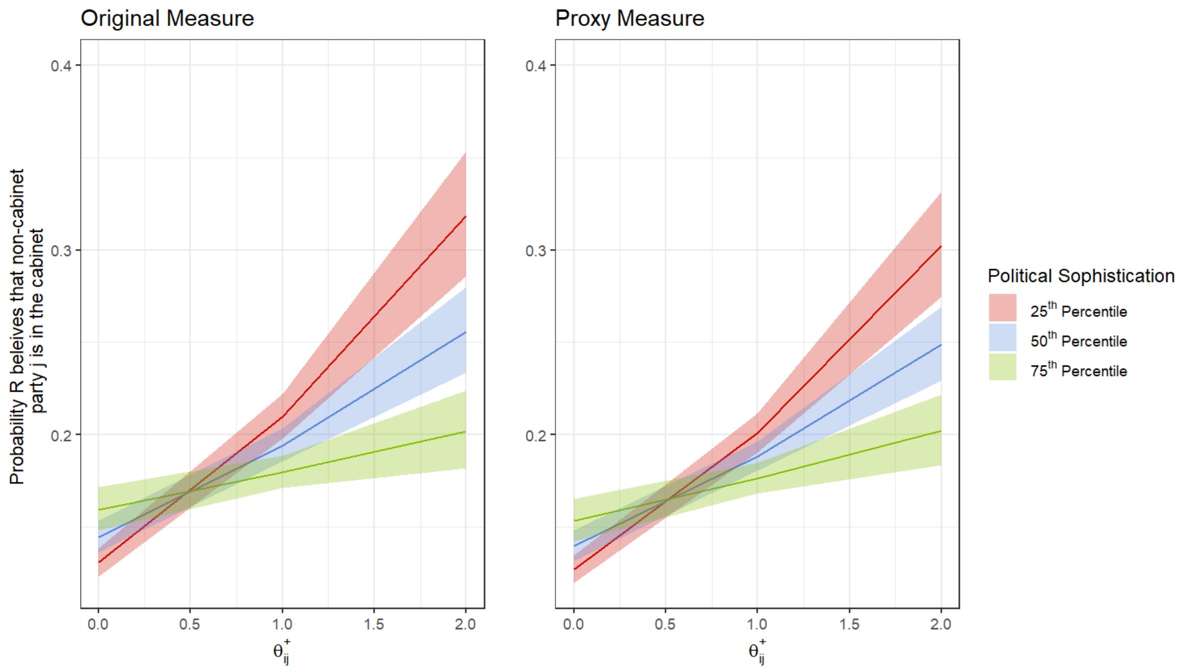
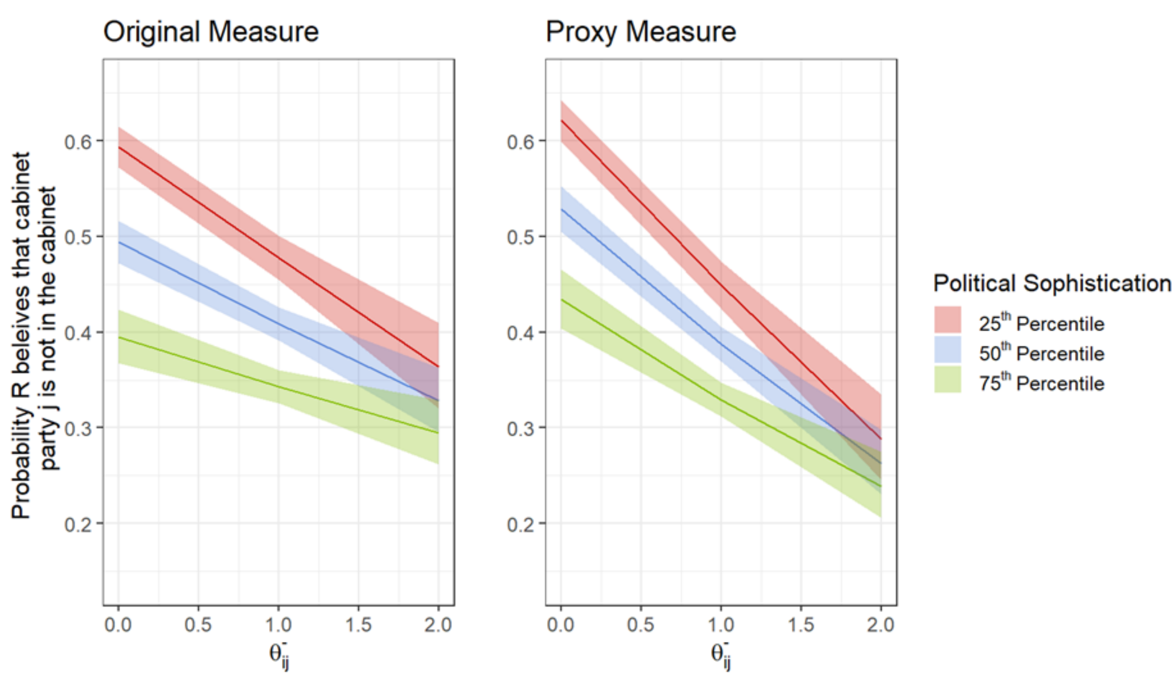


Figure D7: Negative PSI and beliefs about whether cabinet parties are in the cabinet with the original and proxy measures



Overall, these findings show that existing survey measures can be used to create a rough proxy of θ_{ij}, but it is not a perfect substitute. The proxy can capture similar information as the original measure with regards to the direction of a respondent's PSI to a particular party but is less effective in capturing the strength of PSI.

Appendix E: On the instability of partisan attachments in multi-party democracies

In this section, we build a very simple model of the conditions under which maximalist measures of PID will tend to "follow the vote," even when the underlying vector of long-term multi-party attachments remains relatively unchanged. We will consider a single voter and two parties, A and B. We will think of these two parties as the two parties in the party system to which the voter is most strongly attached. As we will see, this is sufficient for us to understand the way multi-party attachment creates vote (and PID report) switching between parties A and B, since the process will apply in the same way to parties to which the person is less attached.

We will assume the voter's expected utility for voting any party *j* is:[25]

$$(1)\ \ U_j = \theta_j + X_j$$

We suppress the subscript for the voter and use *j* to subscript parties. θ_j is the increment to the voter's utility for party j that is due to identity. While, in general, θ_j could be positive or negative, for this simple model we will assume $\theta_j \geq 0$. X_j is a vector of of "short-term" or election specific factors that influence the vote. For this simple model, we have normalized its coefficient to 1, so that when X_j is positive it increases the voter's utility for party j and when it is negative it decreases it.

Since we are concerned with how reports of maximalist PID move (or not) with the vote, we assume that when asked to report the party with which she identifies the most, our voter will report the party *j* for which θ_j is highest.

That said, we do not think that a voter's identity with parties is immutable, since a large literature on PID has repeatedly demonstrated that PID can be moved by short-term factors. Further, it should be fairly obvious that no model that assumed fixed partisan attachments and a deterministic (maximalist) reporting function could ever generate a prediction in which reported PID could change. Thus, we need to allow the values of θ_j to respond to short-term factors, as a large literature in political science suggests it does. Thus, we model the voter's partisan identity with respect to party *j* as:

$$(2)\ \ \theta_j = \gamma_j + \lambda X_j$$

Where γ_j is the voter's long-term attachment to *j* – that is, that part of attachment to party j that does not respond to short-term factors. Consistent with the literature, we will also assume that the

---

[25] We can add a zero mean random shock to this equation (and the other equations) below, but given we take expectations to evaluate the model, these terms play no role and so we leave them out.

(1) impact of X_j on θ_j is in the same direction as the impact of X_j on U_j and that the former impact is smaller than the later. Consequently, since we implicitly set the coefficient on X_j to 1, this implies $0 < \lambda < 1$.[26]

Plugging this equation for θ_j into the utility above and consolidating terms, we get:

$$(3) \quad U_j = \gamma_j + (\lambda + 1)X_j$$

Thus, if we have two parties, A and B, the utility maximizing voter will vote for party A over party B when:

$$\gamma_A + (\lambda + 1)X_A > \gamma_B + (\lambda + 1)X_B$$

or,

$$\gamma_{AB} + (\lambda + 1)X_{AB} > 0$$

Where each term with an "AB" subscript indicates the difference in the values of the term for A minus B. Thus, positive numbers for any of these terms indicate an advantage for A and negative numbers and advantage for B.

Likewise, given a maximalist question, the voter will report her party id as "A" if:

$$\gamma_{AB} + \lambda X_{AB} > 0$$

The intuition behind this very simple model is immediate when we consider what is says about the case of a 100% co-partisan of A and B. This kind of co-partisan is described in the model by setting $\gamma_{AB} = 0$ (i.e., there is 0 distance between these two voters in "partisan identity space." This voter will vote for A when:

$$(\lambda + 1)X_{AB} > 0$$

And will also *report* her PID as A when:

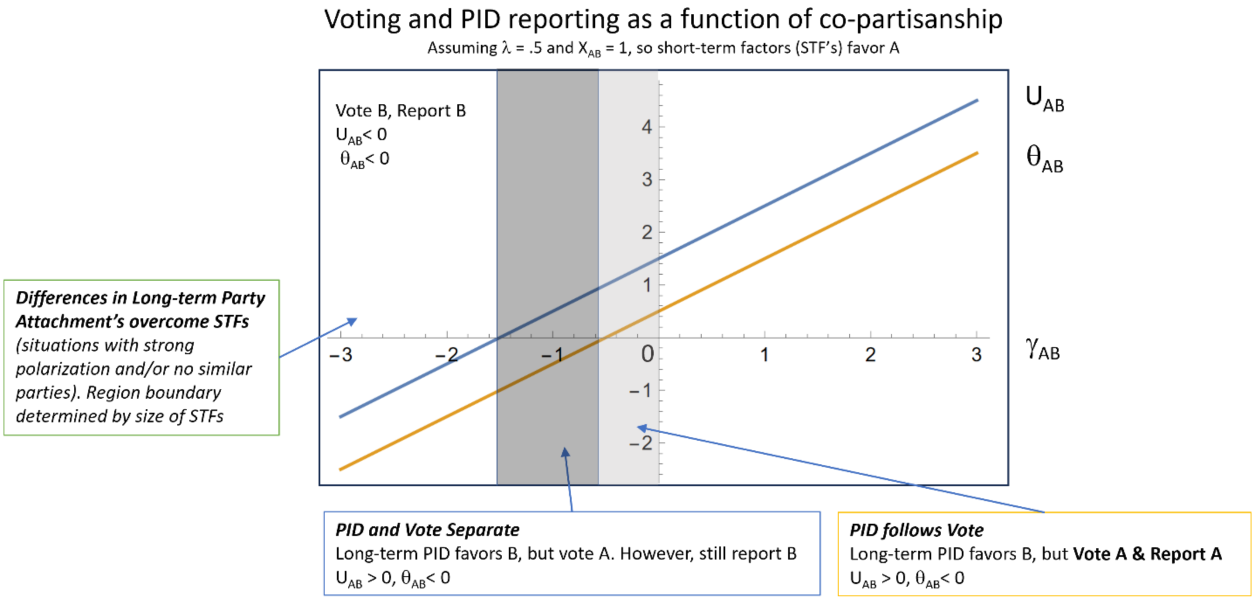
$$\lambda X_{AB} > 0$$

Clearly, both of these conditions will hold any time short term factors favor A so that X_{AB} is positive. Likewise, if short term factors favor B then neither of these equations will hold and she will vote for B and report her PID as B. In other words, for a complete co-partisan, her reported (maximalist) PID will always "follow the vote."

The easiest way to extend our intuition from the complete co-partisans to other kinds of co-partisans, non-(co)partisans and even anti0-copartisans (i.e., when one identifies negatively with one or both parties) is to graph equations 2 and 3 for an illustrative case. Figure E1 does that.

[26] This assumption is not essential but makes the model simpler to interpret and is consistent with the literature on the extent to which short-term factor impact the vote relative to attachment.

Figure E1: The extent of co-partisanship, the vote, and reported maximal PID



In this figure, γ_{AB} (on the x-axis) is the difference in the voter's long-term attachment to parties A and B. Positive numbers for this variable indicate stronger positive (or less negative) attachment to A over B. Negative numbers indicate the opposite. For our example, we set $X_{AB} = 1$, which means the scale of this axis is in multiples of the size of the short-term factors (i.e., a difference of -3 on the scale means the difference in attachment is 3 times the value of short-term factors). Next, we set $\lambda = .5$, which means short-term factors move the voter's proximate identity half as much as utility. The blue and gold lines are the voter's utility and identity functions, respectively, and are graphed against possible values of her γ_{AB}. Given the definition of γ_{AB} as the extent to which the voter is differentially attached (in the long-term) to A vs B, it will be 0 for complete co-partisans, will be increasingly positive when the voter is more attached to A than B, and will be increasingly negative when the voter is more attached to B than A.

Thus, if we read along the x-axis, we see, just as in the example above, that if $\gamma_{AB} = 0$ (a complete co-partisan), she will vote for A and report her PID as A, because the short-term factors favor A (i.e., we have assumed $X_{AB} = 1$). So, again, for a complete co-partisan her reported PID will follow the vote. But as the figure makes clear, this is not only true for a complete co-partisan. It is also true for voters in the light gray area, whose long-term attachments to B are greater than their attachments to A, but this difference is not bigger (more negative) than -1. Attachments to B relative to A that are beyond that (the white area on the left) are sufficiently strong that even A's advantage in short-term factors will not overcome the impact of the voter's relatively stronger attachment to B. One can imagine, for example, that in a two-party system many voters would fall in this region or in the large white region to the right of 0, in which partisans primarily attached to A will always vote for A (since both identity and short-term factors reinforce each other in this reason, given our assumptions), This would be especially true in periods of polarization when γ_{AB} is likely to be very negative or very positive for many voters.

In contrast, in multi-party systems there is likely to be many more voters with a party close enough in the attachment-dimension to fall into the light gray area than in two-party systems and so a great deal more instances of PID "following the vote" than in two party systems – even if partisan attachment works exactly the same way in the two systems. That is, it may be the fact of multi-party government (and multi-party attachments) that drive the narrative that PID does not work the same way in multi-party vs. two party democracies.

Thus, we think this simple model suggest that an exploration of multi-party partisanship may lead to theoretically productive ways to account for the long-standing difference between the way PID seems to work in multi-party vs. single-party system. That said, the toy model offered here is just a sketch, which is one of the reasons it is in an appendix rather than the theoretical focus of the text. In future iterations we need to bring into the model formally the assumptions about the distribution of co-partisanship necessary to give clear predictions about the relative extent to which we should see PID following the vote in different contexts. We also need to bring into this theoretical model, the same definition of co-partisanship that we used empirically (and conceptually) in the text – i.e., in which co-partisanship increase both with balance and with strength of partisanship to either party. γ_{AB} in the current theoretical model does not quite do that – only capturing balance and not strength. Doing so likely means developing a two-dimensional version of Figure E1 in which we keep track of balance and strength separately.

Appendix F: Additional information from footnotes

F.1 Additional information from footnote 13

Huddy and others have used the terms expressive and instrumental to designate these two traditions. We prefer the PSI and PPE labels for several reasons. First, the PPE label emphasizes that this conception of PID is not *any* instrumental model but a specific one in which answers to the partisanship question are reduced to long-term policy and performance evaluations. Second, while the label "expressive" advocates the idea that PSI is about affect and PPE is more cognitive, we think both conceptions have expressive and cognitive components. People think about how they feel and they account for feelings in their instrumental calculations (and sometimes use those feelings to keep track of the outcome of long-forgotten calculations (e.g., Lodge and Taber 2005). In addition, PSI is not just "expressive" generally but is a specific theory of the way a psychological state can develop (almost certainly reflected in physiological changes in the brain) that changes how one processes subsequent, relevant information. Not all "expressive" accounts of political behavior include these elements, as the term often just means something like "emotions matter."

F.2 Additional information from footnote 14

Jost (2021) disagrees with Kinder and Kalmoe (and Achen and Bartels) about the importance of ideology generally. However, the core of this disagreement is about what "counts" as evidence that Americans are ideological -- i.e., Kinder and Kalmoe require evidence that individuals labeled "ideological" have a coherent set of policy views (or at least general values), while Jost thinks of ideology as a larger syndrome that can be important in the absence of a coherent set of policy preferences. However, it is not completely clear, at least to us, the extent to which Jost would agree with the characterization that most American do not know much about policy. Indeed, a close reading of Jost's work reveals some vacillation about the extent to which he accepts the basic premise that most Americans lack detailed and/or coherent policy views – sometimes arguing that he has evidence many have such detailed knowledge and other times downplaying the importance of that kind of evidence for an assessment of ideology.

Achen and Bartel's (2016) critique of the American voter's ability (or willingness) to use past party performance to inform their vote choices flies in the face of years of work on economic voting that seems to show exactly that (see the recent review by Budi, 2024). Cross-nationally, Duch and Stevenson (2008) show that variation in national contexts (e.g., whether there is real competition over the partisan composition of the cabinet and clear attribution of partisan responsibility for previous performance) predicts corresponding variance in the strength of economic voting across contexts. Further, they argue that these results suggest that the apparent failure of voters in some contexts to engage in economic voting may have as much to do with contextual incentives than an inherent failing of citizens.

F.3 Additional information from footnote 17

While much of the empirical work supporting the revisionist position has been observational, a recent "second wave" of revisionist work has appeared that is more often experimental in nature and that has pushed back against the strongest claims of the corresponding "second wave" of work on partisanship as a social identity (described in the last section) -- some of which aggressively discounts the relative impact of policy preferences (and performance evaluations) versus identity on subsequent attitudes and behavior (e.g., Mason 2018).[27] Specifically, work by Fowler (2020), Orr, Fowler and Huber (2023), and Yair and Huber (2020) observe that, especially in polarized environments, the common experimental research designs that have been used to (most dramatically and convincingly) demonstrate partisan identity effects do not, in fact, rule out an important mediating role for policy preferences.[28] Instead, they argue, partisan cuing experiments in which randomly assigned partisan cues cause a change in some subsequent evaluation may produce their causal effects indirectly by changing beliefs about policy rather than through a direct identity effect (Orr, Fowler, and Huber 2023). For example, when a partisan cue causes a respondent to dislike a person, that cause may (primarily) run through changed beliefs about the extent to which the person is likely to share the respondent's policy positions. Even when subjects are given descriptions of partisans using language that focuses only on identity (and that is commonly used in multi-item batteries aimed at measuring identity -- e.g., "When he talks about Democrats he uses the word 'we'" or "When someone criticizes Democrats, he feels like they are criticizing him"), they inevitably make inferences about the policy views of the subject (Orr, Fowler, and Huber 2023; Fowler et al. 2024).

In our view, the important takeaway of this critique (and indeed much of the debate on PSI vs. PPE) is simply that we should not assume, just because our questions ask a respondent explicitly about partisan identity, that we are measuring identity *sans* policy. Thus, in thinking about how we should conceptualize and measure multi-party identification, we should allow that even traditional identity items (like those we review in Chapter 3) may be inextricably tied to stereotypical beliefs about party policy. Of course, the reverse is likely also true: when we ask partisans to evaluate party policy or performance, their evaluations likely reflect distortions induced by PSI – as has been repeatedly demonstrated in the literature (see Williams 2023 comprehensive review).

F.4 Additional information from footnote 18

A more narrowly technical answer to this question points out that Fowler, Orr, and Huber's critique of cuing effects is not a problem for our agenda, since it is a critique of how one estimates the *direct* effect of a cue (which they see as the only sure indication the cue indicates an identity effect). Since, conceptually, we are more interested (in the empirical analyses in Chapters 4 and 5) in evaluating the *total* effect of measures of multi-party attachment, their narrow critique is tangential to our agenda. That said, the larger theoretical context of their critique is certainly relevant.

[27] For example, Mason (2018, p.20, emphasis added) argues that "Primal psychological influences such as motivated reasoning and social identity are capable of shifting and *sometimes entirely determining the policies that citizens support*."
[28] The strongest statement of this new view is by Fowler (2020), who reviews the half-century of empirical work purporting to show the influence of partisan identity on behavior and concludes that there is little evidence to support the view that partisanship exerts a distinct influence on voting behavior that cannot be equally (or better) explained by policy voting (but see Rogers' 2020 response).

F.5 Additional information from footnote 19

Of course, even if many citizens are unaware of the parties' positions on most policies, it does not mean that quite specific policy comparisons among parties do not play a role (and perhaps the crucial role) in the initial development of a partisan identity. Specifically, a person's initial attraction to a party may well hinge on a particular policy issue that has become salient for them. Having identified a party that advocates for the issue position they endorse, such and individual may begin to develop a partisan feeling for that party, which in turn makes it slightly more likely they pay attention to subsequent messages about the party and to interpret those messages in a positive light (or at least not to reject them). Each such message, of course, has its own impact (possibly on her broader policy preferences) and the process of developing partisanship proceeds apace…

F.6 Additional information from footnote 20

To our knowledge, no one has asked how negative attachments might develop given this theory. The question, however, is subtle. For example, we quite specifically used the term "relevant out groups" above and not simply "social groups to which she does not belong." Our intention in using the former language is to make a distinction between groups of which one does not consider oneself a member (i.e., you are not a member of the group "plumbers") and groups that are seen as relevant out-group to one of the groups with which one does identify. Whether this distinction is helpful, however, depends on the role of "out groups" in defining negative identification, which is still largely unsettled (see Section 2.6 of this Chapter).

F.7 Additional information from footnote 21

Further, there is precedent for thinking about multiple party identities in this way. For example, Weisberg (1999), who was an early proponent of measuring multiple attachments, pointed out that Dutch voters who identified with one of the Calvinist parties on the basis of their religious identity, are likely to have also identified with the other Calvinist party on the same grounds. Thus, "such multiple identification[s] should not be surprising…There is enough variation in party systems around the world to expect many variations like this in particular countries." (p. 727) Indeed, given the foundation of European party systems around particular economic and social cleavages (Lipset and Rokkan 1967) and the ability of proportional systems to sustain multiple parties competing for voters in the same social milieu, such overlapping sources of social group support for different parties are likely quite common (Johnston 2006). That said, it is clear that the social foundations of party support have changed over time and may have weakened overall (instead of just realigning). Indeed, it has probably never been the case (even in the heyday of sociological explanations of party support) that social group matching is the only path voters take in developing their PID. It is, however, likely one of them.

F.8 Additional information from footnote 23

Other work has suggested that when parties frequently cooperate, voters may develop superordinate identities in which they come to identify with the whole collection of parties as a group (Lin, Santoso, and Stevenson 2024; Hagevi 2015). Hagevi (p.74), for example, argues that "efforts to build political blocs to win governmental power could result in emotional and intellectual attachments to these blocs in the electorate." Further, trends toward more block electoral competition in many European counties, combined with powerful modern campaign communications and the “presidentialization” of electoral competition, likely encourages the development of affective attachments that go beyond a single party.

However, since the concepts of multi-party PID and “identification with a coalition of parties” have remained underdeveloped theoretically and empirically, we do not yet know if the most useful way to broaden the idea of single-party partisanship to encompasses multiple parties is through a focus on multiple identifications (the approach here) or superordinate identifications (as in Hagevi (2015) and Lin, Santoso, and Stevenson (2024)). That said, adjudicating between these possibilities will require good measures of both multi-party identities and plausible superordinate ones (e.g., to the left or right as groups).

F.9 Additional information from footnote 24

Lee, Santoso, and Stevenson (2024) did experiments in Denmark, Germany, Canada, and the UK. In these experiments, respondents were asked to place hypothetical parties -- described by randomly assigned (but plausible) policy positions, core values, social group support, and patterns of cooperation and conflict with existing parties -- on a left-right scale. The results demonstrate (robustly across the countries and within each country in two different surveys) that these placements are about equally driven by parties’ policy positions (especially the parties’ core values) and their patterns of cooperation and conflict. A lesser, but still significant, influence is the parties’ social group support (i.e., parties with strong support from upper class people are seen as more rightist).

F.10 Additional information from footnote 25

These results mirror many others based on observational data on left-right self-placement (rather than placements of parties), which have consistently shown that a person’s policy views (again, especially their core values), partisanship (always single-party partisanship, traditionally defined), and social group membership explain most of the variance in left-right self-placements (Inglehart and Klingemann 1976; Klingemann 1979; Huber 1989; Knutsen 1995, 1997; Freire 2006, 2008; Medina 2004, 2010).

F.11 Additional information from footnote 25

Lee, Santoso, and Stevenson’s finding that patterns of partisan conflict and cooperation matter a lot to how citizens place parties on the left-right is consistent with Fortunato and Stevenson’s (2013) earlier demonstration that voters perceive parties to be closer together on the left-right when they serve in cabinet together – a result that that has been confirmed and expanded in many subsequent studies (Adams, Weschle, and Wlezien 2021; Falcó-Gimeno and Fernandez-Vazquez 2020; Falco-Gimenez and Munoz 2017; Fortunato 2012; Fortunato and Adams 2015; Fortunato and Stevenson 2013; Plescia and Staniek 2017; Spoon and Klüver 2017). Further, Adams, Weschle, and Wlezien (2021) and Santoso, Stevenson, and Weschle (2023) show, respectively, that it is not just formal cooperation in cabinet that matters to the relative left-right placements of parties. Less formal kinds of partisan conflict and cooperation (as reported in the media) also drive voter beliefs about the left-right positions of parties. Finally, Fort

F.12 Additional information from footnote 25

While not necessary for the left-right to provide a summary of the relationship between pairs of parties with respect to their policy agendas, social group support, and history of cooperation, some scholars have gone farther and suggested that the left-right can become a social identity itself – ultimately being more about defining partisan "teams" than anything else. For example, Oshri, Yair, and Huddy (2020, p. 4) find that "*ideological "left" and "right"... mean more than certain policy directives regarding the economy or society; rather, they signal group belonging and group competition—who is "us" and who is `them'*." Likewise, Vegetti and Širinić (2019: 263) argue:

"In general terms, left and right are just cues, usually given by parties with respect to other parties, and citizens learn their meaning based on what parties use them for. In a given context, they may be frequently linked to different substantive policies, and citizens will learn to use them to organize policy concepts. ***Alternatively, they may be used in a more relational way, to define the borders of political groups, and qualify oneself and others as part of a given group or not****. In this case, people will get used to referring to left and right as political groups, and* ***will regard left-right positions as group memberships****."*

Finally, even before the relatively recent work cited above, there was a long tradition of scholarship in comparative political behavior that has argued the left-right in multi-party democracies is used by voters to track partisan alliances. For example, Arian and Shamir (1983: 140-42) argued forcefully that "left and right labels... do not denote ideology and surely do not reflect ideological conceptualization and thinking." Instead, they argue that voters use the left-right in multi-party environments to affectively orient themselves to the political parties and to sort them (and other individuals) into two affectively charged categories.

F.13 Additional information from footnote 26

We have in mind a commonsense process in which partisanship develops as part of a kind of "partisan syndrome" of interconnected variables. A useful analogy from medicine is the concept of a "metabolic syndrome," which is a cluster of conditions that usually develop in tandem, including high blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol or triglyceride levels. The downstream consequences of a highly developed metabolic syndrome (i.e., increased risk of heart disease, stroke and type 2 diabetes) are well-established, grave and, importantly, are not caused exclusively by any one component of the syndrome. Instead, they are usefully thought of (and studied) as a consequence of the syndrome itself. To put it another way, it matters little whether one first gained some weight, which then caused bit of insulin resistance, which then caused higher blood sugar, which then impacted cholesterol...; or, if the sequence started and developed differently. The point is that ea

Similarly, in the development of a partisan syndrome, it's not particularly important (and likely not knowable retrospectively) whether one's initial inclination towards politics was a partisan feeling, a salient policy issue, fascination with a particular politician, identification with a social group that provided partisan cues, or even a genetic push towards any of these possibilities. The point is that each of these experiences may condition how one experiences subsequent events (even if only by a tiny amount) and so the various variables in the system will tend to develop in tandem. Much more important than untangling the sequence of causal relationships that produced the current state of the system (which will be different for every person) is to identify the correct set of variables that are part of the system and to be able to use all of them together to measure its state for any individual – so that we can use information about that state to predict and explain subsequent attitudes and behavior.

One recent empirical study that nicely highlights this kind of interplay between partisanship and policy is Schonfeld and Winter-Levy (2021). The study leverages the British Conservative party's rather dramatic (post-referendum) change on Brexit policy to show that individuals who supported Brexit were more likely to identify with the Conservatives afterward. However, they also show that the same people who had moved their reported identities toward the Conservatives because of its Brexit policy, subsequently adopted their new party's positions on other issues.

F.14 Additional information from footnote 28

Crewe (1976) explored "polarized citizens" in Britain, who strongly identified with their party and were strongly opposed to the main other party. Marsh (2006) investigated negative partisanship, alongside positive partisanship, in the Republic of Ireland.

F.15 Additional information from footnote 30

Scholars like Bankert, Huddy, and Mason may well disagree. However, it is worth taking seriously the general unease some social scientists may have about defining partisan identities negatively. Do we really think of ourselves as part of the group of people opposed to a party and do we feel connected to such people? Would we subconsciously favor them? Or be more likely to believe messages consistent with the stereotypical world view of members of such a group -- e.g., I see the economy (of an incumbent party to which I am negatively attached) as worse than it really is. To us, there are obvious examples in which the answers to these questions are *yes*. Many Swedish people, for example, appear to identify with the group of people who oppose the Swedish Democrats (Bankert 2024) and many Americans, while they may identify with the Democrats or traditional Republicans, may additionally define themselves as part of the group of people who oppose MAGA Republicans. If we can easily imagine such self-categorization for these kinds of parties, perhaps we should allow that such categorizations apply more broadly.

F.16 Additional information from footnote 35

In the absence of a multi-party measure of PSI, several scholars have tried to use available measures to proxy for this (Caruana, McGregor, and Stephenson 2015; Rose and Mishler 1998). Most commonly, scholars rely on a measure of the probability of ever voting for a party, with those who say they would never vote for a party allocated to the negative PSI category. As Bankert (2020) points out, however, this single-question measure has several drawbacks as a measure of negative PSI, including its invocation of voting behavior, which makes it a poor measure to then use to explain voting behavior, as well as it simply not being, on its face, a measure of either PSI or PPE. Worse, we have no real idea why people declare that they would never vote for a party and, as importantly, why they refrain from doing so. Certainly, there are individuals who "never say never" and so avoid telling survey researchers they would never do something. Others may well have trouble separating "never" from not in the current election.

F.17 Additional information from footnote 36

Holmberg and Oscarsson (2020) report 2018 partisanship from the CSES survey as 50%, but that number only includes respondents who indicated partisanship in the first prompt. The numbers here included those who did so after either a first or second prompt. If we take the number of "no party" responses to the Swedish election studies, which use different questions from CSES, as indicative of pure independence, then the percentage of Swedes reporting some level of party adherence in the 2018 Swedish national election study, which is the number closest to our own measures, is 76% (Holmberg and Oscarsson (2020, p. 17, Figure 2.2).

F.18 Additional information from footnote 37

We have calculated all the statistics in Table 3 accounting for the various kinds of weights provided in the CSES surveys (sampling, demographic, and political weights). The changes after these adjustments are miniscule.

F.19 Additional information from footnote 38

Standard adjustments such as raking and weighting can easily make problems worse (Gelman 2007) and more elaborate adjustments like multi-level regression with poststratification (MRP) require census level information on variables strongly predictive of political interest, knowledge, and partisanship, which are not generally available. Indeed, in other work, the authors have tried to make such adjustments to original survey data collected from online panels. Specifically, we used MRP with political interest data from the large samples (combined over time) in the European Election Studies series to first estimate (via MRP) levels of political interest for every census category defined by age, gender, and education and then to use that augmented census data to do a subsequent round of MRP to estimate the toplines of other target variables like PID. As it turns out, all of that effort only moved sample proportions of target variables like PID by a couple of points in the expected direction (towards less sophisticated and partisan samples).

F.20 Additional information from footnote 39

This is likely due to simple satisficing behavior in which, even well-meaning respondents, who do not have high levels of an underlying trait, feel they are not answering too far wrong if they describe themselves with the middle category for all items and, since it is quicker to do that, they allow themselves to do it. By removing the middle category, one encourages these well-meaning respondents to answer more accurately. At the same time, if the respondent indeed belongs in a middle category, she can express that by answering items with a mix of the two central categories. Indeed, this is exactly what O'Muircheartaigh, Krosnick, and Helic's (2001) study of the question showed: omitting the middle alternative led respondents to randomly select one of the moderate scale points closest to where a midpoint would appear. Reverse coding some items is also important.

F.21 Additional information from footnote 42

Another way of depicting the strength of i's partisanship across all parties would be to sum the absolute value of all the elements of θ_{ij} (with analogous definitions of positive and negative strength of partisanship). In the current example, this would leave voter B's partisan identity strength at 1, while increasing voter A's strength to 2, which creates a larger difference between voters A and B than the relative vector lengths do. More generally, we know that the derivative of $\sum_j \theta_{ij}$ with respect to θ_{ij} is 1. However, the derivative of $\|\vec{\boldsymbol{\theta}}_{\boldsymbol{i}}\|$ with respect θ_{ij} is $\frac{\theta_{ij}}{\sqrt{\sum_J \theta_{ij}^2}}$, which is strictly less than 1. Thus, using the vector length as a measure of total partisan attachment is the more conservative of these two measures of total strength of partisanship for individuals. Further as the denominator gets bigger, this derivative gets smaller so that this conservativism relative to the summation measure gets larger when individuals have many large attachments. While ultimately it is an empirical question whether the vector length or summation measure better represents an individual's total strength of partisanship, our expectation is that the more conservative measures is closer to the truth. Specifically, it seems likely that the overall strength of partisan feeling increases faster when one has few other attachments than when one is already strongly attached to several parties.

F.22 Additional information from footnote 46

While it is possible to define quantities like these that capture co-partisanship more generally among J parties simultaneously, we have found it more helpful (in terms of generating intuition for patterns in the data) to first understand (and quantify) co-partisanship among pairs of parties and build our multi-party intuition from there.

F.23 Additional information from footnote 48

Unlike many of the analyses below, here we do not correct significance levels for multiple comparisons, since this table asks a question that we can answer with the estimated theta for a single party.

F.24 Additional information from footnote 49

This is true for all the parties we examined except for some very small parties with few identifiers for either the traditional measure or ours and for the Labour party and the Liberal Democrats in the UK, whose rates are only 56% and 42% respectively.

F.25 Additional information from footnote 51

It's important to re-emphasize the cautions from section 3.2 and A3.1.3: Our sample seems to be somewhat more partisan (and politically interested) than our best information from relevant probability samples. Thus, the absolute numbers of partisans (independents) may be a high (low) in these samples. However, we have no reason to think that the (relatively mild) oversampling of these groups was more severe in any particular country and so are comfortable making rough country comparisons. Specifically, the differences between the UK and the other countries are so large that we doubt they are due to any sampling issues. The more modest differences between Sweden and the other countries, however, should be considered provisional.

F.26 Additional information from footnote 53

It is interesting that, as discussed in sections 3.1 and A3.1.3, answers to the traditional PID question in our surveys indicate levels of independence that are about 10 percentage points lower than either the corresponding CSES numbers or the numbers we estimate using our multi-party attachment vector. In our earlier discussion we worried that this was due to oversampling more political interested respondents, but the fact that the number of independents we find using our measure matches so exactly the percentages from the CSES – including the pattern of cross-national variation -- may suggest something else is happening.

F.27 Additional information from footnote 54

Ultimately, we would like to put confidence bounds around the magnitudes of these co-partisanship vectors, so that we can determine if levels of co-partisanship, for each respondent-party-dyad, are statistically different from zero or not. One possible way to do this is to use a non-parametric bootstrap at the stage in which we estimate the thetas, but since this will be computationally challenging, we relegate it to future work.

F.28 Additional information from footnote 56

The scale on the y-axis is relatively constrained, despite the respondent-dyad values of the co-partisanship measure running from 0 to ~3, because these measures average over a large majority of respondents-dyad pairs whose values, as we should expect) are 0, or quite close to 0 (even for dyads that have relatively larger proportions of co-partisans than others).

F.29 Additional information from footnote 57

The levels of co-partisanship that we find may at first seem incompatible with scholarship that has found that relatively small numbers of people report a change in their partisanship, using maximalist measures of PID – and when they do move, they tend not to move between the major parties of the left-right (Zukerman et al., 2007). On the later point, however, our findings mirror previous ones. We see this clearly in the depressed levels of co-partisanship for the leading parties of the left and right. On the former point, it is important to point out that a voter who is a co-partisan will not necessarily name different parties when asked a maximalist PID question at different times. Indeed, she may have a substantial secondary attachment that is always less strong than her primary one, so that she appears (using a maximalist question) to have a very stable single-party identification – while all the time hiding (behind the maximalist question) her secondary attachment. Only respondents who have fairly balanced attachments (some small fraction of those in table 7) would be likely to evidence PID switching in a series of maximalist questions – and those fractions are of a size that is compatible with previous findings. For example, Zukerman et al. (2007) show that 2% of German respondents to the German Socio-Economic Panel Study (1985-2001) who said they most identified with the SPD in one period, switched to the CDU/CSU in the next (with a similar percentage other way around) – which is clearly compatible with the 1% estimate for

Social Democratic and Moderate co-partisanship that we show in Table 7. Further, Zukerman et al. (2007) show that switches between these two large parties and "others" between any two periods is about 4% (going from one of these leading parties to some other party) and about 12% going the other direction. Again, this level of switching in reporting of the maximalist measure of PID is completely compatible with underlying levels of co-partisanship between the major parties and the others reported in Table 7 (i.e., about 11% on average between the Social Democrats and the parties of the left, and slightly lower than that for the Moderates with the parties of the right).

F.30 Additional information from footnote 58

One possibility is to exploit events data about the cooperative and conflictual activities of parties as reported in the media, like that used by Santoso, Stevenson, and Weschle (2023). Indeed, one of the authors is currently pursuing this project.

F.31 Additional information from footnote 62

Kernel regression is a nonparametric method used to estimate the relationship between a dependent variable and one or more independent variables without assuming a specific functional form. The method relies on kernel functions, which assign weights to observations based on their proximity to a target value of the independent variable(s), thereby allowing the local structure of the data to guide the estimation. Kernel regression is particularly useful for capturing complex, nonlinear patterns that parametric models might miss, offering flexibility in modeling heterogeneous relationships.

F.32 Additional information from footnote 63

Unfortunately, given the way this project has developed, we were only able to include an extensive battery of performance items on our supplemental survey in the UK. Thus, we cannot rule out this scenario in the other countries in our sample, where it may be that their larger party systems, multi-party policy-making, and more developed block politics will lead to just the kind of transfers of motivated reasoning that we do not find in the UK.

F.33 Additional information from footnote 64

To illustrate just one of the ways this can happen: While our performance evaluation questions specifically mentioned a six-month window, they did not specifically mention the period of Labour incumbency (or mention Labour itself, so some respondents may have missed or ignored this timing cue (or failed to associate it with the full period of Labour incumbency) and so reported their evaluation of the UK's performance over a more expansive period – including periods of Conservative rule, with corresponding levels of kinds of motivated reasoning.

F.34 Additional information from footnote 68

In Sweden, a Social Democratic minority cabinet formed on November 30, 2021, and our survey was in the field from 12/16/2021 - 12/30/2021. In Denmark, the Social Democrats formed a minority cabinet in June of 2019 that relied on outside support from the Red–Green Alliance, the Socialist People's Party, and the Social Liberal Party. Our survey was in the field in December of 2021. In the Italian case, our survey was in the field from 12/16/2021 - 12/22/2021, and the new 5-

party government formed at the end of February 2021. It was led by the independent Mario Draghi, the former president for the European Central Bank.

Appendix G: Alternative Scales and Practical Advice

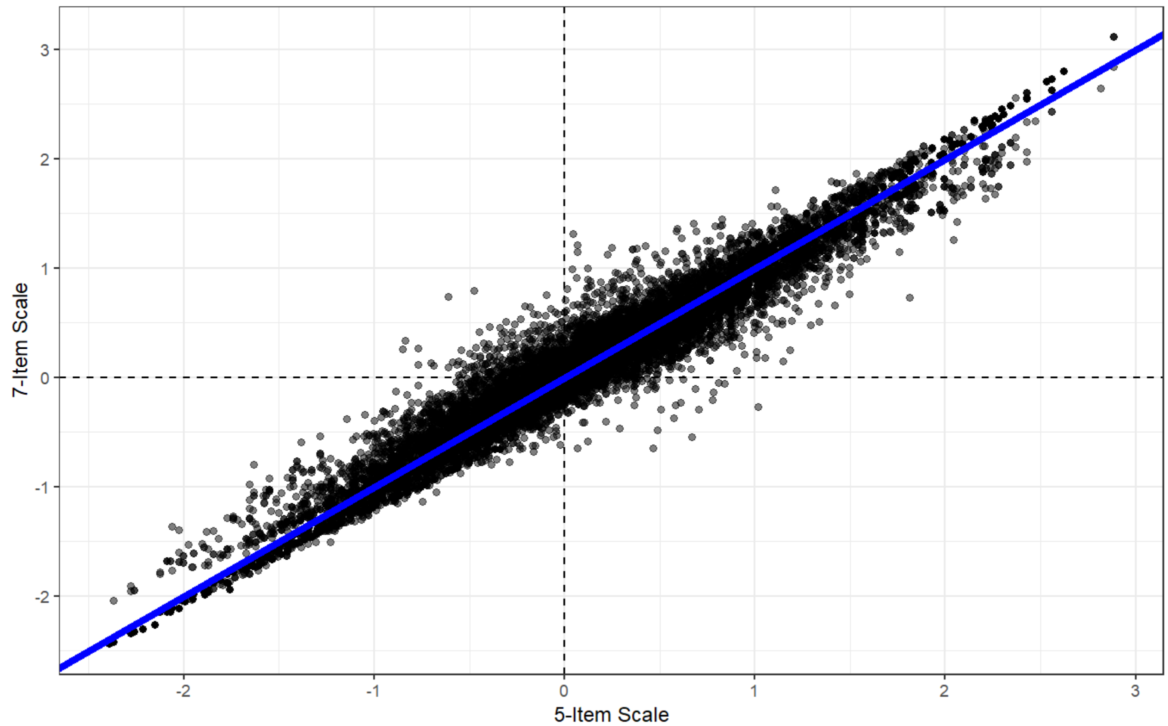
In this section we explore several alternative measures of multi-party attachment that may be of interest to researchers with specific research goals and constraints. These include measures that are not balanced and so may be most useful when measures of negative attachment is not needed, as well as a number of measures that rely on fewer items than our five-item battery. We also provide some practical advice on implementing these question batteries in surveys.

Comparison of our 5-item, balanced measure to a 7-item, unbalanced one

As discussed in section 3.1.1 of the main text, one of the compromises we made to obtain a balanced battery of questions suitable for estimating both positive and negative attachment was to exclude from our scale two items that are commonly included in such attachment scales: the "my party" item and the "connected" item (see Table 2 in the main text for the question wording). In this section, we show that this is not consequential for our analysis because the scores we obtain from the 7 item, balanced measure that includes these two items are quite close to the ones we obtain from the 5-item balanced measure. That said, for researchers unconcerned with building a balanced scale, adding these items does marginally improve scale reliability and so may be desirable.

Figure G1 provides a comparison of estimated attachments for all of our respondents from both the 5-item and 7-item scale.

Figure G1: Comparison of estimates from the 5- and 7-item scales



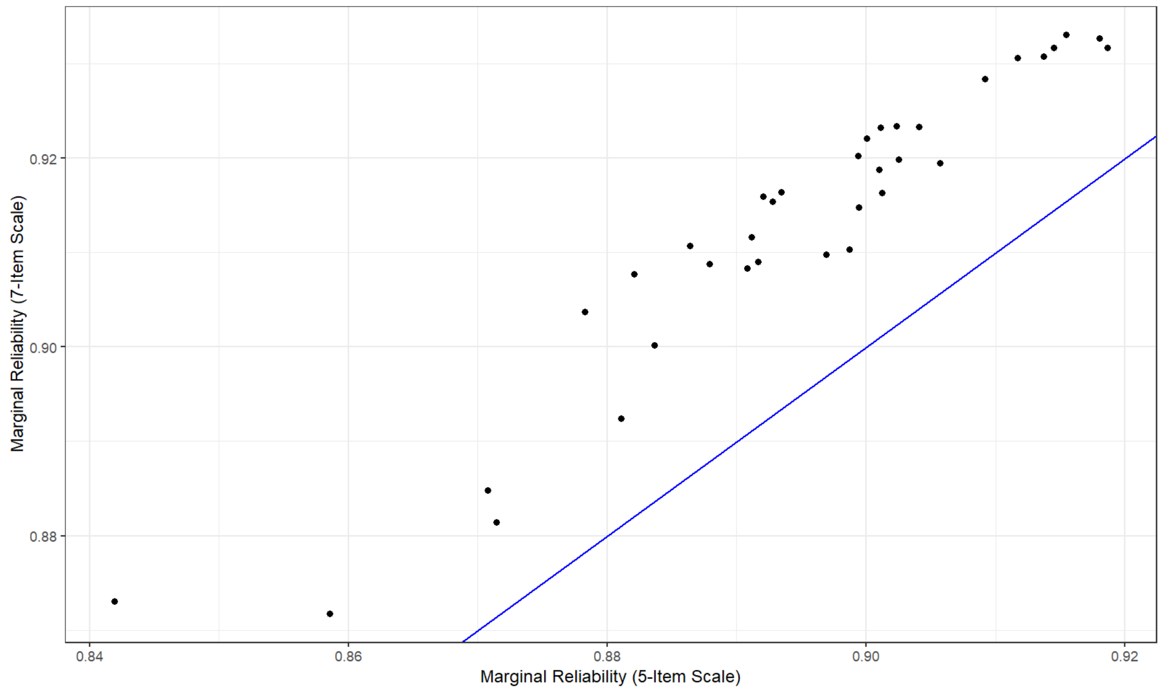
Next, Table G1 provides the inter-item correlations for the 7-item scale, where we see the patterns of correlations with the two new items are quite similar to the patterns for the five items.

Table G1: Inter-item correlations for the 7-item scale

	like	praise	feeling	close	common	connected	myparty
like	1.00	0.74	0.65	0.65	0.65	0.70	0.59
praise	0.74	1.00	0.69	0.69	0.68	0.71	0.64
feeling	0.65	0.69	1.00	0.70	0.70	0.62	0.63
close	0.65	0.69	0.70	1.00	0.78	0.65	0.64
common	0.65	0.68	0.70	0.78	1.00	0.64	0.64
connected	0.70	0.71	0.62	0.65	0.64	1.00	0.65
myparty	0.59	0.64	0.63	0.64	0.64	0.65	1.00

In addition, as we did when we evaluated the scale properties of our measure in Appendix section A.4, we can examine the marginal reliability of our scales for attachment to each party (and compare them to those estimates). Recall that we can interpret marginal reliability in the IRT framework analogously to a Cronbach's alpha in Classical Test Theory – so scores around .8 or above are encouraging. Figure G2 provides the estimates. The blue line is the 45-degree line and we see that for each party, we get a small improvement (plus ~.02 points) when we add the two unbalanced items.

Figure G2: Marginal Reliabilities of 5- and 7-item party scales



The price we pay for that, however, is that we muddy the interpretation of what an attachment of 0 in the scale means. As in all IRT models, an estimate of the underlying trait that is 0 means the individual is at the average of the trait. For our balanced scale, we argued in Section 3.3.1 in the main text, it is safe to interpret this zero as non-partisanship with respect to a given party. That, however, is less likely to hold in the unbalanced measure – where the mean attachment to a party is generally some degree of positive attachment. That, in turn, complicates what one should do about individuals who do not recognize a party. Clearly, assigning these individuals a score of zero is not a good idea, since for the unbalanced scale that assigns them some positive attachment to the party. Instead, one must assign them a negative number that represents not having any attachment (positive or negative) to the party. The only tenable way to do this, in our view, is to abandon the idea of a balanced scale altogether and implement a version of the scale that is more like those upon which we built (and that are discussed in section 3.3.1) – i.e., batteries that only include items that indicate degree of positive attachment. With these kinds of items, one can then assign a quite low negative score, relative to the estimated range in one's study, to the underlying trait (e.g., -3) for those who do not recognize the party.

Batteries with fewer items

Can one use question batteries with fewer items? In this section we briefly summarize some of the scale properties of partisan attachment vectors (both balanced and unbalanced) built with fewer items. Specifically, Table G2, summarizes estimates of the marginal reliability of attachment scales build with each combination of three items from our 5-item scale (these are average party-specific reliabilities but the variance over parties is not large – as one can see, for example, for our 5-item measure in Figure G2 above). We also provide the Cronbach's alpha.

Table G2: Average marginal reliability and Cronbach's alpha of 3-item scales

Items	Avg. Marginal Reliability	Cronbach's α
like-praise-feeling	0.847	0.874
like-praise-close	0.841	0.880
like-praise-common	0.840	0.878
like-feeling-close	0.837	0.861
like-feeling-common	0.836	0.860
like-close-common	0.842	0.881
praise-feeling-close	0.843	0.874
praise-feeling-common	0.841	0.871
praise-close-common	0.845	0.892
feeling-close-common	0.857	0.890

These statistics make it clear that there is little difference between the reliability of the various 3-item scales, Further, these compare favorably with the reliability of the 5-item scale, though compared to the marginal reliabilities for that measure (in Table A4 in appendix section A3.2.3), there is a fall off of about 5 points. Further, and as we would expect, there is also some improvement in coverage for the 5-item scale vs these 3-item ones (as indicated by total information plots for each scale) but that is a small effect. Further, most of this improvement comes from the "feeling" item, which (with its answer categories invoking "hate" and "love") we added to the scale after our pre-test to improve coverage of more extreme positive and negative attachments. Thus, if we were to choose a three-item scale, we would include the feeling item.

Another piece of advice to researchers looking for a shorter item battery would be to add answer categories. For our balance scale, we include only two positive and two negative choices. This is fine when we have 5-items (so 20 pieces of information on which to distinguish respondent answer patterns). However, we worry that for three items, we are likely losing some of the power of using a multi-item battery. We need to have instrumentation across the scale. One way to do that with fewer ordinal items is to add answer categories. With our balanced scale essentially halving the answers that tell us about positive and negative attachments respectively, using fewer items without adjusting those categories is likely a mistake.

Table G3 provides similar information for unbalanced scales built from smaller numbers of questions. In each we include the "my party" question, since this is the standard question scholars have used to tap a sense of belonging and that one is unlikely to exclude from an unbalance scale. Otherwise, we examine each combination of the other two items in our 5-item scale. The results (and our conclusions) are similar to those above: any combination of these items seems to be about equally good.

Table G3: Average marginal reliability and Cronbach's alpha of 3-item scales including an unbalanced item

Items	Avg. Marginal Reliability	Cronbach's α
like-praise-myparty	0.832	0.855
like-feeling-myparty	0.816	0.832
like-close-myparty	0.818	0.844
like-common-myparty	0.818	0.843
praise-feeling-myparty	0.827	0.848
praise-close-myparty	0.824	0.860
praise-common-myparty	0.823	0.858
feeling-close-myparty	0.830	0.852
feeling-common-myparty	0.829	0.850
close-common-myparty	0.828	0.875

Practical advice on survey implementation

One issue that interacts with the choice of a balanced or unbalanced item battery is how to handle respondents who do not recognize a party. Since our project is concerned with characterizing the extent of multi-party attachments and because we are at the exploratory stage of this effort, it was important to us to make sure we did not pre-maturely exclude such people from our analysis, so we gave our attachment battery for a party to respondents even if they did not recognize the party (with, of course, appropriate recognition of this fact, and instructions for dealing with it, in the survey). In the event, our examination of the these responses (see Appendix section A3.2.2) revealed both that there is no substantive structure in the responses - e.g., they are unstructured by the left-right, whereas all other responses are very strongly structured by the left-right – but there is a lot of spurious structure created by respondents satisficing in answering the items – i.e., choosing the same response category for all items (it is easy to distinguish such responses from "real ones" in which the respondent actually intends to choose, for example, the second answer category, because we reverse coded a number of items and have no central category).

Thus, while we decided to require all respondents to answer about all parties, even if they were unrecognized (and then we subsequently – after seeing the evidence above -- assigned these respondents a value of 0 for their attachment to those parties), what we would recommend to others is to not ask the attachment battery to respondents who do not recognize the party. That does not mean, however, that these individuals should be excluded from subsequent analyses because of this missing value. Instead, it seems safe to simply assign these individuals a score of zero for their attachment to that party.

This discussion highlights two other pieces of practical advice: Answer categories should not have a middle category, some items should be reverse coded, and there should be enough items (no fewer than 3) so that one can easily identify straight-liners in the un-reverse-coded responses. The latter is important even if one does not ask respondents to answer attachment batteries about parties with which they are unfamiliar, since some respondents who say they are familiar with a party will nevertheless straight-line on one of the answer categories.

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