Ideological and Affective Polarization in Multiparty Systems

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Abstract

Inspired by increasingly partisan politics in the US, a burgeoning literature on affective polarization applies the concept to multiparty systems. While there are many literature reviews on polarization in the US, as of yet there exists no comparable stocktaking of comparative research on polarization in multiparty systems. This review article fills this gap by providing a comprehensive overview of relevant concepts and operationalizations of ideological and affective polarization in multiparty systems and by summarizing comparative research on the causes and consequences of polarization in these systems. The review also makes an empirical contribution by creating and analyzing cross-national data on polarization to scope the relationship between ideological and affective polarization across several measures. We present the data and measures in an accompanying *Encyclopedia of Polarization*.

Keywords: Political Polarization, Ideological Polarization, Affective Polarization, Multiparty systems, Electoral systems, Turnout

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1 Introduction

The evolution of increasingly partisan politics in the United States, along with the widespread perception that similar trends are underway in other established democracies, has reinvigorated scholarly interest in political polarization in multiparty systems. A burgeoning literature has begun to apply the concept of affective polarization to European multiparty systems.

While several review articles have addressed and summarized research on and developments in the United States (Fiorina and Abrams 2008; Hetherington 2009; Iyengar et al. 2019; Layman, Carsey, and Horowitz 2006; Lelkes 2016; Prior 2013), comparable reviews of the literature on polarization in multiparty systems are lacking. Existing reviews either focus only on ideological (Dassonneville and Çakır 2021) or affective polarization (Wagner 2024) or are very limited in their scope (Borbáth, Hutter, and Leininger 2023). Because measuring polarization in multiparty systems is more complex than in the US two-party system, one cannot simply assume that findings from the US context are directly applicable to multiparty systems.

Thus, this review article fills a gap by providing a comprehensive overview of relevant concepts and operationalizations of ideological and affective polarization that have been applied to multiparty systems and by summarizing scholarly findings on the causes and consequences of polarization in these systems. To keep this review's focus on comparative research on multiparty systems, we make only a few references to the vast literature on polarization in the American two-party system where necessary. Although we review research from multiparty systems in general, the majority of the papers relate to Europe. This is not a set focus on our part, but rather reflects the fact that the majority of research is focused on these countries.

We focus on both ideological and affective polarization. The former defines polarization as (growing) programmatic differences between political camps. Ideological polariza-

tion is thought to limit the possibilities for cross-party and cross-group compromise as parties, candidates, or citizens move to the political margins. However, it can also encourage popular participation by making representative politics more meaningful to citizens (Wessels and Schmitt 2008). Affective polarization adds an affective component to our understanding of polarization. It is also believed to hinder compromise, as partisans of different camps are less willing to talk to each other. By considering both, we can also more thoroughly examine the relationship between ideological and affective polarization.

In the course of the review, it will be demonstrated that discrepancies in the results can, to some extent, be attributed to the differing measures and data employed by researchers. To address this, we will present an empirical contribution, where we analyze cross-national data on polarization to examine the consistency of existing measures of polarization across space, time, and different data sources. This empirical undertaking is based on two complementary resources we have developed for researchers interested in political polarization. First, we present the *Encyclopedia of Political Polarization*[1], an online repository that catalogs available measures of political polarization and their use in applied research, along with data sources for cross-national comparative research. It also features an interactive data viewer and the ability to download time-series cross-sectional data on polarization at the country-year level. Second, we present the `polaR` R package[2], which implements the measures documented in the *Encyclopedia* and provides functions for importing the most commonly used cross-national comparative datasets.

We begin our review with a brief definition of political polarization before discussing key challenges in conceptualizing and measuring polarization in multiparty systems.

[1]The *Encyclopedia* is available online at https://polarization.wiki.

[2]The package is still under development. A development version of the package can be installed from https://gitlab.com/felixgruenewald/polaR Comments, suggestions, and feature requests are welcome.

We then summarize the state of comparative research on the causes and consequences of polarization in these systems, followed by an empirical assessment of how different measures of affective and ideological polarization correlate with each other over time and across data sources. We conclude by summarizing our findings and discussing implications for future research on political polarization.

2 Defining polarization

In political science, the concept of polarization originally referred exclusively to (growing) programmatic differences or the divergence of political opinions between groups (e.g., political camps) in society. Nowadays, this is commonly described as ideological polarization. The concept of affective polarization adds an affective component to our understanding of polarization and describes the divergence of sentiment between groups. In this section, we briefly define both terms.[3]

Beginning with Sartori's seminal work on party systems (1976), polarization, which he defined as growing distance between political actors, has been a central theme in the literature on multiparty systems in Europe and beyond (Dassonneville and Çakır 2021). Sartori, and most of the literature until recently, understood distance in a purely programmatic sense, often along a single left-right dimension. In its simplest form, ideological polarization can be measured as the distance between the policy positions of parties or their supporters, but more sophisticated methods also take into account the full distribution of opinions across the political spectrum.

Polarization is different from party-system fractionalization (Dalton 2008), which measures the distribution of vote or seat shares across parties, but can be considered a

[3]This conceptual distinction is widely shared in the discipline, although some authors use different terminology to describe the two concepts, for example, Bernaerts, Blanckaert, and Caluwaerts (2023) speak of idea-based polarization, i.e., ideological polarization, and identity-based polarization, i.e., affective polarization.

component of politicization (Hutter and Grande 2014). Although conceptually distinct, polarization tends to correlate with party-system fractionalization because many measures, as we will see in the next section, integrate vote and seat shares. In the literature on the politicization of the EU, politicization is defined as the extent to which the EU is both a salient and politically contested, i.e., polarized, political issue.

More recently, an emerging literature, pioneered in the US context by Iyengar, Sood, and Lelkes (2012), has begun to distinguish affective from programmatic polarization. Affective polarization goes beyond the programmatic side of politics and highlights that political identities go along with sympathies for members of one's own political camp and antipathies toward the opposing side. Affective polarization is mostly commonly understood as the difference between ingroup like and outgroup dislike, although this is not the only possible way to define it (see Röllicke 2023).

The study of political polarization began with an examination of the distribution of political positions of parties on a simple left-right scale (e.g., Taylor and Herman 1971) but later occasionally included ideological polarization of the public, too (e.g., Bischof and Wagner 2019). Affective polarization, in contrast, is mostly seen as a mass public phenomenon, although it is also conceivable among political elites. Anecdotal evidence, e.g., the vile confrontation between the 2016 US presidential candidates Trump and Clinton, supports this view, but systematic empirical measurements are rare (but see Enders 2021; Öhberg and Cassel 2023).

Thus, as summarized in Figure 1, the most important conceptual distinctions when discussing polarization are whether one is concerned with ideological or affective polarization, and whether parties or politicians (elite level) or individual citizens (mass public) are the unit of analysis.

In the case of affective polarization, there is another subordinate classification, that distinguishes between horizontal, partisans disliking partisans of other parties, and

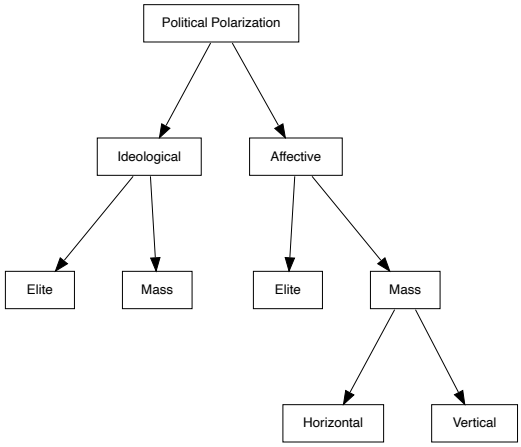

Figure 1: Polarization can be conceptualized as ideological or affective and both can be measured at the elite level or among the mass public.

vertical affective polarization, partisan disliking other parties or their elites (Röllicke 2023). This distinction does have important implications for measurement as we will show later on.

Finally, it is worth noting that polarization can denote both a state (of divisions in society) or a process (moving towards greater divisions in society) (see also Bramson et al. 2017; Röllicke 2023). Nevertheless, existing empirical measures of polarization are mostly implicitly, sometimes explicitly based on an understanding of polarization as a state. However, these measures, if measured over multiple time points, lend themselves to capturing a process of increasing, stable, or decreasing polarization. Next, we detail how researchers have measured these different concepts of polarization among political elites and the mass public. It will become clear that the distinction between elite and mass levels is not always as clear empirically as it appears to be conceptually.

3 Measuring ideological and affective polarization

In this section, we review and systematize the current state of the art in measuring ideological and affective polarization in multiparty systems. Both concepts are relatively

easy to apply to the U.S. case. Here, in most applications, ideological polarization at the elite level is simply measured as the difference between the positions of the two parties, for example, the distance between the average Republican and the average Democratic member of Congress (Banda and Cluverius 2018). Similarly, ideological polarization among citizens can be measured as the difference in position or opinion between Democrats and Republicans (Abramowitz and Saunders 2008; but see Lelkes 2016). Likewise, affective polarization is typically measured as the difference between inparty and outparty thermometer scores but can also be measured through items tapping social distance or stereotyping of outgroup members (Iyengar, Sood, and Lelkes 2012). However, measurement quickly becomes more complex once one moves beyond the US's two-party system.

Assessing polarization in multiparty systems is considerably more complicated because there are more than two parties and parties differ significantly in size. The former implies that one must choose between distances between one party and all other parties and their supporters (Gidron, Adams, and Horne 2020; Reiljan 2020) or measuring the distance between all parties or partisans (Wagner 2021). The latter implies a choice between treating all parties equally (e.g., Hobolt and Hoerner 2019) or weighting by the size of the parties as measured by their seat (Taylor and Herman 1971) or vote share (Dalton 2008).

Ideological polarization is measurable on both the elite and the citizen level and requires situating parties or their supporters in an ideological space. Researchers can obtain estimates of the ideological positions of parties from content analyses of party manifestos (Birch 2020; Steiner and Martin 2012; Wilford 2017), expert surveys (Carroll and Kubo 2018; Dalton and Berning 2022), roll-call votes scaling (Pierce and Lau 2019) or survey respondents' rating of party positions (Dalton 2008; Lupu 2015; Vegetti 2014), among others. When measuring ideological polarization in the population, researchers typically use surveys to capture and aggregate respondents' ideological self-positioning

(e.g., Reiljan 2020) or opinions on specific issues (e.g., Birch 2020).

Ideological polarization on the elite level can be measured in its simplest form as the absolute ideological distance between the positions of the most extreme party on the left and the most extreme party on the right of the political spectrum (Abedi 2002; Andrews and Money 2009; Crepaz 1990; Keman 1997; Matakos, Troumpounis, and Xefteris 2016). However, the most extreme parties in multiparty systems can often be quite small, which means that measures that capture the pure range of ideological positions in a political system may be an inaccurate reflection of the overall polarization in a party system.

Therefore, measures that account for all parties by calculating the variance (Hazan 1997; Taylor and Herman 1971, 1971) or standard deviation of party positions, unweighted (Bischof and Wagner 2019; Hobolt and Hoerner 2019) or weighted (Dalton 2008; Lupu 2015), can be considered an improvement. Weighting by the parties' vote shares (Dalton 2008; Lupu 2015) or seat shares (Hazan 1997; Taylor and Herman 1971) takes into account the parties' electoral success and thus their differing importance.[4]

Dalton's (2008) polarization index is the most widely used measure in comparative research (used by Amitai 2023; Curini and Hino 2012; Matakos, Troumpounis, and Xefteris 2016, among others). It takes as input CSES data on respondents' party placements and applies a standard deviation formula that standardizes by the mean of the ideology scale used by CSES. Ezrow's (2007) party system dispersion measure represents an unstandardized variant of Dalton's measure. By replacing party positions with the average ideological self-positioning of their partisans, it can also be used to measure ideological polarization among partisans (Reiljan 2020).

Other less common, but in principle equally broadly applicable measures include the related measures of party-system compactness (Alvarez and Nagler 2004) and extrem-

[4]In these measures, the mean position of the party position, against which the positions of all parties are compared and then squared, is usually calculated using vote or seat shares as weights, too.

ism (Ezrow 2008), which measure the dispersion of party positions relative to the average voter (rather than the average party, as in most other measures). Additional approaches include calculating the difference in means of left and right party positions (Moral 2017), using network analysis (Maoz and Somer-Topcu 2010), IRT models (Traber, Stoetzer, and Burri 2023), or V-DEM's expert ratings of polarization (Bernaerts, Blanckaert, and Caluwaerts 2023).

Most research relies on a single left-right dimension to measure programmatic polarization. However, it is now increasingly common to distinguish between an economic and a cultural dimension of political competition, the latter being referred to as the new politics cleavage (Kitschelt and Hellemans 1990) or GAL-TAN (Hooghe, Marks, and Wilson 2002), and to measure polarization along both dimensions separately (Andrews and Money 2009; Borbáth, Hutter, and Leininger 2023; Dassonneville and Çakır 2021). The approaches to measuring ideological polarization reviewed here are agnostic to the substantive content of the ideology scale used. All they require is that the ideology scale can reasonably be interpreted as continuous. Hence, it would be possible to measure polarization along the new integration-demarcation cleavage (Kriesi et al. 2006) or even more specific policy dimensions, such as environmental protection (Birch 2020).

The phenomenon of affective polarization denotes the contrast between sympathies for members of one's own political camp and antipathies toward the opposite side. Affective orientations can be directed at both politicians (vertical) and partisans or voters (horizontal) of a party. Affective polarization has so far been measured based on party thermometer questions (Iyengar, Sood, and Lelkes 2012; Reiljan 2020; Wagner 2021), implicit association tests (Iyengar and Westwood 2015), economic games (Carlin and Love 2013; Westwood et al. 2018), or items measuring the importance of partisanship for non-political outcomes, such as social interactions (Tichelbaecker et al. 2023), the award of scholarships (Iyengar and Westwood 2015) or marriage (Iyengar, Sood, and

Lelkes 2012). Most of these latter items have rarely been used outside the US. Party thermometer items are the most common basis for cross-national comparative research, but also for single-country case studies (e.g., Harteveld 2021a; Harteveld and Wagner 2023), as they are readily available in many secondary election surveys. However, as Hernández, Anduiza, and Rico (2021) show using the CSES, affective polarization declines precipitously after an election, suggesting that researchers may be overestimating polarization by relying primarily on election polls. Moreover, Berntzen, Kelsall, and Harteveld (2023) indicate that distinct emotions such as anger, disgust, and fear are only moderately correlated with the party thermometer, suggesting possible limitations of the instrument as a measure of general affective reactions.

Researchers measure affective polarization as the average difference between inparty and outparties evaluations (Reiljan 2020), or the spread of party like-dislike scores (Wagner 2021). Wagner's (2021) measure, which, like Dalton's (2008) measure of ideological polarization, is essentially a weighted-standard deviation formula, appears to be the more popular.[5] Most notably, Wagner's spread measure can be computed at the individual level to explore variation in affective polarization across individuals. Aggregation to the party-system level is possible by simply calculating the mean of a country sample.

To obtain party positions for comparative research, researchers can rely on the Comparative Study of Electoral Systems (CSES), for national elections, and the European Election Study (EES), for elections to the European parliament, which provides respondents' ratings of party positions, the Manifesto Project Dataset (MARPOR, formerly CMP), which provides party positions based on content analyses of the parties' election manifestos, or the Chapel Hill Expert Survey (CHES), which provides expert-coded party positions (for a summary of sources, see Table 1). For measuring ideological po-

[5]Used, for example, by Bettarelli, Reiljan, and Van Haute (2023) to measure affective polarization at the regional level or Garzia, Ferreira da Silva, and Maye (2023) to scope out long-term developments.

larization at the mass level, the CSES, the Eurobarometer (EB) surveys, the European Social Survey (ESS) and the EES provide data on the ideological self-positioning of citizens for many countries and at several points in time. However, the CSES is the only large-scale, cross-national, and publicly available survey that includes the party thermometer questions needed to calculate the most common measures of affective polarization.

Table 1: Available data sources for measuring different types of polarization at different levels of measurement for cross-national comparative research.

	Ideological	**Affective**
Elite	CHES, CMP, CSES, EES	-
Mass	CSES, EB, EES, ESS	CSES

Given the intention to measure a particular type of polarization – either ideological or affective – at a particular level – elite or mass – researchers still face several measurement choices. First, whether to consider polarization between all parties simultaneously, only between one party and all other parties, or, more recently, between party dyads (for the latter see Gidron, Adams, and Horne 2022). Second, whether to weight by party size, and third, of course, which input data to use. At the time of writing, the dominant approach in the literature seems to be not to rely on identifying a single outparty and to account for the importance of parties by calculating weighted measures. Among the data sources, the CSES is the most popular. Its appeal lies in the ease with which elite and mass polarization measures can be computed from the same dataset and its relatively broad geographic and temporal coverage.

However, we also believe that there are a number of issues with current practices that researchers intending to measure and study polarization should be aware of. While these practices are not necessarily flawed, nor are there obviously better approaches, we believe it is important for researchers to be aware of them and to consider whether and how they affect their specific research projects. The first issue concerns both

measures of ideological and affective polarization. The second concerns the use of population surveys to estimate ideological polarization among parties, and the third concerns the target of commonly used like-dislike items.

First, while it clearly makes sense not to treat all parties equally but to weigh party positions by vote or seat share, this makes the measure dependent not only on party behavior but also on citizen behavior. Even if party positions remained constant between elections, measures of polarization would change if the distribution of votes changed. This is certainly problematic if one is concerned with the relationship between elite-level polarization and some mass-level cause or consequence, as it introduces endogeneity. In contrast, a study by Hübscher et al. (2023) provides an interesting example where the endogeneity of polarization to voter behavior is intentional. Using time-invariant ideology scores from the ParlGov database, they show that vote switching to more extreme parties increases party-system polarization. Therefore, researchers should be explicit about whether they understand ideological polarization among parties to be driven by party strategy, voter behavior, or both and measure it accordingly.

Second, many papers measure ideological polarization among parties based on citizens' perceptions of party positions. However, it is uncertain to what extent these perceptions can be considered objective measures of parties' positions as citizens' perceptions of parties and candidates are influenced by a variety of factors at the individual (Krosnick 1990) and contextual levels (Fortunato and Stevenson 2012), or both (Dahlberg 2013). Some of these influences, such as coalition governments (Fortunato and Stevenson 2012), can be seen as rational updating of beliefs about party positions. However, voters are also known to overstate the closeness of their position to their preferred party or candidate, while exaggerating their distance from disfavored parties and candidates, a phenomenon known as projection (Krosnick 1990; Merrill, Grofman, and Adams 2001).

What does projection imply for measuring ideological polarization? While a full, empirically grounded answer to this question is beyond the scope of this review article, a few recommendations seem in order. At best, cognitive mechanisms such as projection introduce random error into measures using citizens' perceptions of party positions, thus leading to attenuation bias. At worst, they introduce a significant directional bias into measures of ideological polarization. Thus, in our view, researchers would be well advised not to exclusively rely on citizens' evaluations, but to triangulate parties' positions with other sources. This point is particularly relevant if scholars are concerned with testing links between mass- and elite-level polarization.

Third, affective polarization conceptually denotes animosity between partisans of different political camps. However, due to a lack of alternatives, it is often measured using widely available party thermometer items that capture individuals' likes and dislikes of parties rather than partisans. As Druckman and Levendusky (2019) point out, orientations toward party elites and supporters are conceptually distinct – Röllicke (2023) refers to measures based on the former as vertical polarization and those based on the latter as horizontal polarization – and may, therefore, also differ empirically. Initial findings from the Netherlands (Harteveld 2021a), Israel (Gidron, Sheffer, and Mor 2022), and Romania (Ciobanu and Sandu 2022) suggest that evaluations of parties and partisans are strongly but not perfectly correlated. Using survey data from Spain, Comellas Bonsfills (2022) shows that affective polarization measured by feelings toward parties tends to overestimate the extent to which people dislike voters of opposing parties but that the gap between party and partisan dislike decreases in the ideological distance between partisans. Finally, Reiljan et al. (2023), by computing measures of affective polarization from the CSES's like-dislike questions on parties and their leaders, show that both are strongly correlated but that affective polarization toward parties is stronger than toward their leaders. In contrast, by using distinct measures for out-party polarization (party thermometer) and out-partisan polarization

(social distance measures), Tichelbaecker et al. (2023) find only a modest relationship between both concepts, ranging from from highs of 0.31 to 0.33 in France, Germany, Italy, and Spain to lows of 0.19 and 0.17 in Greece and the United States.

4 Causes and consequences of polarization in multiparty systems

While we possess a set of established measures that allow us to describe patterns of polarization, its causes and consequences still need to be better understood. Therefore, we now discuss the causes of polarization in multiparty systems before discussing research on its consequences. In doing so, we, again, distinguish between ideological and affective polarization.

Research on the causes of ideological polarization has focused primarily on economic and institutional factors. In an early study, Sigelman and Yough (1978) examined the impact of societal affluence on ideological polarization in a sample of 35 countries and concluded that "the real key to understanding cross-national differences in left-right polarization appears to be more political than socioeconomic" (p. 374). As a result, much of the subsequent research has focused on party-system characteristics, with most testing the assumption that proportional electoral systems and a larger number of parties are associated with greater ideological polarization.

The results for these two predictors are contradictory. Dow (2001; 2011) finds that more proportional systems support greater ideological dispersion while Andrews and Money (2009) show that as the number of parties increases, the ideological distance between the most extreme parties increases. In contrast, both Ezrow (2008) and Curini and Hino (2012) present null results regarding the relationship between proportional representation or the number of parties and ideological polarization. A subsequent

study found that a higher number of parties leads to increased platform polarization in terms of distance between the two farthest platforms but does not elevate overall polarization according to Dalton's (2008) polarization index. In contrast, more proportional systems exhibit greater polarization in both measures (Matakos, Troumpounis, and Xefteris 2016). Finally, Dalton (2021) finds that party-system polarization is greater in proportional systems but, surprisingly, negatively correlated with the effective number of parties when his measure is reapplied to all available CSES cumulations.

Despite Sigelman and Yough's discouraging initial findings on the role of the economy, other studies have examined the relationship between economic conditions and political polarization. These studies suggest that ideological polarization increases during bad economic times. Perhaps unsurprisingly, given its association with 'TINA'[6] politics, international economic integration appears to reduce party polarization, as measured along an economic left-right dimension (Steiner and Martin 2012). However, Hübscher, Sattler, and Wagner (2023) identify austerity as a cause of political polarization because it directs citizens' votes to more extreme parties. Han (2015) finds that income inequality is associated with greater polarization when electoral systems are more permissive. While Han focuses on the general left-right dimension, Fenzl (2018), in another cross-national study, finds that income inequality depolarizes party positions on economic issues.

Since parties are supposed to represent the interests of their supporter base, it seems natural to expect that parties would respond to societal polarization. However, few studies have examined this relationship. Dreyer and Bauer (2019) find that parties adopt more extreme positions in response to higher voter polarization but that this effect is conditioned by voters' propensity to abstain. When the propensity to abstain is low, parties are less responsive to voter polarization. Parties in which activists have

[6] An acronym for "There is no alternative," a phrase coined by Margaret Thatcher that refers to narratives suggesting that there are no viable alternatives to a particular set of policies.

a greater say in leadership selection tend to produce more ideologically extreme candidates and policies resulting in higher ideological party polarization in countries where, on average, parties grant greater authority in candidate selection to party activists (Amitai 2023).

All of the above studies have attempted to explain polarization at the elite level, i.e., party-system polarization. However, a few studies have also addressed the question of what causes ideological polarization among citizens. For example, Bischof and Wagner (2019) find that the entry of a radical right party into parliament increases ideological polarization among the electorate. Further research shows that the politically engaged, in particular, become more polarized in response to parties' ideological shifts (Moral and Best 2023). Ideological polarization among citizens, it seems, follows party-based polarization. Although demographic change raises expectations of increasing intergenerational conflict, O'Grady (2022) shows that within Europe's aging societies, age divisions over social issues and immigration are similar in magnitude today as they were in the 1980s. Thus, demographic change cannot explain the growing ideological polarization observed in some countries.

Ideological and affective polarization are, of course, intuitively linked, but the nature of this relationship is not yet fully understood. A number of studies have examined whether ideological polarization among parties translates into affective polarization among the mass public (Banda and Cluverius 2018; Rogowski and Sutherland 2016). However, as these studies were conducted in the dichotomous US party system, the question remains to what extent these findings generalize to multiparty systems.

Westwood et al. (2018) provides further evidence from the US, the UK, Belgium, and Spain, that the further away from the outparty the voter is in the ideological space, the less trust (used as a measure for affective polarization) they have in the outparty (see also Ryan 2023 for evidence from Denmark and Sweden). From a Downsian perspective,

Algara and Zur (2023) show that affective polarization is driven by congruence between citizens and their party, relative to other parties, in the general liberal-conservative space and across a variety of salient issue domains. Specifically, it appears to be the salience of an ideological disagreement that leads to its affective component (Han 2023; Simon et al. 2019). However, with evidence from five multi-party systems, Comellas and Torcal (2023) point out that affective attachment to an ideological label is more important in explaining affective distance between ideological blocs than their issue extremity or consistency.

With a broader focus, Gidron, Adams, and Horne (2022) show with a CSES sample that voters' dislike of outparties is stronger for parties whose elites disagree with the economic and cultural positions of their inparty, with the cultural dimension becoming more relevant over time. Reiljan (2020) confirms a significant relationship between both supply-side and demand-side ideological polarization and polarized like and dislike ratings of parties. However, these effects vary significantly across countries, leading Reiljan to conclude that the two types of polarization should be treated as distinct concepts. At the individual level, citizens distinguish between parties and partisans and dislike ideologically distant parties more strongly (Harteveld 2021a).

An important mechanism linking ideology and affect is ideological sorting, whereby voters' preferences on policy issues become increasingly aligned with the positions of their preferred party (Levendusky 2009; Mason 2015). Harteveld (2021b), covering multiple elections in 40 countries using CSES data, is able to show that social sorting, that is how voters' social identities proxied by income, education, religion, or region align with their partisan identities, contributes to greater dislike of out-parties.

Differences in affective polarization across party systems are also explained by features of the party system. On the one hand, polity matters. Bernaerts, Blanckaert, and Caluwaerts (2023) show that more consensual political systems are less prone to

ideological but more prone to affective polarization, presumably due to greater social sorting in these more proportional systems. On the other hand, politics matters as well. At the macro level, Adams et al. (2023) find that the proportion of women in parliament is negatively related to affective polarization. Moreover, coalitions reduce the effect of elite disagreement on partisans' negative feelings toward the coalition partner (Bantel 2023; Gidron, Adams, and Horne 2022). Similarly, Bassan-Nygate and Weiss (2022) can show in Israel that the perception of the likeliness of a coalition can increase tolerance towards other parties. Bantel (2023) argues for the crucial role of political left-right camps in multiparty systems. The presence of radical right parties, in particular, contributes to affective polarization, as these parties attract strong dislike from partisans of other parties and have supporters who often strongly dislike all other parties (Bantel 2023; Gidron, Adams, and Horne 2022; Harteveld, Mendoza, and Rooduijn 2022).

It is widely assumed that ideological polarization makes cooperation and finding compromises more difficult. However, not all researchers assess the consequences of ideological polarization exclusively negatively. In fact, for a long time, the prevailing view was that ideological polarization was a good thing because it made elections more meaningful for citizens (Wessels and Schmitt 2008). Indeed, multiple cross-national comparative studies provide robust evidence that polarization increases turnout in multi-party systems (Béjar, Moraes, and López-Cariboni 2020; Crepaz 1990; Dalton 2008; Steiner and Martin 2012; Wessels and Schmitt 2008; Wilford 2017). Turnout appears to be highest when polarization is high and the number of parties is still relatively low (Wilford 2017). Research on polarization and turnout also provides clues to understanding long-term trends in electoral participation. For instance, Steiner and Martin (2012) find that economic integration decreases party polarization, thereby depressing turnout.

Comparative research on the individual level has contributed further evidence that

greater electoral choice, as measured by ideological polarization in the party system, mobilizes individuals to vote (Moral 2017; Wessels and Schmitt 2008). Individual perceptions of polarization between parties can vary, of course, but also mobilize voters to vote (Moral 2017), especially if they are ideologically close to a party (Hobolt and Hoerner 2019). Relatedly, Dassonneville and Çakır (2021) find that ideological polarization mobilizes in particular left- and right-wing citizens but demobilizes centrist citizens. Also, proximity (Dalton 2008; Lachat 2008; Singer 2016) and issue voting (Alvarez and Nagler 2004) seem to be strengthened by polarization. However, as polarization appears to strengthen party attachments (Lupu 2015), it needs to be clarified whether these results reflect better-informed or simply more partisan vote choices. Results showing that polarization reinforces partisans' perceptions that their preferred party is the most competent and ideologically close (Vegetti 2014) suggest that it may be the latter.

While most of the literature has focused on the effects of party-system polarization on the electorate, some studies have also examined its effects at the elite level. Since coalition-building requires policy compromises between parties, polarization is thought to make it more difficult to form and maintain a coalition. Early on, Taylor and Herman (1971) not only pioneered the measurement of party-system polarization, but also examined its effect on government stability, finding that ideological polarization is negatively correlated with government duration. However, Maoz and Somer-Topcu (2010) find that polarization increases cabinet duration, arguing that polarization reduces the number of viable coalitions, making it less likely that crises can be resolved by changing the partisan composition of the cabinet without resorting to elections. This relationship is also confirmed by Savage (2013) in an analysis of Eastern Europe, where governments in more polarized party systems are less likely to experience early terminations. On the other hand, Bergmann, Bäck, and Saalfeld (2022) finds no significant effect of ideological polarization on cabinet duration. In sum, the evidence on

the effect of polarization on government stability is still inconclusive.

The consequences of affective polarization are also multifaceted and even extend beyond the political sphere. Affectively polarized individuals generally perceive party positions as more extreme and the party system in general as more ideologically polarized, regardless of whether such polarization exists (Ward and Tavits 2019). Not surprisingly then, several studies find that affective polarization, too, has a positive effect on citizens' political engagement. Individuals who are more affectively polarized are more likely to vote (Harteveld and Wagner 2023; Wagner 2021) and place greater importance on the outcome of elections (Ward and Tavits 2019).

However, the list of potential negative consequences of affective polarization appears to be much longer. Affective polarization is associated with lower trust in opposition parties (Iyengar et al. 2019) and lower satisfaction with democracy (Wagner 2021). Affectively polarized citizens can hold parties accountable by being active voters, but at the same time, they may be unwilling to accept electoral losses and are more likely not to hold their own party accountable (Ward and Tavits 2019). Consequently, more affectively polarized societies are more likely to have experienced democratic backsliding in recent decades (Orhan 2022). However, recent experimental evidence from the US suggests that affective polarization has no effect on democratic norms or accountability (Broockman, Kalla, and Westwood 2022).

Affective polarization also spills over into non-political spheres. Affective polarization implies less willingness to cooperate across party lines (Westwood et al. 2018), to consider other points of view (Hobolt, Leeper, and Tilley 2020), and less willingness to afford help to partisans of a disliked party in case of a medical emergency (Stoetzer et al. 2022). Thus, initial findings from European multiparty systems seem to mirror findings from the US that people's affective orientations not only color their political views but also influence their behavior in non-political domains (cf. Iyengar et al.

2019).

While existing studies on polarization have produced some stylized facts, such as that polarization increases voter turnout, the current state of the art is also characterized by inconsistent results, such as on the impact of electoral systems. The studies we reviewed differ widely in terms of the countries included in the sample and the specific time period analyzed, which may explain the heterogeneous results. They also use different types of data to measure party positions and differ in their approaches to operationalizing party-system polarization. For example, most of the aforementioned studies use the CSES, while others use the CHES, EB, EES, MARPOR, a compilation of single country surveys such as the Finish Election Study (FES) or the German Longitudinal Election Study (GLES), or original survey data (e.g. Torcal et al. 2023). These differences in the data not only lead to differences in the sample, as noted above, but also to potentially significant differences in the measurement of polarization. Moreover, the studies we review use more than fifteen different measures of ideological polarization and affective polarization, respectively. In the next section, we examine the consistency of these measures across space, time, and different data sets in order to plausibilize whether differences in measurement can lead to differences in substantive results.

5 Trends and correlations

For the US, it is relatively undisputed that ideological (Abramowitz and Saunders 2008; Layman, Carsey, and Horowitz 2006; Mccarty, Poole, and Rosenthal 2006) and affective polarization (Garzia, Ferreira da Silva, and Maye 2023; Iyengar et al. 2019; Iyengar, Sood, and Lelkes 2012) have increased in recent years. However, the US is also an unusual case by international comparison in that the country experienced unusually low levels of polarization in the decades after WWII. Indeed, despite a recent

increase in polarization among parties and the public in the US, comparative analyses find that the US exhibits relatively average levels of polarization in terms of ideological (Dassonneville and Çakır 2021) and affective polarization (Reiljan 2020; Wagner 2021). The US, it seems, are simply catching up to Western European norms of polarization, where parties have robust roots in social milieus and come with strong social identities created around them.

But what about polarization in multiparty systems? Are there any discernible patterns? Do such diagnoses depend on the measures or data sources used? Beyond the US, ideological polarization has, by some accounts, increased in some countries and decreased in others (Borbáth, Hutter, and Leininger 2023; Dalton 2021), and trends depend on which policy dimension one focuses on (Dassonneville and Çakır 2021). Similarly, affective polarization did increase in some countries while it decreased in others (Borbáth, Hutter, and Leininger 2023; Boxell, Gentzkow, and Shapiro 2022; Garzia, Ferreira da Silva, and Maye 2023; Gidron, Adams, and Horne 2020). However, previous research has focused on different selected measures. This variety of approaches used in the literature raises the question of whether differing diagnoses of trends and inconsistent findings on the causes and consequences of polarization depend at least partly on how polarization is conceptualized and measured. Furthermore, as mentioned before, it might also affect substantive results and conclusions.

To provide a more systematic assessment, we use data from the CSES, ESS, and EB surveys as well as the CHES and MARPOR projects to compute several different measures of ideological and affective polarization on a country-year basis. We compute these measures from the raw data using custom R functions that we have coded for this purpose and assembled into an R package.[7] We further document these measures in the *Encyclopedia of Polarization*, an online repository that currently catalogs ten

[7] A development version of the package can be installed from https://gitlab.com/felixgruenewald/polaR

different measures of political polarization and their use in applied research, as well as data sources for cross-national comparative research.[8] We hope that researchers will find these to be useful resources for choosing and calculating measures of political polarization for their research.

In Figure 2, we track the levels of ideological polarization as measured by four popular measures of polarization: Dalton's (2008) polarization index, the standard deviation of CSES respondents's self-placement on the left-right scale, Reiljan's (2020) Affective Polarization Index (API) and Wagner's (2021) weighted spread of like-dislike scores. The latter two also rely on CSES data. We use these measures to gauge levels of ideological and affective polarization in twelve countries over the period 1990–2021.[9] This descriptive exercise allows us to get a fuller picture of whether the common perception that polarization is increasing in many established democracies is actually rooted in fact.

[8]The *Encyclopedia* is available online at https://polarization.wiki.

[9]Readers interested in other measures or countries can use the *Encyclopedia of Polarization*'s interactive visualization tool (https://polarization.wiki/projects/polarapp) to look at a broader set of measures and countries. See also A1 for additional measures of ideological and affective polarization.

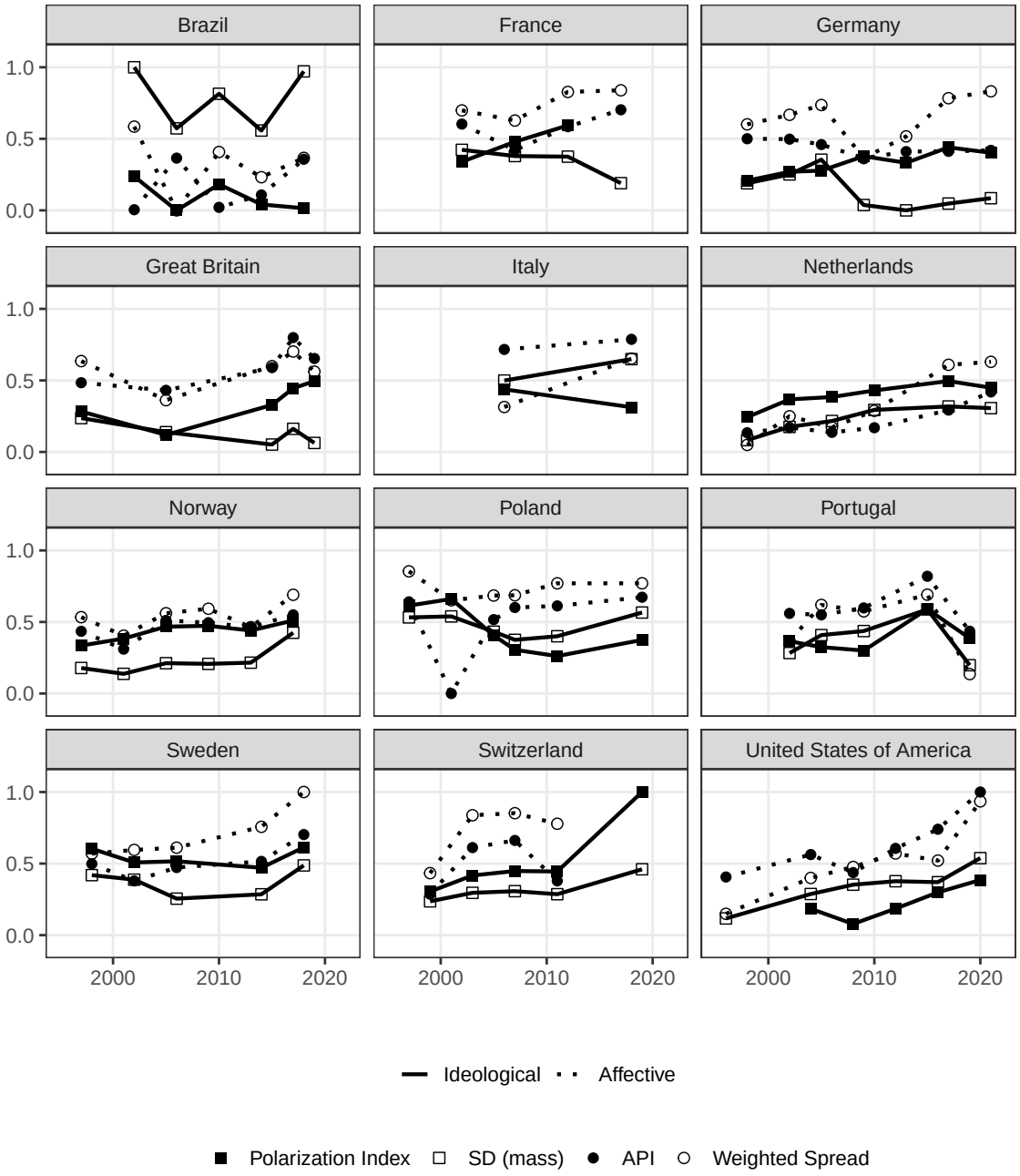

Figure 2: Trends in ideological polarization at the elite (Polarization Index) and mass level (SD) and affective polarization at the mass level in twelve democracies using CSES data. (Min-max normalization applied to all measures to rescale to [0, 1].)

We confirm that the United States is unique in having experienced a secular upward trend in both ideological and affective polarization for at least two decades. Similar to other cross-sectional assessments (Boxell, Gentzkow, and Shapiro 2022; Garzia, Ferreira da Silva, and Maye 2023; Gidron, Adams, and Horne 2020), we also see upward trends in affective polarization in France, Britain, or the Netherlands, but also in Sweden (but see Borbáth, Hutter, and Leininger 2023). Overall, ideological and affective polarization seem to move in parallel, but there are also discrepancies, such as in Brazil, France, or Germany. In the latter case, we also see a strong divergence between two measures of elite and mass level ideological polarization.

Since we see quite some divergence, we also use this empirical inventory as an opportunity to test the reliability of the measures. Table 2 shows the simple bivariate correlations between the four measures based on the pooled sample. Correlating the measures across time and space reveals surprisingly weak correlations, even between measures that are supposed to measure the same concept. The correlation between Reiljan's API and Wagner's spread measure is positive but relatively weak at .54. However, it is significantly stronger than the correlation of .23 between Dalton's polarization index and the standard deviation of respondents' ideology scores, though the latter two measures are aimed at different levels of analysis.

Table 2: Correlation (Pearson's r) across time and space of four measures of ideological polarization at the elite level and affective polarization at the mass level. (No normalization applied to the measures.)

	Polarization Index	**SD (mass)**	**API**	**Weighted Spread**
Polarization Index	-			
SD (mass)	0.54	-		
API	0.22	0.5	-	
Weighted Spread	-0.05	0.09	-0.18	-

Some of these discrepancies can certainly be explained by differences in operationalization, which may lead to cross-sectional differences. However, these should be of less concern as research on the causes and consequences of polarization often mod-

els changes over time. Therefore, we use cross-sectional time-series regressions with country fixed-effects to confirm whether different measures of the same phenomenon move in the same direction over time. Table 3 shows the results.[10] Reassuringly, the results show that both measures of of ideological polarization (Polarization Index and Std. Deviation) are significantly correlated, as both tend to move in the same direction over time. The same is true for the two measures of affective polarization (API and Weighted Spread). Yet, the Affective Polarization index does not correlate with the measures of ideological polarization.

Table 3: Correlation over time (coefficients from regressions with country fixed effects) of four measures of ideological polarization and affective polarization at the elite and mass level. (No normalization applied to the measures.)

	Polarization Index	**SD (mass)**	**API**	**Weighted Spread**
Polarization Index	-			
SD (mass)	1.7** (0.14)	-		
API	0.12 (0.01)	0.08 (0.08)	-	
Weighted Spread	1.34** (0.21)	0.52*** (0.44)	1.47*** (0.29)	-

Estimate (R Squared), Regression Row on Column
Signif. codes: p<0.001***, p<0.05**, p>0.01*, p<0.1°

The data we collected also allow us to examine the importance of the choice of data source. For this exercise, we calculate the standard deviation of participants' left-right self-positioning, which is one of the most widely applicable measures of polarization at the mass level. Using the CSES, CHES, and MARPOR, we obtain 187 estimates of party-system polarization for our sample of countries over the period 1995 to 2022 and plot them in Figure 3. A reliable measure of polarization should ideally be highly correlated across data sources, but there is plenty of room for divergence. Although at first glance the measures appear to show broadly similar trends over time, fixed effects regressions between the measures do not yield significant results (Table 4).[11] Such a finding calls into question the comparability of polarization scores across different data

[10]Complete regression results for all specification can be found in the appendix. There, we also present a purely cross-sectional analysis by dummying out individual years, thereby, focusing on whether measures show geographic consistency at any given point in time.

[11]Again, full regression results for all specifications are reported in the appendix.

sets, and thus underscores the importance of careful selection of data sources.

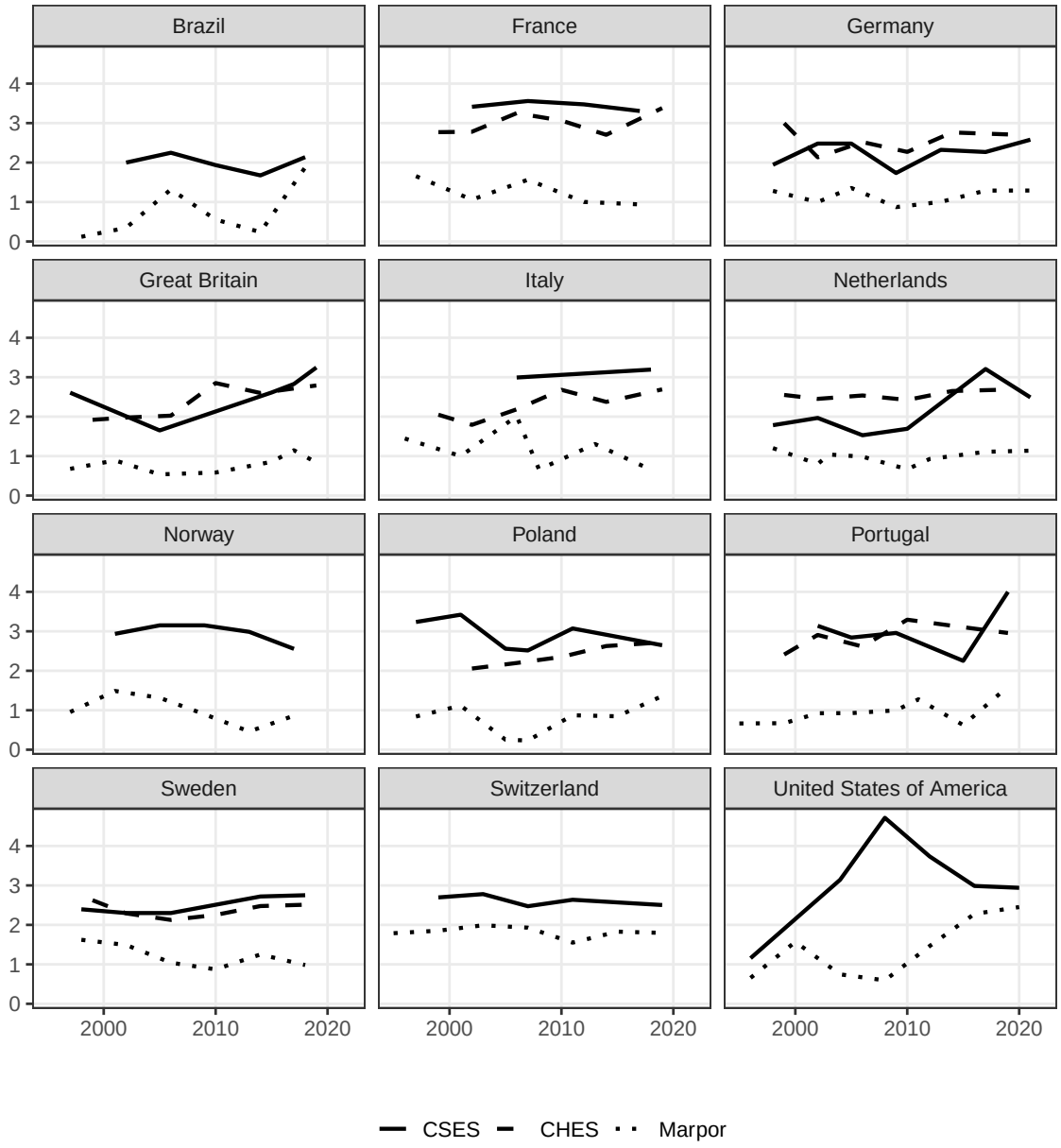

Figure 3: Trends in ideological polarization in twelve democracies, as measured by the standard deviation of expert evaluations of parties' left-right positions using three different data sources. (No normalization applied to the measures.)[12]

Table 4: Correlation over time (coefficients from regressions with country fixed-effects) of ideological polarization at the party level measured with three different datasets (always as standard deviation of expert evaluation of parties' left-right positions). (No normalization applied to the measures.)

	CSES	**CHES**	**Marpor**
CSES	-		
CHES	1.14 (0.15)	-	
Marpor	0.24 (0.04)	0.37 (0.41)	-

Estimate (R Squared), Regression Row on Column
Signif. codes: p<0.001***, p<0.05**, p>0.01*, p<0.1°

While our empirical exploration has largely confirmed existing findings on trends in political polarization, it has also revealed significant differences in results across measures and across datasets. Specifically, measures of the same concept or the same measure across different datasets are often only weakly correlated. This finding supports our view that conflicting findings in the literature may also be due to differences in measures and data used.

6 Conclusion

Rising polarization in the US and a common perception that similar trends are taking hold in European multiparty systems have revived interest in political polarization in multiparty systems. Following Iyengar et al.'s (2012) seminal contribution on affective polarization in the US, a burgeoning literature has begun to apply the concept to multiparty systems. While there are several literature reviews of research on the US case, there is no comparable inventory of research on political polarization in multiparty systems – but see Dassonneville and Çakır (2021), who focus only on ideological polarization, and Borbáth, Hutter, and Leininger (2023), who to some extent also consider

[12]CHES uses the label United Kingdom, however, as our polarization measure are computed on parties from Great Britain only, we use the latter label. Brazil, Switzerland, Norway and the USA are not part of the CHES data. We want to thank Suthan Krishnarajan for making available his version of the Eurobarometer data which requires considerable amount of effort to combine the different waves.

affective polarization. In this review article, we have tried to fill this gap by summarizing existing research on both ideological and affective polarization in multiparty systems and providing an empirical assessment of trends and correlations among the most commonly used measures of political polarization.

Our review of the state of the art revealed that research on the causes of ideological polarization has yielded conflicting results on the effect of party-system characteristics, such as proportional electoral systems and the number of parties, on polarization. With respect to the role of the economy, the results are not any more conclusive, as studies associate worsening economic conditions or income inequality with both increases and decreases in ideological polarization on different policy dimensions. Parties also respond to societal polarization, with higher voter polarization leading parties to adopt more extreme positions, especially in countries where activists have more influence over candidate selection. Conversely, the entry of radical right parties into parliament increases ideological polarization among citizens.

Studies on the causes of affective polarization indicate that ideological and affective polarization are interrelated, although the exact relationship remains ambiguous. Several studies examine how citizens absorb ideological polarization among political elites, which leads to partisans disliking the opposing party. Differences in affective polarization across party systems can further be explained by institutional design, with more consensual political systems being less prone to ideological but more prone to affective polarization. Moreover, populist radical right parties contribute to increased affective polarization because they attract strong dislike from partisans of other parties and because their supporters often strongly dislike all other parties.

Polarization is often seen as detrimental to political cooperation. On the other hand, increased voter turnout, especially in multiparty systems, can be seen as a positive effect of ideological polarization. Proximity and issue voting are also strengthened by

polarization, which, however, can also lead to more partisan voting. At the elite level, polarization makes coalition building more complex, with mixed evidence on its effects on government stability.

Affective polarization is also generally viewed as predominantly negative. Nevertheless, affective polarization appears to have positive effects on citizens' political engagement, leading to higher voter turnout, for instance. Still, existing research also documents numerous negative effects, such as polarization leading to lower trust in opposition parties, lower satisfaction with democracy, and a potential reluctance to accept electoral losses and hold one's own party accountable. Affective polarization can also spill over into non-political domains, leading to less cooperation across party lines, more closed-mindedness toward other perspectives, and even less willingness to help partisans of disliked parties in emergencies.

As we have shown, the scholarly debate about the causes and consequences of polarization is far from settled, so are discusions about its normative implications although current research tends to highlight more negative than positive consequences of, in particular, affective polarization. If one considers (rising) polarization to be undesirable, what, if anything, can be done to reduce polarization? We can derive some answers from the literature on the causes of affective polarization. For one, less media coverage of polarization in favor of more coverage of bipartisan agreement could help curb ideological polarization among the mass public (see, for example, Levendusky and Malhotra 2016) Moreover, a less confrontational style by political actors (see, for example, Huddy and Yair 2021), interparty contact (see, for example, Ciobanu and Sandu 2022) and improving women's representation in parliaments (Adams et al. 2023) could all help to reduce affective polarization. Minority governments could also help cope with party-system fragmentation and reduce polarization (see Gidron, Adams, and Horne 2022). As the increasing fractionalization of multiparty systems observed in many countries makes minority governments more likely, it may indicate a limit to polarization on the

horizon.

Until then, political polarization is sure to occupy the attention of many researchers. In our view, future research should also focus on resolving longstanding questions about the institutional and economic roots of ideological polarization, as well as further causes and consequences of the more novel concept of affective polarization. Investigating potential causal links between ideological and affective polarization is a particularly challenging but highly relevant endeavor. In any case, future research should be attentive to the measurement issues we have highlighted. These concern the common practice of weighting measures by party vote shares, which, however, makes measures of party-system polarization endogenous to voter behavior. This may or may not be desirable and, hence, requires a conscious choice by the researcher. We further highlight that frequently used citizen estimates of party positions may contain cognitive biases and, therefore, caution against relying solely on survey-based measures of elite-level polarization. Researchers would be well advised to test the robustness of their substantive results with multiple measures, as we have shown empirically that different measures and datasets can produce quite different estimates of both ideological and affective polarization. With regard to the latter, researchers should explicate whether they see partisan affect directed towards parties or their partisans, and justify their choice of measures accordingly.

7 References

Abedi A (2002) Challenges to Established Parties: The Effects of Party System Features on the Electoral Fortunes of Anti-Political-Establishment Parties. *European Journal of Political Research* **41**, 551–583.

Abramowitz AI and **Saunders KL** (2008) Is Polarization a Myth? *The Journal of Politics* **70**, 542–555.

Adams J *et al.* (2023) Can't We All Just Get Along? How Women MPs Can Ameliorate Affective Polarization in Western Publics. *American Political Science Review* **117**, 318–324.

Algara C and **Zur R** (2023) The Downsian Roots of Affective Polarization. *Electoral Studies* **82**, 102581.

Alvarez RM and **Nagler J** (2004) Party System Compactness: Measurement and Consequences. *Political Analysis* **12**, 46–62.

Amitai Y (2023) The Activists Who Divide Us: A Cross-Country Analysis of Party Activists' Influence on Polarization and Representation. *Comparative Political Studies* 00104140231169030.

Andrews JT and **Money J** (2009) The Spatial Structure of Party Competition: Party Dispersion Within a Finite Policy Space. *British Journal of Political Science* **39**, 805–824.

Banda KK and **Cluverius J** (2018) Elite Polarization, Party Extremity, and Affective Polarization. *Electoral Studies* **56**, 90–101.

Bantel I (2023) Camps, Not Just Parties. The Dynamic Foundations of Affective Polarization in Multi-Party Systems. *Electoral Studies* **83**, 102614.

Bassan-Nygate L and **Weiss CM** (2022) Party Competition and Cooperation Shape Affective Polarization: Evidence from Natural and Survey Experiments in Israel. *Comparative Political Studies* **55**, 287–318.

Béjar S, **Moraes JA** and **López-Cariboni S** (2020) Elite Polarization and Voting Turnout in Latin America, 1993–2010. *Journal of Elections, Public Opinion and Parties* **30**, 1–21.

Bergmann H, **Bäck H** and **Saalfeld T** (2022) Party-System Polarisation, Legislative Institutions and Cabinet Survival in 28 Parliamentary Democracies, 1945–2019. *West European Politics* **45**, 612–637.

Bernaerts K, **Blanckaert B** and **Caluwaerts D** (2023) Institutional Design and Polarization. Do Consensus Democracies Fare Better in Fighting Polarization Than Majoritarian Democracies? *Democratization* **30**, 153–172.

Berntzen LE, **Kelsall H** and **Harteveld E** (2023) Consequences of Affective Polarization: Avoidance, Intolerance and Support for Violence in the United Kingdom and Norway. *European Journal of Political Research*.

Bettarelli L, **Reiljan A** and **Van Haute E** (2023) A Regional Perspective to the Study of Affective Polarization. *European Journal of Political Research* **62**, 645–659.

Birch S (2020) Political Polarization and Environmental Attitudes: A Cross-National Analysis. *Environmental Politics* **29**, 697–718.

Bischof D and **Wagner M** (2019) Do Voters Polarize When Radical Parties Enter Parliament? *American Journal of Political Science* **63**, 888–904.

Borbáth E, **Hutter S** and **Leininger A** (2023) Cleavage Politics, Polarisation and Participation in Western Europe. *West European Politics* **0**, 1–21.

Boxell L, **Gentzkow M** and **Shapiro JM** (2022) Cross-Country Trends in Affective Polarization. *The Review of Economics and Statistics* 1–60.

Bramson A *et al.* (2017) Understanding Polarization: Meanings, Measures, and Model Evaluation. *Philosophy of Science* **84**, 115–159.

Broockman DE, **Kalla JL** and **Westwood SJ** (2022) Does Affective Polarization

Undermine Democratic Norms or Accountability? Maybe Not. *American Journal of Political Science*.

Carlin RE and **Love GJ** (2013) The Politics of Interpersonal Trust and Reciprocity: An Experimental Approach. *Political Behavior* **35**, 43–63.

Carroll R and **Kubo H** (2018) Polarization and Ideological Congruence Between Parties and Supporters in Europe. *Public Choice* **176**, 247–265.

Ciobanu C and **Sandu D** (2022) What Can De-Polarize the Polarizers? Affective Polarization for Party Activists Before and After Elections. *Working Paper*.

Comellas Bonsfills JM (2022) When Polarised Feelings Towards Parties Spread to Voters: The Role of Ideological Distance and Social Sorting in Spain. *Electoral Studies* **79**, 102525.

Comellas JM and **Torcal M** (2023) Ideological Identity, Issue-Based Ideology and Bipolar Affective Polarization in Multiparty Systems: The Cases of Argentina, Chile, Italy, Portugal and Spain. *Electoral Studies* **83**, 102615.

Crepaz MML (1990) The Impact of Party Polarization and Postmaterialism on Voter Turnout. *European Journal of Political Research* **18**, 183–205.

Curini L and **Hino A** (2012) Missing Links in Party-System Polarization: How Institutions and Voters Matter. *The Journal of Politics* **74**, 460–473.

Dahlberg S (2013) Does Context Matter – The Impact of Electoral Systems, Political Parties and Individual Characteristics on Voters' Perceptions of Party Positions. *Electoral Studies* **32**, 670–683.

Dalton RJ (2008) The Quantity and the Quality of Party Systems: Party System Polarization, Its Measurement, and Its Consequences. *Comparative Political Studies* **41**, 899–920.

Dalton RJ (2021) Modeling Ideological Polarization in Democratic Party Systems. *Electoral Studies* **72**, 102346.

Dalton RJ and **Berning CC** (2022) Ideological Polarization and Far-Right Parties in Europe. In Brinkmann HU and Reuband K-H (eds), *Rechtspopulismus in Deutschland: Wahlverhalten in Zeiten politischer Polarisierung*. Wiesbaden: Springer Fachmedien, pp. 13–35.

Dassonneville R and **Çakır S** (2021) Party System Polarization and Electoral Behavior. Available from https://oxfordre.com/politics/view/10.1093/acrefore/9780190228637.001.0001/acrefore-9780190228637-e-1979 (accessed 14 May 2021).

Dow JK (2001) A Comparative Spatial Analysis of Majoritarian and Proportional Elections. *Electoral Studies* **20**, 109–125.

Dow JK (2011) Party-System Extremism in Majoritarian and Proportional Electoral Systems. *British Journal of Political Science* **41**, 341–361.

Dreyer P and **Bauer J** (2019) Does Voter Polarisation Induce Party Extremism? The Moderating Role of Abstention. *West European Politics* **42**, 824–847.

Druckman JN and **Levendusky MS** (2019) What Do We Measure When We Measure Affective Polarization? *Public Opinion Quarterly* **83**, 114–122.

Enders AM (2021) Issues Versus Affect: How Do Elite and Mass Polarization Compare? *The Journal of Politics* **83**, 1872–1877.

Ezrow L (2007) The Variance Matters: How Party Systems Represent the Preferences of Voters. *The Journal of Politics* **69**, 182–192.

Ezrow L (2008) Parties' Policy Programmes and the Dog That Didn't Bark: No Evidence That Proportional Systems Promote Extreme Party Positioning. *British Journal of Political Science* **38**, 479–497.

Fenzl M (2018) Income Inequality and Party (de)polarisation. *West European Politics* **41**, 1262–1281.

Fiorina MP and **Abrams SJ** (2008) Political Polarization in the American Public. *Annual Review of Political Science* **11**, 563–588.

Fortunato D and **Stevenson RT** (2012) Perceptions of Partisan Ideologies: The Effect of Coalition Participation. *American Journal of Political Science* **57**, 459–477.

Garzia D, **Ferreira da Silva F** and **Maye S** (2023) Affective Polarization in Comparative and Longitudinal Perspective. *Public Opinion Quarterly* nfad004.

Gidron N, **Adams J** and **Horne W** (2020) American Affective Polarization in Comparative Perspective. *Elements in American Politics*.

Gidron N, **Adams J** and **Horne W** (2022) Who Dislikes Whom? Affective Polarization Between Pairs of Parties in Western Democracies. *British Journal of Political Science* 1–19.

Gidron N, **Sheffer L** and **Mor G** (2022) Validating the Feeling Thermometer as a Measure of Partisan Affect in Multi-Party Systems. *Electoral Studies* **80**, 102542.

Han KJ (2023) Issue Salience and Affective Polarization. *Journal of Elections, Public Opinion and Parties* 1–19.

Han SM (2015) Income Inequality, Electoral Systems and Party Polarisation. *European Journal of Political Research* **54**, 582–600.

Harteveld E (2021a) Fragmented Foes: Affective Polarization in the Multiparty Context of the Netherlands. *Electoral Studies* **71**, 102332.

Harteveld E (2021b) Ticking All the Boxes? A Comparative Study of Social Sorting and Affective Polarization. *Electoral Studies* **72**, 102337.

Harteveld E, **Mendoza P** and **Rooduijn M** (2022) Affective Polarization and the Populist Radical Right: Creating the Hating? *Government and Opposition* **57**, 703–727.

Harteveld E and **Wagner M** (2023) Does Affective Polarisation Increase Turnout? Evidence from Germany, The Netherlands and Spain. *West European Politics* **46**, 732–759.

Hazan RY (1997) *Centre Parties: Polarization and Competition in European Parliamentary Democracies*. A&C Black.

Hernández E, **Anduiza E** and **Rico G** (2021) Affective Polarization and the Salience of Elections. *Electoral Studies* **69**, 102203.

Hetherington MJ (2009) Review Article: Putting Polarization in Perspective. *British Journal of Political Science* **39**, 413–448.

Hobolt SB and **Hoerner JM** (2019) The Mobilising Effect of Political Choice. *European Journal of Political Research* **59**, 229.

Hobolt SB, **Leeper TJ** and **Tilley J** (2020) Divided by the Vote: Affective Polarization in the Wake of the Brexit Referendum. *British Journal of Political Science* **First View**, 1–18.

Hooghe L, **Marks G** and **Wilson CJ** (2002) Does Left/Right Structure Party Positions on European Integration? *Comparative Political Studies* **35**, 965–989.

Hübscher E, **Sattler T** and **Wagner M** (2023) Does Austerity Cause Polarization? *British Journal of Political Science* 1–19.

Huddy L and **Yair O** (2021) Reducing Affective Polarization: Warm Group Relations or Policy Compromise? *Political Psychology* **42**, 291–309.

Hutter S and **Grande E** (2014) Politicizing Europe in the National Electoral Arena: A Comparative Analysis of Five West European Countries, 1970–2010. *JCMS: Journal of Common Market Studies* **52**, 1002–1018.

Iyengar S *et al.* (2019) The Origins and Consequences of Affective Polarization in the United States. *Annual Review of Political Science* **22**, 129–146.

Iyengar S, **Sood G** and **Lelkes Y** (2012) Affect, Not Ideology: A Social Identity Perspective on Polarization. *Public Opinion Quarterly* **76**, 405–431.

Iyengar S and **Westwood SJ** (2015) Fear and Loathing Across Party Lines: New

Evidence on Group Polarization. *American Journal of Political Science* **59**, 690–707.

Keman H (1997) Centre-Space Politics: Party Behaviour in Multi-Party Systems. In Keman H (ed.), *The Politics of Problem-Solving in Postwar Democracies*. London: Palgrave Macmillan UK, pp. 85–112.

Kitschelt H and **Hellemans S** (1990) The Left-Right Semantics and the New Politics Cleavage. *Comparative Political Studies* **23**, 210–238.

Kriesi H *et al.* (2006) Globalization and the Transformation of the National Political Space: Six European Countries Compared. *European Journal of Political Research* **45**, 921–956.

Krosnick JA (1990) Americans' Perceptions of Presidential Candidates: A Test of the Projection Hypothesis. *Journal of Social Issues* **46**, 159–182.

Lachat R (2008) The Impact of Party Polarization on Ideological Voting. *Electoral Studies* **27**, 687–698.

Layman GC, **Carsey TM** and **Horowitz JM** (2006) Party Polarization in American Politics: Characteristics, Causes, and Consequences. *Annual Review of Political Science* **9**, 83–110.

Lelkes Y (2016) Mass Polarization: Manifestations and Measurements. *Public Opinion Quarterly* **80**, 392–410.

Levendusky M and **Malhotra N** (2016) Does Media Coverage of Partisan Polarization Affect Political Attitudes? *Political Communication* **33**, 283–301.

Levendusky MS (2009) The Microfoundations of Mass Polarization. *Political Analysis* **17**, 162–176.

Lupu N (2015) Party Polarization and Mass Partisanship: A Comparative Perspective. *Political Behavior* **37**, 331–356.

Maoz Z and **Somer-Topcu Z** (2010) Political Polarization and Cabinet Stability in Multiparty Systems: A Social Networks Analysis of European Parliaments, 1945–98. *British Journal of Political Science* **40**, 805–833.

Mason L (2015) 'I Disrespectfully Agree': The Differential Effects of Partisan Sorting on Social and Issue Polarization. *American Journal of Political Science* **59**, 128–145.

Matakos K, **Troumpounis O** and **Xefteris D** (2016) Electoral Rule Disproportionality and Platform Polarization. *American Journal of Political Science* **60**, 1026–1043.

Mccarty N, **Poole K** and **Rosenthal H** (2006) *Polarized America: The Dance of Ideology and Unequal Riches*.

Merrill S, **Grofman B** and **Adams J** (2001) Assimilation and Contrast Effects in Voter Projections of Party Locations: Evidence from Norway, France, and the USA. *European Journal of Political Research* **40**, 199–221.

Moral M (2017) The Bipolar Voter: On the Effects of Actual and Perceived Party Polarization on Voter Turnout in European Multiparty Democracies. *Political Behavior* **39**, 935–965.

Moral M and **Best RE** (2023) On the Relationship Between Party Polarization and Citizen Polarization. *Party Politics* **29**, 135406882110695.

O'Grady T (2022) Is Ideological Polarisation by Age Group Growing in Europe? *European Journal of Political Research* 1475–6765.12575.

Öhberg P and **Cassel F** (2023) Election Campaigns and the Cyclical Nature of Emotions—How Politicians Engage in Affective Polarization. *Scandinavian Political Studies* **46**, 219–240.

Orhan YE (2022) The Relationship Between Affective Polarization and Democratic Backsliding: Comparative Evidence. *Democratization* **29**, 714–735.

Pierce DR and **Lau RR** (2019) Polarization and Correct Voting in U.S. Presidential Elections. *Electoral Studies* **60**, 102048.

Prior M (2013) Media and Political Polarization. *Annual Review of Political Science* **16**, 101–127.

Reiljan A (2020) 'Fear and Loathing Across Party Lines' (Also) in Europe: Affective Polarisation in European Party Systems. *European Journal of Political Research* **59**, 376–396.

Reiljan A *et al.* (2023) Patterns of Affective Polarization Toward Parties and Leaders Across the Democratic World. *American Political Science Review* 1–17.

Rogowski JC and **Sutherland JL** (2016) How Ideology Fuels Affective Polarization. *Political Behavior* **38**, 485–508.

Röllicke L (2023) Polarisation, Identity and Affect - Conceptualising Affective Polarisation in Multi-Party Systems. *Electoral Studies* **85**, 102655.

Ryan A (2023) Exploring Differences in Affective Polarization Between the Nordic Countries. *Scandinavian Political Studies* **46**, 52–74.

Sartori G (1976) *Parties and Party Systems. A Framework for Analysis.* Cambridge: Cambridge University Press.

Savage L (2013) Party System Polarisation and Government Duration in Central and Eastern Europe. *West European Politics* **36**, 1029–1051.

Sigelman L and **Yough SN** (1978) Left-Right Polarization In National Party Systems: A Cross-National Analysis. *Comparative Political Studies* **11**, 355–379.

Simon B *et al.* (2019) Politicization as an Antecedent of Polarization: Evidence from Two Different Political and National Contexts. *British Journal of Social Psychology* **58**, 769–785.

Singer M (2016) Elite Polarization and the Electoral Impact of Left-Right Placements:

Evidence from Latin America, 1995–2009. *Latin American Research Review* **51**, 174–194.

Steiner ND and **Martin CW** (2012) Economic Integration, Party Polarisation and Electoral Turnout. *West European Politics* **35**, 238–265.

Stoetzer LF *et al.* (2022) Affective Partisan Polarization and Moral Dilemmas During the COVID-19 Pandemic. *Political Science Research and Methods* 1–8.

Taylor M and **Herman VM** (1971) Party Systems and Government Stability. *The American Political Science Review* **65**, 28–37.

Tichelbaecker T *et al.* (2023) What Do We Measure When We Measure Affective Polarization Across Countries? *Public Opinion Quarterly* nfad033.

Torcal M *et al.* (2023) The Dynamics of Political and Affective Polarisation: Datasets for Spain, Portugal, Italy, Argentina, and Chile (2019-2022). *Data in Brief* **48**, 109219.

Traber D, **Stoetzer LF** and **Burri T** (2023) Group-Based Public Opinion Polarisation in Multi-Party Systems. *West European Politics* **46**, 652–677.

Vegetti F (2014) From Political Conflict to Partisan Evaluations: How Citizens Assess Party Ideology and Competence in Polarized Elections. *Electoral Studies* **35**, 230–241.

Wagner M (2021) Affective Polarization in Multiparty Systems. *Electoral Studies* **69**.

Wagner M (2024) Affective Polarization in Europe. *European Political Science Review* 1–15.

Ward DG and **Tavits M** (2019) How Partisan Affect Shapes Citizens' Perception of the Political World. *Electoral Studies* **60**, 102045.

Wessels B and **Schmitt H** (2008) Meaningful Choices, Political Supply, and Institutional Effectiveness. *Electoral Studies* **27**, 19–30.

Westwood SJ *et al.* (2018) The Tie That Divides: Cross-national Evidence of the Primacy of Partyism. *European Journal of Political Research* **57**, 333–354.

Wilford AM (2017) Polarization, Number of Parties, and Voter Turnout: Explaining Turnout in 26 OECD Countries. *Social Science Quarterly* **98**, 1391–1405.

Appendix

A Replication of Figure 2: additional measures

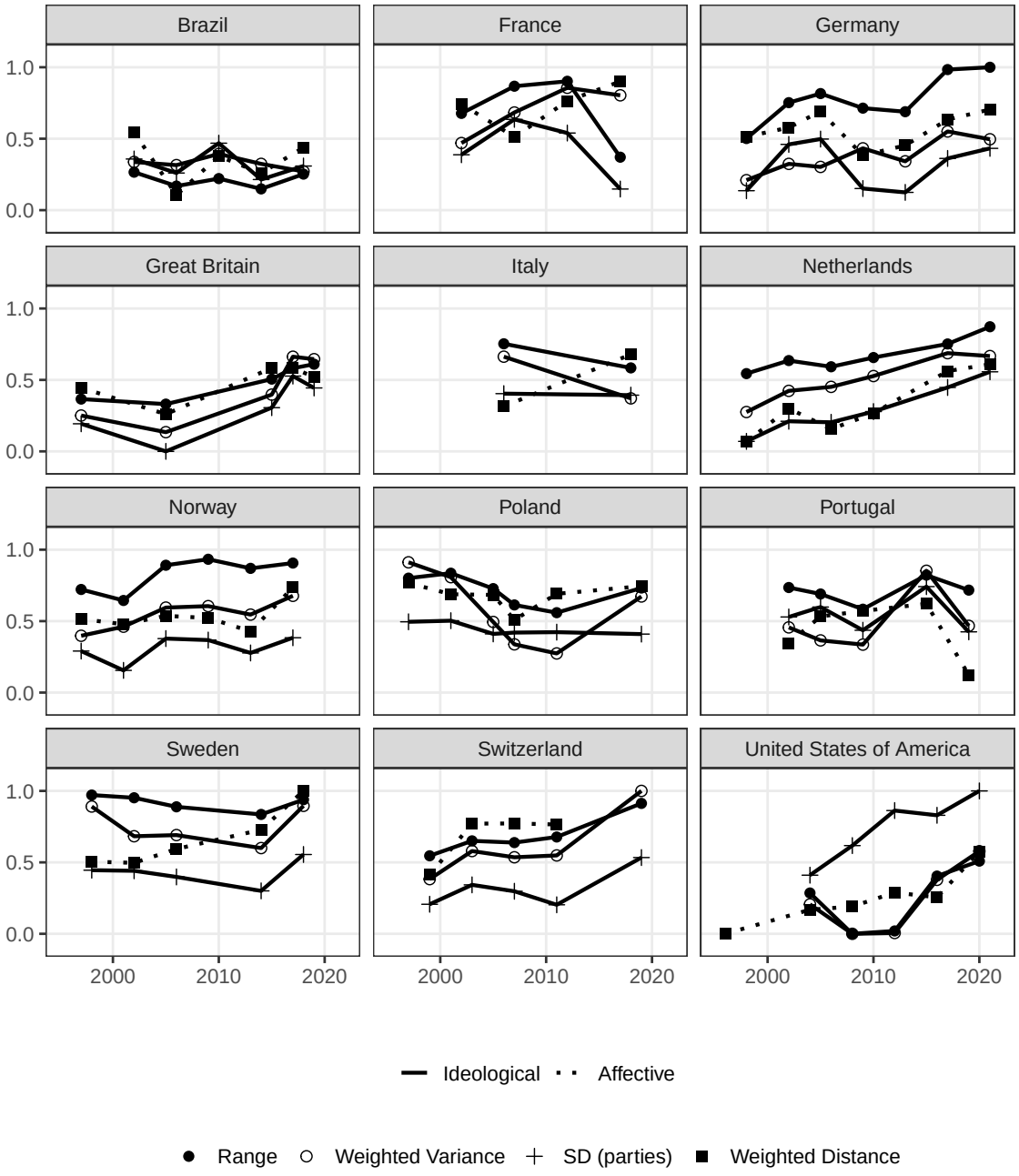

Figure A1: Trends in ideological polarization at the elite level and affective polarization at the mass level in twelve democracies using CSES data. (Min-max normalization applied to all measures to rescale to [0, 1].)

B Replication of Table 2: more measures

Table A1: Correlation (Pearson's r) across time and space of four measures of ideological polarization at the elite level and affective polarization at the mass level. (No normalization applied to the measures.)

	Polarization Index	Range	Weighted Variance	SD (mass)	SD (parties)	API	Weighted Spread	Weighted Distance
Polarization Index	-							
Range	0.84	-						
Weighted Variance	0.89	0.76	-					
SD (mass)	-0.18	-0.3	0.07	-				
SD (parties)	0.23	0.03	0.23	0.34	-			
API	0.22	0.17	0.2	-0.05	0.51	-		
Weighted Spread	0.5	0.42	0.42	0.09	0.43	0.54	-	
Weighted Distance	0.57	0.56	0.55	0.14	0.2	0.38	0.9	-

C Replication of Table 3: more measures

Table A2: Correlation over time (coefficients from regressions with country fixed effects) of four measures of ideological polarization at the elite level and affective polarization at the mass level. (No normalization applied to the measures.)

	Polarization Index	Range	Weighted Variance	SD (mass)	SD (parties)	API	Weighted Spread	Weighted Distance
Polarization Index	-							
Range	0.67*** (0.59)	-						
Weighted Variance	0.56*** (0.81)	0.56*** (0.55)	-					
SD (mass)	1.7** (0.14)	1.95* (0.12)	2.24* (0.09)	-				
SD (parties)	2.01*** (0.39)	2.66*** (0.5)	2.9*** (0.34)	0.37*** (0.31)	-			
API	0.12 (0.01)	0.32 (0.04)	0.67* (0.12)	0.08 (0.08)	0.15* (0.13)	-		
Weighted Spread	1.34** (0.21)	1.62** (0.14)	2.38** (0.18)	0.52*** (0.44)	0.71*** (0.37)	0.88*** (0.28)	-	
Weighted Distance	0.79** (0.2)	0.78* (0.09)	1.43** (0.19)	0.29*** (0.38)	0.36*** (0.27)	0.88*** (0.28)	0.57*** (0.9)	-

Estimate (R Squared), Regression Row on Column
Signif. codes: p<0.001***, p<0.05**, p>0.01*, p<0.1°

D Replication of Figure 3: additional measures

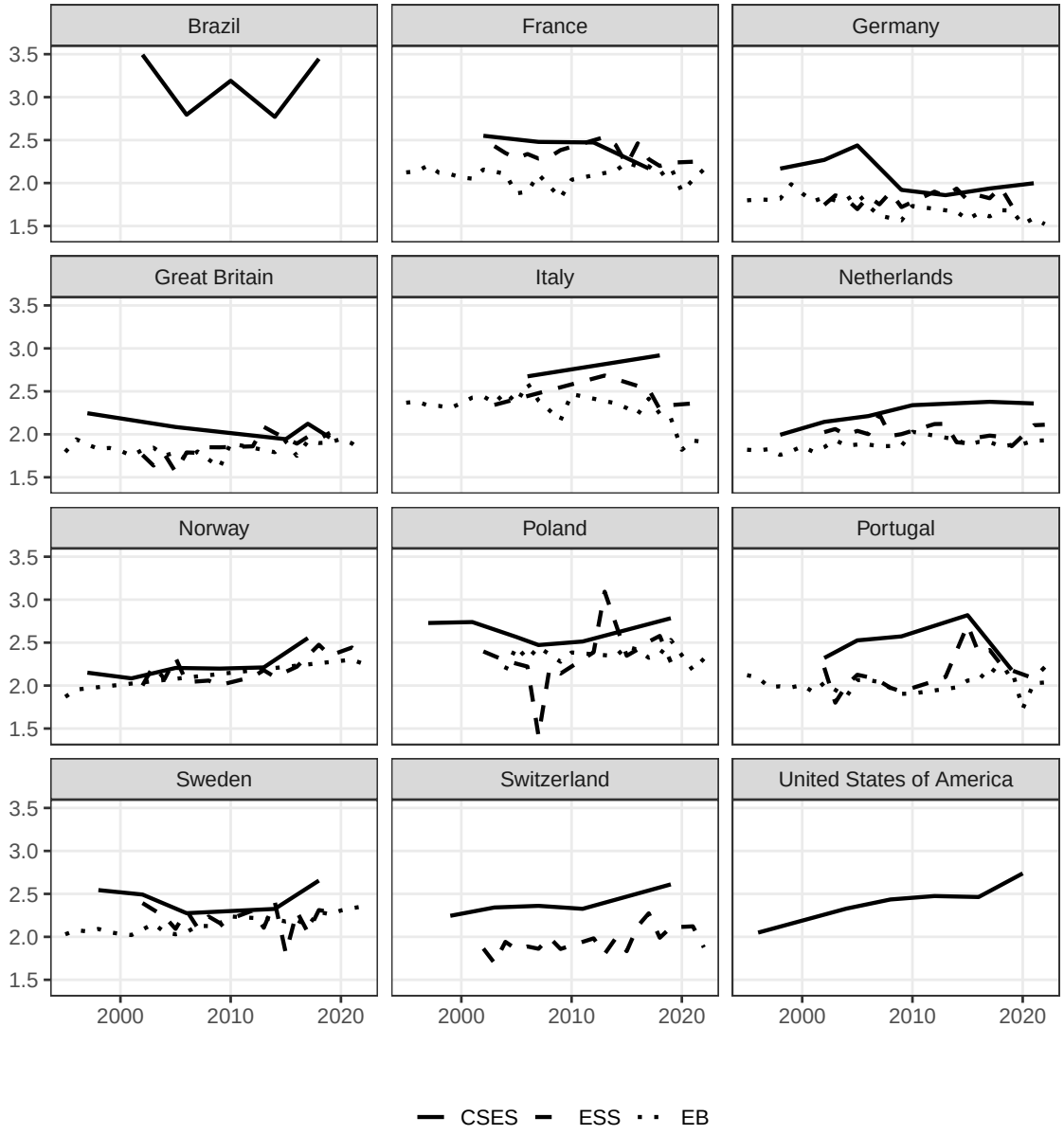

Figure A2: Trends in ideological polarization at the mass level in twelve democracies, as measured by the standard deviation of respondents' self-placement on the left-right scale using three different data sources. (No normalization applied to the measures.).[13]

E Replication of Table 4: more measures

Table A3: Correlation over time (coefficients from regressions with country fixed-effects) of ideological polarization at the mass level measured with three different datasets (always as standard deviation of respondents' self-placement. (No normalization applied to the measures.)

	CSES	**ESS**	**EB**
CSES	-		
ESS	0.47 (0.08)	-	
EB	0.34 (0.13)	0.16 (0.01)	-

Estimate (R Squared), Regression Row on Column
Signif. codes: p<0.001***, p<0.05**, p>0.01*, p<0.1°

[13]Eurobarometer for Great Britain data shown here also includes Northern Irish respondents. Brazil and the USA are not part of the European datasets, ESS and EB. Switzerland is not part of the Eurobarometer data.

F Full Regression Tables: CSES

Table A4: Regression with country fixed effects on Polarization Index

	Dependent variable:
	Polarization Index
Range	0.675^{***}
	(0.082)
Countries	12
Observations	60
R^2	0.590
Adjusted R^2	0.485
F Statistic	67.665^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A5: Regression with country fixed effects on Polarization Index

	Dependent variable:
	Polarization Index
Weighted Variance	0.555^{***}
	(0.039)
Countries	12
Observations	60
R^2	0.811
Adjusted R^2	0.763
F Statistic	201.854^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A6: Regression with country fixed effects on Polarization Index

	Dependent variable:
	Polarization Index
SD (mass)	1.705^{***}
	(0.626)
Countries	12
Observations	60
R^2	0.136
Adjusted R^2	-0.084
F Statistic	7.404^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A7: Regression with country fixed effects on Polarization Index

	Dependent variable:
	Polarization Index
SD (parties)	2.011^{***}
	(0.364)
Countries	12
Observations	60
R^2	0.394
Adjusted R^2	0.239
F Statistic	30.580^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A8: Regression with country fixed effects on Polarization Index

	Dependent variable:
	Polarization Index
API	0.123
	(0.155)
Countries	12
Observations	59
R^2	0.013
Adjusted R^2	−0.244
F Statistic	0.629 (df = 1; 46)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A9: Regression with country fixed effects on Polarization Index

	Dependent variable:
	Polarization Index
Weighted Spread	1.344^{***}
	(0.386)
Countries	12
Observations	59
R^2	0.208
Adjusted R^2	0.002
F Statistic	12.104^{***} (df = 1; 46)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A10: Regression with country fixed effects on Polarization Index

	Dependent variable:
	Polarization Index
Weighted Distance	0.785^{***}
	(0.231)
Countries	12
Observations	59
R^2	0.200
Adjusted R^2	-0.008
F Statistic	11.531^{***} (df = 1; 46)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A11: Regression with country fixed effects on Range

	Dependent variable:
	Range
Weighted Variance	0.565^{***}
	(0.073)
Countries	12
Observations	61
R^2	0.552
Adjusted R^2	0.440
F Statistic	59.174^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A12: Regression with country fixed effects on Range

	Dependent variable:
	Range
SD (mass)	1.947**
	(0.755)
Countries	12
Observations	61
R^2	0.122
Adjusted R^2	−0.098
F Statistic	6.647** (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A13: Regression with country fixed effects on Range

	Dependent variable:
	Range
SD (parties)	2.661***
	(0.386)
Countries	12
Observations	61
R^2	0.498
Adjusted R^2	0.372
F Statistic	47.535*** (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A14: Regression with country fixed effects on Range

	Dependent variable:
	Range
API	0.320
	(0.221)
Countries	12
Observations	60
R^2	0.043
Adjusted R^2	−0.202
F Statistic	2.101 (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A15: Regression with country fixed effects on Range

	Dependent variable:
	Range
Weighted Spread	1.619***
	(0.585)
Countries	12
Observations	60
R^2	0.140
Adjusted R^2	−0.080
F Statistic	7.652*** (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A16: Regression with country fixed effects on Range

	Dependent variable:
	Range
Weighted Distance	0.781^{**}
	(0.354)
Countries	12
Observations	60
R^2	0.094
Adjusted R^2	-0.137
F Statistic	4.882^{**} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A17: Regression with country fixed effects on Weighted Variance

	Dependent variable:
	Weighted Variance
SD (mass)	2.240^{**}
	(1.010)
Countries	12
Observations	61
R^2	0.093
Adjusted R^2	-0.134
F Statistic	4.920^{**} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A18: Regression with country fixed effects on Weighted Variance

	Dependent variable:
	Weighted Variance
SD (parties)	2.898^{***}
	(0.582)
Countries	12
Observations	61
R^2	0.341
Adjusted R^2	0.176
F Statistic	24.812^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A19: Regression with country fixed effects on Weighted Variance

	Dependent variable:
	Weighted Variance
API	0.672^{**}
	(0.272)
Countries	12
Observations	60
R^2	0.115
Adjusted R^2	−0.111
F Statistic	6.108^{**} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A20: Regression with country fixed effects on Weighted Variance

	Dependent variable:
	Weighted Variance
Weighted Spread	2.378^{***}
	(0.730)
Countries	12
Observations	60
R^2	0.184
Adjusted R^2	-0.024
F Statistic	10.600^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A21: Regression with country fixed effects on Weighted Variance

	Dependent variable:
	Weighted Variance
Weighted Distance	1.428^{***}
	(0.428)
Countries	12
Observations	60
R^2	0.191
Adjusted R^2	-0.015
F Statistic	11.126^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A22: Regression with country fixed effects on SD (mass)

	Dependent variable:
	SD (mass)
SD (parties)	0.374^{***}
	(0.081)
Countries	12
Observations	61
R^2	0.306
Adjusted R^2	0.132
F Statistic	21.146^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A23: Regression with country fixed effects on SD (mass)

	Dependent variable:
	SD (mass)
API	0.080^{*}
	(0.040)
Countries	12
Observations	61
R^2	0.078
Adjusted R^2	−0.153
F Statistic	4.034^{*} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A24: Regression with country fixed effects on SD (mass)

	Dependent variable:
	SD (mass)
Weighted Spread	0.517^{***}
	(0.085)
Countries	12
Observations	61
R^2	0.436
Adjusted R^2	0.295
F Statistic	37.161^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A25: Regression with country fixed effects on SD (mass)

	Dependent variable:
	SD (mass)
Weighted Distance	0.291^{***}
	(0.054)
Countries	12
Observations	61
R^2	0.380
Adjusted R^2	0.225
F Statistic	29.439^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A26: Regression with country fixed effects on SD (parties)

	Dependent variable:
	SD (parties)
API	0.150^{**}
	(0.056)
Countries	12
Observations	60
R^2	0.131
Adjusted R^2	-0.091
F Statistic	7.081^{**} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A27: Regression with country fixed effects on SD (parties)

	Dependent variable:
	SD (parties)
Weighted Spread	0.707^{***}
	(0.133)
Countries	12
Observations	60
R^2	0.375
Adjusted R^2	0.215
F Statistic	28.147^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A28: Regression with country fixed effects on SD (parties)

	Dependent variable:
	SD (parties)
Weighted Distance	0.355^{***}
	(0.085)
Countries	12
Observations	60
R^2	0.272
Adjusted R^2	0.087
F Statistic	17.601^{***} (df = 1; 47)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A29: Regression with country fixed effects on API

	Dependent variable:
	API
Weighted Distance	0.875^{***}
	(0.201)
Countries	12
Observations	61
R^2	0.284
Adjusted R^2	0.105
F Statistic	19.035^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A30: Regression with country fixed effects on API

	Dependent variable:
	API
Weighted Distance	0.875^{***}
	(0.201)
Countries	12
Observations	61
R^2	0.284
Adjusted R^2	0.105
F Statistic	19.035^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A31: Regression with country fixed effects on Weighted Spread

	Dependent variable:
	Weighted Spread
Weighted Distance	0.572^{***}
	(0.027)
Countries	12
Observations	61
R^2	0.902
Adjusted R^2	0.877
F Statistic	439.332^{***} (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

G Full Regression Tables: SD Expert

The following regression tables show country fixed effects on the ideological polarization at the elite level, measured as the standard deviation of experts' left-right party placement, between different datasets.

Table A32: Regression with country fixed effects on the ideological polarization at the elite level in the CSES

	Dependent variable:
	CSES
CHES	1.139
	(1.330)
Countries	8
Observations	13
R^2	0.155
Adjusted R^2	−1.535
F Statistic	0.734 (df = 1; 4)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A33: Regression with country fixed effects on the ideological polarization at the elite level in the CSES

	Dependent variable:
	CSES
MARPOR	0.241
	(0.167)
Countries	12
Observations	61
R^2	0.042
Adjusted R^2	−0.198
F Statistic	2.092 (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A34: Regression with country fixed effects on the ideological polarization at the elite level in the CHES

	Dependent variable:
	CHES
MARPOR	0.371*
	(0.169)
Countries	8
Observations	16
R^2	0.408
Adjusted R^2	−0.269
F Statistic	4.817* (df = 1; 7)
Note:	*p<0.1; **p<0.05; ***p<0.01

H Full Regression Tables: SD Mass

The following regression tables show country fixed effects on the ideological polarization at the population, or mass, level, measured as the standard deviation of respondents left-right self-placements, between different datasets.

Table A35: Regression with country fixed effects on the ideological polarization at the population level in the CSES

	Dependent variable:
	CSES
Eurobarometer	0.467
	(0.344)
Countries	7
Observations	30
R^2	0.077
Adjusted R^2	−0.216
F Statistic	1.843 (df = 1; 22)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A36: Regression with country fixed effects on the ideological polarization at the population level in the CSES

	Dependent variable:
	CSES
ESS	0.340
	(0.201)
Countries	9
Observations	29
R^2	0.131
Adjusted R^2	−0.281
F Statistic	2.855 (df = 1; 19)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A37: Regression with country fixed effects on the ideological polarization at the population level in the ESS

	Dependent variable:
	ESS
Eurobarometer	0.156
	(0.185)
Countries	8
Observations	84
R^2	0.009
Adjusted R^2	−0.096
F Statistic	0.713 (df = 1; 75)
Note:	*p<0.1; **p<0.05; ***p<0.01

I polaR: Overview of the package

With our package, `polaR`,[14] we offer a selection of functions to measure affective and ideological polarization across a range of datasets, with various measures, each in multiple versions where applicable (weighted and unweighted measures, on different issue dimensions or with like-dislike scores). These functions cover the complete process of measuring polarization: importing and cleaning the data from different sources, computing the measures and combining the aggregated datasets. All data in this paper has been gathered using the exact code that we make public in the package, while it will also contain a range of measures that are not covered in this text due to space constraints. In this way, the code can be used to replicate our findings, but also offers the possibility to use, adapt and apply the measures for other research purposes. At the same time, on our website we allow to directly generate, view and download all the measures that can be computed with the package. In the following, we offer a brief overview of the packages' core functions:

I.1 Importing Data

Different datasets use different variable names and scales for the same items. The package therefore contains an import function that takes a range of datasets and recodes names, scales and missing values into a consistent pattern on the base of which the measures can be computed. For this, a pre-defined dictionary containing all relevant variables is used to look up the variable names for the dataset specified under the `source` option, and transforms them accordingly. Users can load and adapt or add to the dictionary to increase the number of variables or datasets compatible with the package. With the option `keep_all` option, users can opt between importing all variables in the dataset, or just those that are relevant to the computation of measures.

[14] A development version of the package can be installed from https://gitlab.com/felixgruenewald/polaR. The repository also includes further documentation and examples.

```
cses <- polaR_import(source = "cses",
                     path = "path/to/cses.dta",
                     keep_all = F)

ess <- polaR_import(source = "ess",
                    path = "path/to/ess.sav",
                    keep_all = F)
```

I.2 Measures

`polaR` includes a range of different measures that can be computed with various datasets. Some measures, like the CSES polarization index, are linked to a specific dataset. Others, like the standard deviation of issue self-placements of respondents or spread of party positions, can be computed with different data sources. Wherever it is possible to compute a measure, the package offers the possibility to do so.

```
sd_mass <- sd_mass(dataset = cses,
                   issue =  "leftright")

sd_mass <- sd_mass(dataset = ess,
                   issue =  "leftright")
```

I.2.1 Individual & Aggregate Level Some measures work on the individual level, i.e., they add an additional polarization variables for every respondent in the original dataset. This is the case for e.g. the Spread of Like-Dislike scores by Wagner. With `aggregate`, you can choose whether the function puts out the full dataset with the additional individual level variables, or already a country-year aggregation of the measure.

```
cses <- spread_likedislike(cses,
                           weighted = TRUE,
                           aggregate = FALSE)

agg_spread <- spread_likedislike(cses,
                                 weighted = TRUE,
                                 aggregate = TRUE)
```

Other measures are computed directly on a country-year level and do not have an individual level, like here the standard deviation of participants' left-right self-positioning, the CSES Polarization Index by Dalton or API by Reiljan:

```
sd_mass <- sd_mass(cses,
                   issue =  "leftright")

polarization_index <- cses_polarization_index(cses)

api_cses <- api(cses)
```

I.2.2 Weighted Measures Some measures have weighted variations. With `weighted`, you can toggle between the two versions, like in the example below for Wagner (2021)'s spread of like-dislike scores.

```
spread_wgt <- spread_likedislike(cses,
                                 weighted = TRUE,
                                 aggregate = TRUE)

spread <- spread_likedislike(cses,
```

```
                                weighted = FALSE,
                                aggregate = TRUE)
```

I.2.3 Issue Dimension Measures like the perception of party positions can have different issue dimensions. With `issue`, it can be defined which dimension the measure should be computed on.

```
range_lr <- range_ind(cses,
                      issue = "leftright",
                      aggregate = TRUE)


sd_expert_galtan_ches <- sd_experts(ches,
                                    issue = "galtan",
                                    units = "party")
```

I.2.4 Expert measures Expert measures are somewhat of a special case, as they follow a different logic than the rest of the dataset, with many data points for the exact same expert score. For individual, respondent-based datasets, the dataset first needs to be broken down to unique country-year cases and then the measure can be calculated.

```
sd_expert <- sd_experts(cses,
                        issue =  "leftright")
```

I.3 Combining and Visualization

The resulting dataframes have a country-year format and can easily be bound together.[15] The data can be freely used, controlled and adapted. Visualizations of all measures are possible using the tool on our paper-accompanying website.[16]

Country	Date	Measure	Dataset	Pol. Score
DE	2021	SD Party Perception	CSES	3.025987
DE	1992	SD Attitudes	EB	1.904443
NO	2005	SD Attitudes	ESS	2.323224
FR	2022	SD Attitudes	EB	2.158998
DE	2004	SD Attitudes	EB	1.805063
CH	2013	SD Attitudes	ESS	1.801200

[15]The example here only displays partial information from the full datasets generated which would also include information about the issue dimension, levels of analysis and more.

[16]The visualization tool can be found under https://polarization.wiki/projects/polarapp