



Growing Up in a Polarized Party System: Ideological Divergence and Partisan Sorting Across Generations

Thomas Jocker¹ · Wouter van der Brug¹ · Roderik Rekker^{2,3}

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Abstract

American political elites have increasingly polarized over the past decades, which has inspired much research into mass polarization. We study whether there is a generational component to mass polarization by disentangling period, age, and cohort differences while distinguishing two forms of mass polarization: partisan sorting and ideological divergence. Drawing from General Social Survey and American National Election Studies data, we find that partisan sorting has increased across long-standing and emerging issues, while ideological divergence has not. Contrary to expectations, over-time increases in sorting are clearly driven by changes within generations rather than by generational replacement. On several issues, newer generations turn out to be *less* sorted than those they replace. This tentatively suggests that, partially as a consequence of demographic changes, generational replacement will gradually lead to less polarization in American public opinion as it converges toward more liberal positions.

Keywords Polarization · Generational replacement · Partisan sorting · Ideological divergence · Alignment · Lifecycle effects · Period effects

✉ Thomas Jocker
t.j.jocker@uva.nl

Wouter van der Brug
W.vanderBrug@uva.nl

Roderik Rekker
roderik.rekker@ru.nl

¹ Department of Political Science, University of Amsterdam, Amsterdam, The Netherlands

² Department of Political Science, Radboud University, Nijmegen, The Netherlands

³ Department of Political Science, University of Gothenburg, Gothenburg, Sweden

Introduction

American political elites have increasingly polarized over the past decades. Politicians from the Democratic and Republican party are ideologically more distinct than in the past and find it harder to reach compromises (Barber & McCarty, 2015; Hetherington, 2009; McCarty et al., 2006; Rohde, 1991). Scholars disagree, however, whether similar trends exist among the American electorate. Some suggest that partisan citizens have indeed polarized across long-standing and emerging issues in the same way as elites (e.g. Abramowitz, 2018; Abramowitz & Saunders, 2008; Abramowitz & Webster, 2018; Hunter, 1991). Others point out that many Americans do not identify with either party and do not hold polarized opinions (DiMaggio et al., 1996; Evans, 2003; Fiorina & Abrams, 2008; Fiorina et al., 2008, 2011). As will be discussed in more detail below, mass polarization consists of two different phenomena: ideological divergence and partisan sorting (Hill & Tausanovitch, 2015; Lelkes, 2016). Ideological divergence is a process by which disagreement about policies increases among all citizens, whether they affiliate with a party or not. Partisan sorting refers to the link between party identity and issue positions. However, while most studies of both phenomena examine long-term trends in American public opinion, this scholarship typically ignores generational differences. We contribute to the literature by estimating how generational replacement contributes to both elements of mass polarization, ideological divergence and partisan sorting.

For two reasons, generational replacement can be a major force driving long term social and political change (e.g. Carmines & Stimson, 1981; Hooghe, 2004; Inglehart, 1971). First, generations differ in their composition in terms of important determinants of political preferences, such as education, ethnicity, and religion. The replacement of older cohorts by better educated, less religious, and more ethnically diverse generations is bound to have consequences for public opinion (e.g. Fisher, 2020). In turn, this should also affect mass polarization as demographic groups differ in their political orientations (e.g. Baldassarri & Gelman, 2008). Secondly, research in political socialization tells us that events occurring during the ‘formative years’ (adolescence and early adulthood) are crucial for the formation of basic orientations. As people grow older, their political dispositions increasingly stabilize (Franklin, 2004; Maccoby et al., 1954: p. 24). This implies that the political context during which citizens enter the electorate leaves a lasting impression upon their political orientations later in life. Consequently, generations socialized in a more polarized party system are likely more polarized than those who grew up in more consensual times. If this is indeed the case, mass polarization will become more pronounced as younger generations replace older ones.

We are unaware of studies focusing on generational differences in the first dimension of mass polarization, ideological divergence. A handful of studies indicate that partisan sorting (the second dimension) could indeed be stronger among newer generations. Stoker and Jennings (2008) show that young Americans align their political orientations more closely with their partisan identities

than older citizens, especially on emerging issues. Similarly, Levendusky (2009: Ch. 3 and Ch. 4) demonstrates that younger cohorts are better-sorted than older ones, while Twenge et al. (2016) find that the correlation between partisanship and ideological self-categorization is stronger for younger citizens. Although these studies suggest that generational replacement fuels partisan sorting, they have not distinguished between generational and life-cycle effects. In an effort to do so, Phillips (2022) reveals limited generational differences in the correlation between party identification and ideological self-placement. However, no study has disentangled life-cycle and generational differences across a wide range of issues. It seems plausible that partisan sorting increases with age as a result of learning, particularly during early adulthood. In that case generational differences in partisan sorting are *underestimated* when they are not isolated from life-cycle effects. By using age-period-cohort (APC) analysis, the present study will therefore disentangle three types of effects: period effects (trends affecting the electorate of all ages and generations), aging effects (changes occurring during the life-cycle of individuals), and generational differences (persisting inter-cohort differences resulting from composition or distinct socialization experiences).

Disentangling these effects is not ‘just’ a methodological necessity but carries substantive implications for the future development of public opinion in the US. If we observe age effects rather than generational differences, generational replacement will have no consequences on public opinion. By contrast, if the newer generations are more polarized, mass polarization will increase when less polarized cohorts are replaced by new generations and vice versa. Our study investigates these generational differences by analyzing the cumulative data files of the General Social Survey (GSS) and the American National Election Studies (ANES) in an ‘age-period-cohort’ (APC) framework. These datasets allow us to analyze attitudes on a plethora of political issues, ranging from long-standing social welfare concerns to issues that recently have become more politicized such as immigration.

Overall, we find that period effects trump aging effects and generational differences. We find strong trends of increasing *partisan sorting* and modest trends of increasing *ideological divergence* on all issue dimensions across all generations and age groups. Regarding generational differences, the Baby Boomers are generally the most polarized in terms of both alignment and divergence. Contrary to our expectations, newer generations are generally less polarized despite growing up in times of increased party polarization. An important implication of our results is therefore that the replacement of the Baby Boomers by younger generations will probably not fuel mass polarization, but dampen it somewhat instead. When taking into account the liberal outlook of these younger generations, generational replacement should have important consequences for the future of American politics.

Conceptualizing Mass Polarization

Elite polarization occurs when politicians increasingly disagree on public policy, a process that has become characteristic of American politics since the early 1970s (e.g. McCarty et al., 2006). Compared to America’s party system today,

the 1950s and 1960s marked an unusual time of bipartisan coalitions in the wake of the New Deal (Han & Brady, 2007). In the following decades, elite polarization has extended beyond social welfare policies. Numerous issues, ranging from racial equality to abortion, have been absorbed within long-standing lines of party conflict (Barber & McCarty, 2015; Hare & Poole, 2014).

Although elite polarization has been well-established, scholars disagree whether similar trends exist at the mass level. Since almost all politicians belong to one of the two major parties, elite polarization can be observed by measuring whether these two groups drift apart. In the case of mass polarization, this is less straightforward since many citizens do not identify with either party. Furthermore, the number of 'Independents' increases over time, with newer generations being historically more likely to identify as such (e.g. Abramson, 1976; Twenge et al., 2016). As argued by Lelkes (2016), the American electorate may polarize ideologically due to two distinct processes. First, voters may grow apart simply because the overall level of disagreement around political issues increases across all citizens, regardless of partisanship. This is known as *ideological divergence*: 'the degree to which the distribution of ideology has moved apart' (Lelkes, 2016: p. 394; Hill & Tausanovitch, 2015: p. 1059). The second way in which the US electorate could polarize is when Republicans and Democrats become more ideologically distinct, either because ideological positions affect party identification, or because partisans follow the party line more closely. This second form of mass polarization is *partisan sorting*: the alignment between political orientations and party identity (Lelkes, 2016: p. 394; Hill & Tausanovitch, 2015: p. 1059). Partisan sorting can be seen as a form of polarization, as it structures 'multiple lines of potential conflict and organizes individuals and groups around exclusive identities, thus crystallizing interests into opposite factions' (Baldassari & Gelman, 2008: p. 409).

The literature provides more convincing evidence that partisan sorting increases than of increasing ideological divergence. Public opinion research shows that partisanship increasingly structures political behavior and core belief systems (Bartels, 2000; Hetherington, 2001). This partisan sorting trend has been most notable on conflict dimensions that emerged on the political agenda in recent decades, especially among politically engaged activists and partisans (e.g. Carmines & Stimson, 1989; Layman & Carsey, 2002; Layman et al., 2006; Hunter, 1991). Some have understood these parallel trends to reflect a significant division within the American electorate at large (e.g. Abramowitz, 2018; Abramowitz & Saunders, 2008; Abramowitz & Webster, 2018). However, skeptics of mass polarization convincingly demonstrate that most Americans are not (strongly) partisan. These non-partisans have not diverged ideologically and are not involved in a 'Culture War' (DiMaggio et al., 1996; Evans, 2003; Fiorina et al., 2008, 2011; Fiorina & Abrams, 2008). While politically active citizens may increasingly align their party identity with issue attitudes, the electorate at large shows little sign of diverging to the ideological extremes (Baldassari & Gelman, 2008; Fiorina, 2017; Hill & Tausanovitch, 2015; Levendusky, 2009; Mason, 2016). Nevertheless, these patterns might look different once we properly differentiate between generations.

Theory and Hypotheses

We consider three theoretical perspectives that make distinct predictions about whether mass polarization trends are driven primarily driven by age, period, or cohort effects. Although these effects are not necessarily mutually exclusive, disentangling their relative contribution is necessary to understand patterns of mass polarization.

Cohort Effects

Generational research shows that people form their core political dispositions and basic values during their late adolescence or early adulthood, also called the ‘formative’ years. Once the formative years have passed, roughly around the age of 25, citizens slowly become constrained by partisan loyalties, habits, values and ideological orientations (Franklin, 2004; Maccoby et al., 1954: p. 24).¹ Given people’s increased resistance to change with age, the political context during which they enter the electorate leaves a lasting impression on their political orientations later in life.

As adolescents, citizens learn what differences exist between the political parties in their country. People politically socialized in a highly polarized party system like present-day United States will have a clear idea what it means to be a (liberal) Democrat, or a (conservative) Republican (Carmines & Stimson, 1989; Levendusky, 2009: p. 3). When candidates and parties provide clear and polarizing cues, citizens in their impressionable years are expected to be particularly sensitive to the messaging from the party they identify with. As a result, partisan sorting can be expected to be stronger among members of these generations than among those who were socialized when the two main parties were less polarized. Elite polarization might also affect citizens who do not identify with either party. Issues that are not politicized may not elicit opinions from young people, whereas those highly contested by the parties may garner more attention and lead to opinion formation. The latter is probably true for all citizens, but those experiencing their formative years can be expected to respond more strongly than others to these polarizing cues.

Furthermore, citizens who grow up when new issues appear on the political agenda will understand politics differently compared to those not sharing a similar socializing experience. By itself, generational replacement can account for little political change: as long as the same issues crowd the political agenda, the formative experiences of generations will not be sufficiently distinct. In a similar vein, the emergence of new issues alone cannot explain gradual political change since it is unlikely that older citizens will be persuaded to update long-standing beliefs or party affiliations (Converse, 1969). The key observation here is that entrants to the electorate generally lack such constraints, meaning that emerging issues have more potential to shape the political orientations of younger generations. According to

¹ There is no universal consensus on which are the formative years (Krosnick and Alwin 1989: p. 416). Most scholars consider individuals to be especially impressionable from late adolescence to early adulthood, approximately between 12 and 25 years of age, with the strongest learning effects taking place at the age of 18 (Bartels & Jackman, 2014; Rekker et al., 2019; Schuman & Rodgers, 2004).

Carmines and Stimson (1981: p. 108), this makes new generations the ‘most likely agents’ of evolutionary political change should new issues emerge on the political agenda, since they will gradually replace older generations less affected by these newer issues.

Whereas Carmines and Stimson (1981, 1989) initially argued that race-related policies constituted the only example of issue evolution in American politics, public attitudes on issues ranging from abortion to gender equality were soon found to increasingly align with party identification (Abramowitz, 1994; Adams, 1997; Layman, 2002; Layman & Carsey, 2002; Layman et al., 2006; Stoker & Jennings, 2008; Stimson, 2004). Following Carmines and Stimson’s original reasoning, we expect emerging issues to differentially affect generations because they mark distinct historical political socialization periods. Simultaneously, as long-standing political issues continue to polarize the partisan landscape, we do not expect that the importance of these issues will be lost to new generations (e.g. Layman & Carsey, 2002; Layman et al., 2006; Stoker & Jennings, 2008). Considering that America’s youngest generations share a collective experience of growing up during increasingly polarized times, we investigate the following research question:

RQ1 What, if any, are the generational differences in ideological divergence?

As the link between generational replacement and partisan sorting has been more firmly established in the literature (e.g. Stoker & Jennings, 2008), we test the following hypothesis:

H1 Newer generations will exhibit higher levels of partisan sorting than older generations.

We expect this cohort effect to be particularly pronounced in the case of emerging issues (Van der Brug & Rekker 2021).

If different socialization experiences characterize political generations, it is important to establish what political generations are and how they should be categorized. We understand political generations as groups of citizens with distinct patterns of political orientations resulting from the socializing experience they enjoyed during their formative years (Neundorf & Smets, 2017; Stoker, 2014). We categorize generations based on generational monikers popularized by the Pew Research Center (Dimock, 2018): Greatest generation (born between 1910 and 1927), Silent generation (1928–1945), Boomer (1946–1964), Generation X (1965–1980), and Millennial (1981–1996). Admittedly, this generational scheme (Table 1) sacrifices some of the nuances a categorization based on specific historical events may provide, yet it is far from meaningless. Empirical research consistently demonstrates significant differences between these groups in their political behaviors and opinions (e.g. Fisher, 2017, 2020; LaCombe & Juelich, 2019; Stoker, 2014; Twenge et al., 2016). As one study argues, most Americans can correctly identify their generational membership, often think about themselves in generational terms, and even report changing their

Table 1 Classification of generations and their formative experiences. Note that we omitted the most recent ‘established’ generation, Gen Z (born 1997–2012), because of data limitations

Generation	Greatest	Silent	Boomer	Gen X	Millennial
Year of birth	1910–1927	1928–1945	1946–1964	1965–1980	1981–1996
Formative experience	Partisan conflict revolves around economic issues	Elite depolarization following the New Deal	Elite polarization on racial and gender equality	Increased elite polarization on cultural issues	Sharp increase in overall polarization in the House and Senate

anticipated voting behavior if it would serve their generation's interests. In short, these generations may be seen as 'collective political actors' (Munger, 2022).

Period Effects

Most empirical examinations of mass polarization focus on period effects: over-time changes that affect citizens of all ages and generations similarly. Neglecting generational differences, one has to (implicitly) assume that individuals adapt to changing circumstances throughout their lifespan: a perspective known as the *lifelong openness model* (Alwin & Krosnick, 1991; Tyler & Schuller, 1991). If people of different generations and ages adapt equally to new developments, generational replacement does not contribute to ideological divergence and partisan sorting (nor to other kinds of political or social changes). To the extent that members of all generations adapt their views and party preferences in reaction to new developments, we will observe across the board period effects, even when controlling for age and generation. To the extent that this is indeed the case, polarization will increase across different generations when new are politicized. For example, it stands to reason that older citizens are capable of re-evaluating their initial positions on immigration even though this issue has not been at the forefront of political conflict until recently.

RQ2 Did ideological divergence change over time (after controlling for age and cohort effects) and, if so, how?

H2 After controlling for age and cohort effects, partisan sorting will increase over time.

Age Effects

Finally, age effects capture how people's attitudes and behaviors change over their life-course. While citizens develop habits and opinions early in life, their political orientations might change gradually as they grow older. First, people may become better informed about party positions on multiple issues, allowing partisan sorting to strengthen over time. Second, there is evidence that people become somewhat more conservative as they grow older (e.g. Peterson et al., 2020; Tilley & Evans, 2014), and less likely to vote for Green parties in Europe (Lichtin et al., 2023). However, whether citizens will converge ideologically upon growing older has remained largely uncharted territory. Theoretically, youngsters may take up an uncompromising 'pure' or 'radical' form of ideology, adopting more 'nuanced' and 'mature' positions at a later age as a result of political learning (Rekker et al., 2015). While evidence has been largely anecdotal, we explore whether people converge ideologically as they adopt more nuanced ideological positions with advancing age:

RQ3: Does ideological divergence differ across age groups and, if so, how?

By comparison, the relationship between partisan sorting and age has been well-established (Converse, 1964; Stoker & Jennings, 2008). Decades of public opinion research demonstrates that people are not only more likely to identify with a

political party later in life (Van der Brug & Franklin, 2017), these partisan ties tend to grow stronger with age (Campbell et al., 1960; Converse, 1969), and generally become more stable during one's lifespan (Alwin & Krosnick, 1991). Consequently, older citizens should be more constrained by their partisan identities compared to younger citizens:

H3 Older citizens will exhibit higher levels of partisan sorting compared to younger citizens.

Method

Data

The present study draws upon the General Social Survey (GSS) and the American National Election Studies (ANES) cumulative data files. Taken together, these datasets provide ample opportunity to study mass polarization on numerous issues across cohorts and age groups from 1972 to 2021. We present the GSS results when possible because it covers several important attitudes over a longer period of time. However, as the GSS does not repeatedly measure immigration attitudes, we rely on ANES data for this variable. The ANES results for variables also included in the GSS are shown in “Online Appendix D”.

Variable selection

Our study analyzes political orientations on emerging and longstanding issues, ranging from a respondent's preference on a specific policy area (e.g. immigration, abortion) to variables that touch upon one's core political values (e.g. whether they identify as a ‘liberal’ or ‘conservative’). We focus on five issues, three of which are scales composed of multiple items and which have emerged sequentially on the American political agenda (see Stoker & Jennings, 2008):

- *Social welfare* policies concern long-standing policy questions about the extent to which the Federal government should extend aid to those in need. Extant research shows that the American electorate was already divided on social welfare issues before the 1970s (Layman & Carsey, 2002; Layman et al., 2006).
- *Race and gender* policies emerged at the forefront of partisan conflict roughly around the same time. While racial issues divided the parties leading up to the mid-1960s (Carmines & Stimson, 1989), gender equality concerns have split partisans since the early 1970s (Stimson, 2004: 72–4; Stoker & Jennings, 2008).
- *Culture and morality* issues comprise what has become known as a ‘Culture War’ (e.g. Hunter, 1991; Jacoby, 2014; Lindaman & Haider-Markel, 2002). While this cultural dimension encompasses a broad spectrum of issues, we focus on the cultural divide in the religious and moral sphere that pits progressive against traditional values. Examples of such moral questions include under what condi-

tions abortion should be legal and whether same-sex sexual relations are morally acceptable. While several cultural issues emerged on the political agenda at the end of the 1970s, they became increasingly divisive in the 1990s.²

To ensure the robustness of our findings, we replicate our analysis by constructing alternative indices using ANES data.³ A list of all selected variables is provided in “Online Appendix A”.

In addition to these three indices, we also include ideological self-placement and immigration attitudes in our study. Ideological self-placement has been a key object of mass polarization studies. As political elites and partisans have increasingly polarized (McCarty et al., 2006), we expect similar tendencies with each successive cohort. By contrast, immigration has only recently become a salient issue (e.g. Hout & Maggio, 2021).⁴ Taking immigration attitudes as a separate outcome variable provides an additional opportunity to test whether emerging issues sees new generations more polarized.

We recoded all variables to positively correlate with Republican party identification. The indices take the respondents’ average scores, normalized to range from 0 to 1. For the sake of consistency, we also recoded immigration, ideological self-placement, and party identification in the same way.

The Identification Problem

A well-known issue when estimating generational differences, over-time changes, and aging effects is that each of these three interrelated phenomena is a perfect linear function of the other two, since $\text{age} = \text{year} - \text{year of birth}$. We tackle this identification problem by imposing theoretically-informed constraints on two of the three APC components (age and cohort) as proposed by Kritzer (1983), as only then the third (period) can be freely estimated (e.g. Glenn, 2005; Thijs et al., 2020). While it is possible to estimate APC effects by constraining only *one* of the components, such a strategy requires heroic assumptions about the nature of these effects (Bell, 2020).

We argue that age and generational differences can only be estimated meaningfully when period effects are fully controlled for, by including a dummy variable for each survey year. These dummy variables pick up unpredictable oscillations, that could be due to sampling errors as well as sudden events that can cause a temporal uptick in polarization.

² Both the GSS and the ANES changed how they asked respondents about cultural/moral issues in their most recent surveys. As such, we omit the 2021 GSS survey and the 2020 ANES round from these models.

³ For example, the GSS Culture and Morality index captures the respondents’ average attitudes on abortion, pre-marital sex, same-sex sexual relations, and divorce laws. The alternative ANES index is composed of thermometer scores toward homosexuals, abortion attitudes, and the average of a battery of questions taking stock of moral values.

⁴ Immigration questions have only been featured consistently in the ANES since 1992. As a result, we omit members of the Greatest generation when modelling polarization on immigration attitudes.

The trade-off of freely estimating period effects is that theoretically-informed constraints have to be placed on both the age and the generational effects. For generational differences, the theoretical discussion presented earlier informs the relevant cut-offs between birth cohorts (Table 1).⁵ Unfortunately, not all birth cohorts of interest are sufficiently represented to disentangle APC effects. This is the case for the respondents born before 1910 as well as those born after 1997 (Gen Z), who we omit from both datasets.

Our theoretical specification for age effects draws from research on psychological development and life priorities (e.g. Arnett, 2000; Steinberg, 2010; Wink & Dillon, 2003). The literature on life-cycle effects on political orientations generally shows strong levels of political learning and attitude change during adolescence when citizens first enter the electorate (ages 17–21) and early adulthood (22–29), relative stability during middle adulthood (30–65), and then some shifts (sometimes in the opposite direction) during late adulthood (65+) (e.g. Bartels & Jackman, 2014; Converse, 1969; Dassonneville, 2017; Hobbs, 2019; Rekker et al., 2015; Schuman & Rodgers, 2004). We leverage this knowledge about what life-cycle effects on political orientations typically look like to remove multicollinearity and to identify the APC models.

Model Specification

Our study distinguishes between ideological divergence and partisan sorting. Both are group characteristics. Ideological divergence is the degree of disagreement about policy positions among a group of citizens. Partisan sorting is the extent to which party preferences and issue attitudes correlate among individuals in a group. These groups are defined by age, period and cohort (people of a certain age, people born in a certain period, or people who were interviewed in the same election year). When disentangling age, period and cohort effects we thus face the problem that each individual is simultaneously a member of three different groups (age, period, and cohort). To disentangle the three APC components, we developed the following strategy. We measure ideological divergence by capturing the degree to which individuals deviate in their political orientations from the expected mean based on age, period, and cohort (regardless of partisanship). We obtain these values from regression models, which involves several steps. First, we estimate for each of the issue scales the expected values based on age, period, and cohort:

$$\hat{y}_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \dots + \beta_p x_{ip} \quad (1)$$

where respondent's i 's expected value on issue y is modelled as a function of explanatory variables $x_{1i}, x_{2i}, \dots, x_{ip}$, denoting i 's period, cohort, and age (recall that age, period, and cohort are dummy-coded). The resulting predicted values (y -hats) represent the expected means of individuals based on the groups they belong to,

⁵ As a robustness check, we ran our analyses after categorizing respondents by decennial birth cohorts (1910–19, 1920–29, etcetera). Overall, while some of the individual regression estimates differ from the results we present here, the general patterns of generational differences remain similar. These results are not printed here due to space limitations but are available from the authors upon request.

say, a Boomer aged 30–64 (middle adulthood) in the year 1996. The results of these models are presented in “Online Appendix C”. We need these values to compute our outcome variables. To model ideological divergence, we calculate the absolute difference between the predicted values of each respondent and their observed values (i.e., the absolute residuals):

$$\text{divergence}_i = |y_i - \hat{y}_i| \quad (2)$$

Taking the absolute residuals ensures that we capture divergence on both sides of the ideological spectrum. To answer our research questions, we want to know whether we find more mass polarization in specific periods, age groups or generations. Therefore, we estimate ideological divergence on the basis of cohort, period, and age:

$$\widehat{\text{divergence}}_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \dots + \beta_p x_{ip} \quad (3)$$

where the explanatory variables x_{1i} , x_{2i} ... x_{ip} , denote i 's period, cohort, and age group and p is the total number of predictors in the model. The regression coefficients for age groups, birth cohorts and year will provide answers to our research questions.

To analyze partisan sorting, we construct our outcome variables by subtracting the predicted values (as calculated from Eq. 1) of each respondent from their observed values, after which we divide these scores by their estimated divergence (as calculated from Eq. 3):

$$\text{StandardizedOrientations}_i = (y_i - \hat{y}_i) / \widehat{\text{divergence}}_i \quad (4)$$

The resulting values are attitudes standardized by period, age, and cohort. These values allow us to estimate *partisan sorting* while accounting for APC-effects in *ideological divergence*. Had we taken raw attitude scores as the outcome variable, a growing difference between Democrats and Republicans could have reflected either ideological divergence or partisan sorting, or a combination of both. By contrast, our transformation makes it possible to separate completely between divergence and partisan sorting. We standardize party identification using the same procedure (explained in Eqs. 1, 2, 3, 4). Our second measure of polarization, *sorting*, follows from the relationship between party identification and issue attitudes. Hence, we predict attitudes by party identification and by interactions between party identification and age, year and cohort dummies:

$$\begin{aligned} \text{StandardizedOrientations}_i = & \beta_0 + \beta_1 \text{StandardizedPID}_i + \beta_2 (\text{StandardizedPID}_i * x_1) \\ & + \beta_3 (\text{StandardizedPID}_i * x_2) + \beta_4 (\text{StandardizedPID}_i * x_3) + \dots \end{aligned} \quad (5)$$

In Eq. 5, *StandardizedPID* is the standardized measure of party identification, while x_1 , x_2 , etcetera are dummies for period, age groups and birth cohorts. The regression coefficient β_1 , representing the main effect of party identification, is the estimation of partisan sorting for the reference group. Here, we are mainly interested

in the interaction effects that capture the relative degree of sorting among specific generations, age groups, or years.⁶

Next, we repeat our analyses while accounting for demographic shifts. To do so, we account for three significant compositional changes in the American electorate by adding the following dummy variables to the previous equations: race/ethnicity (Non-White v. White), education (no college versus at least one year of college), and active Protestantism (Protestants who attend religious services at least once a month). When estimating partisan sorting, these variables are interacted with the standardized Party Identification (Eq. 5). In what follows, we present the results of the APC-models with and without these control variables. As period, age, and cohort are purely exogeneous variables (someone's education does not affect their age, period, or cohort membership), the uncontrolled models provide valid estimates of the total direct *and* indirect effects of age, period, and generation. By comparison, the controlled effects help to determine whether these effects can (partially) be explained by changes in the demographic composition of the electorate.⁷

Given that our multiple-step strategy for estimating ideological divergence and partisan sorting uses the same observations, traditional OLS techniques would fail to account for the reduction in degrees of freedom, potentially biasing standard errors downward. To address this issue, we chose to estimate our parameters and confidence intervals by means of bootstrapping with resampling ($R = 1000$) for each model. Our parameter estimates are the means of the sampling distribution of the bootstrap samples and the reported standard errors in the tables are the standard deviations thereof.⁸

Results

Generational Differences

We first estimate mean-level generational differences in political orientations (recall Eq. 1) as presented in “Online Appendix C” (pp. 9–16). Echoing previous research (e.g. Norris & Inglehart, 2019), new generations are indeed significantly and substantially more liberal than previous generations across all issue dimensions. These values provide context to interpreting ideological divergence, which captures the absolute deviation from these (estimated) means (recall Eq. 2). The ideological divergence models containing cohort, period, and age estimates (with and without demographic controls) are presented in Table B.1, and those for partisan sorting in

⁶ Note that although we model party identification as an independent variable to estimate party sorting, it is unlikely that the relationship between partisanship and other political orientations is unidirectional (e.g. Brewer 2005: pp. 227–228; Layman & Carsey, 2002). As a result, our interpretation of party sorting is correlational instead of causal.

⁷ We acknowledge that demographic factors may play a different role between age groups, generations or periods. However, since the uncontrolled models contain at least 27 interactions, it is impossible to include higher order interactions without overfitting the models.

⁸ Replication files are available on the Political Behavior Dataverse: <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/SYFSLI>.

Table B.2 in “Online Appendix B” (pp. 4–8).⁹ Since the patterns are not clearly visible based on the regression coefficients, we prefer to show the predicted values for the generations in Fig. 1 while holding year, age group and other covariates (if applicable) constant at their mean effects.

Our first research question asks whether newer generations hold more polarized opinions, which should be expressed by a higher degree of ideological divergence among recent cohorts. However, these models show a different pattern. While often statistically significant, the effect sizes are small, and the ideological divergence panels shown in the left column of Fig. 1 do not inspire much confidence regarding meaningful generational differences. Although we note significant generational differences in several models, Millennials are one of the least diverged generations overall. Overall, our results suggest that older generations tend to be more diverged ideologically, regardless of demographic shifts in the electorate.

Building upon previous research, we expected higher levels of partisan sorting among the newer generations than among those they replace (H1). In line with this hypothesis, the Greatest and Silent generations (born 1910–1945) tend to be the least sorted cohorts. However, the newest generations score lower than expected. For example, Millennials are the second least sorted cohort on long-standing social welfare policies ($p < 0.01$).¹⁰ While the other models show no significant differences between generations, Millennials again turn out to be less sorted than expected. By contrast, on most issue scales we find the highest degrees of partisan sorting among the Baby Boomers. This suggests that the effect of generational replacement on polarization has peaked when the Baby Boomers replaced the Greatest generation. Our replication involving alternative outcome variables using ANES data yields similar results, except Millennials are now the most sorted generation on race and gender issues, although not by a significant margin (see Table D.2 in “Online Appendix D”, pp. 21–23).¹¹ Taken together, we reject our first hypothesis that partisan sorting is highest among the newer generations.

Period Effects

Turning to the period effects, we first investigate whether ideological divergence has changed over time (RQ2). The left column in Fig. 2 shows that this is indeed the

⁹ Note that the proportion of explained variance in several ideological divergence models is lower than those for the party sorting models. We did not develop these models to provide the best model fit, but to assess polarization differences over time, between generations, and across the life-cycle. As a result, we do not expect the explained variance to be very high. However, these low R^2 's indicate that only a limited proportion of the individual-level variation in the dependent variables can be attributed to the APC-components.

¹⁰ The ANES results in “Online Appendix D” show no significant generational alignment differences in party sorting on social welfare and ideological self-placement. Regardless, these results also challenge our hypothesis that newer generations should be the most aligned cohorts.

¹¹ Note that this model contains relatively few Millennial respondents, as the ‘Women in society’ question has not been included in the ANES since 2008. We also modeled the ‘Aids to Blacks and other minorities’ separately, covering an extensive period from 1970 to 2020. Even so, Millennials are significantly more aligned than the Baby Boomers in this model. These results highlight some of the instabilities of these APC-models. See “Online Appendix D” for more details.

Cohort effects

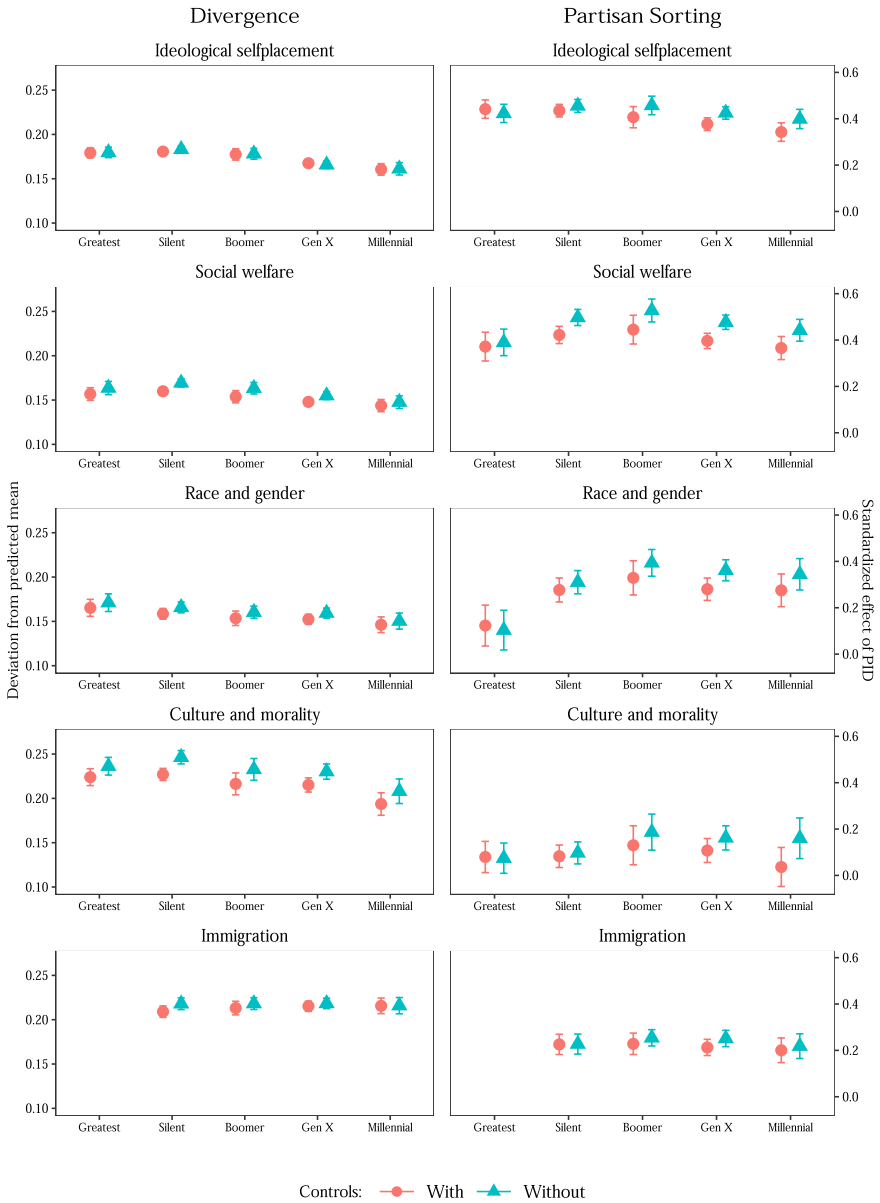


Fig. 1 Cohort effects in ideological divergence (left column) and partisan sorting (right column). Results based on bootstrapped regression models with and without demographic controls. See Table B.1 (ideological divergence) and Table B.2 (partisan sorting) in “Online Appendix B”, pp. 4–8 for complete results. Data: GSS, except for immigration (ANES)

case for three of the five policy dimensions. After controlling for age and cohort differences, we find that the American public has diverged on ideological self-placement and social welfare. However, the initial uptick in ideological divergence on cultural and moral issues and immigration seems to have abated, as the more recent years are not statistically significant. We also observe no clear pattern of ideological divergence on race and gender, with most year dummies in the model failing to attain statistical significance. Several ideological divergence trends, like social welfare, have stagnated. Interestingly, the most recent surveys show a slight increase in ideological divergence across most models. Similar to the results presented earlier, controlling for demographic shifts makes little to no difference.

By contrast, the sorting trends shown in the right column in Fig. 2 clearly support our hypothesis that partisan sorting has increased (H2). Americans have aligned their political orientations more closely with their partisan identities over the past decades on all outcome variables. These trends are impressive. For instance, partisan sorting on ideological self-placement increased from 0.25 in 1974 to 0.78 in 2021. We see similar patterns across the board, with the most notable alignment trends occurring along emerging issues. Partisan sorting on cultural policies was virtually non-existent from 1974 until the end of Reagan's second presidential term when the term 'culture war' became popular (e.g. Hunter, 1991). Similarly, sorting on immigration was negligible until the beginning of the Millennium. Since 2008, however, immigration attitudes have become strongly aligned with party identities at an incredible pace: from 0.00 in 2008 to 0.49 in 2020 (or, -0.15 to 0.29 in the model containing demographic controls). Overall, we see a trend of significant partisan sorting, regardless of whether we control for compositional changes in the US electorate.

Age Effects

Next, we explore whether aging leads to ideological divergence (RQ3). As shown in Fig. 3, the effects are minor and not in line with stereotypical images of radical youngsters who become more nuanced as they grow older. If anything, people tend to *diverge* ideologically on cultural and moral questions, immigration and social welfare policies, although these aging effects are small. Moreover, the effect seems to trail off at reaching late adulthood (65+). The other models reveal no distinct life-cycle patterns in ideological divergence, nor do we observe interesting deviations when controlling for demographic shifts in the electorate.

Hypothesis 3 states that, as a result of political learning, citizens will bring their political orientations more in line with their partisan identities with age. This hypothesis receives mixed support in our analysis. We see a clear trend of increased sorting with age on ideological self-placement and social welfare issues, particularly when comparing the two youngest age groups (17–21 and 22–29) with adults of 30 years and older. However, these effects disappear once we control for religion, education, and race/ethnicity. Differences between middle and late adulthood are weaker and not always statistically significant. A reasonable explanation is that political learning

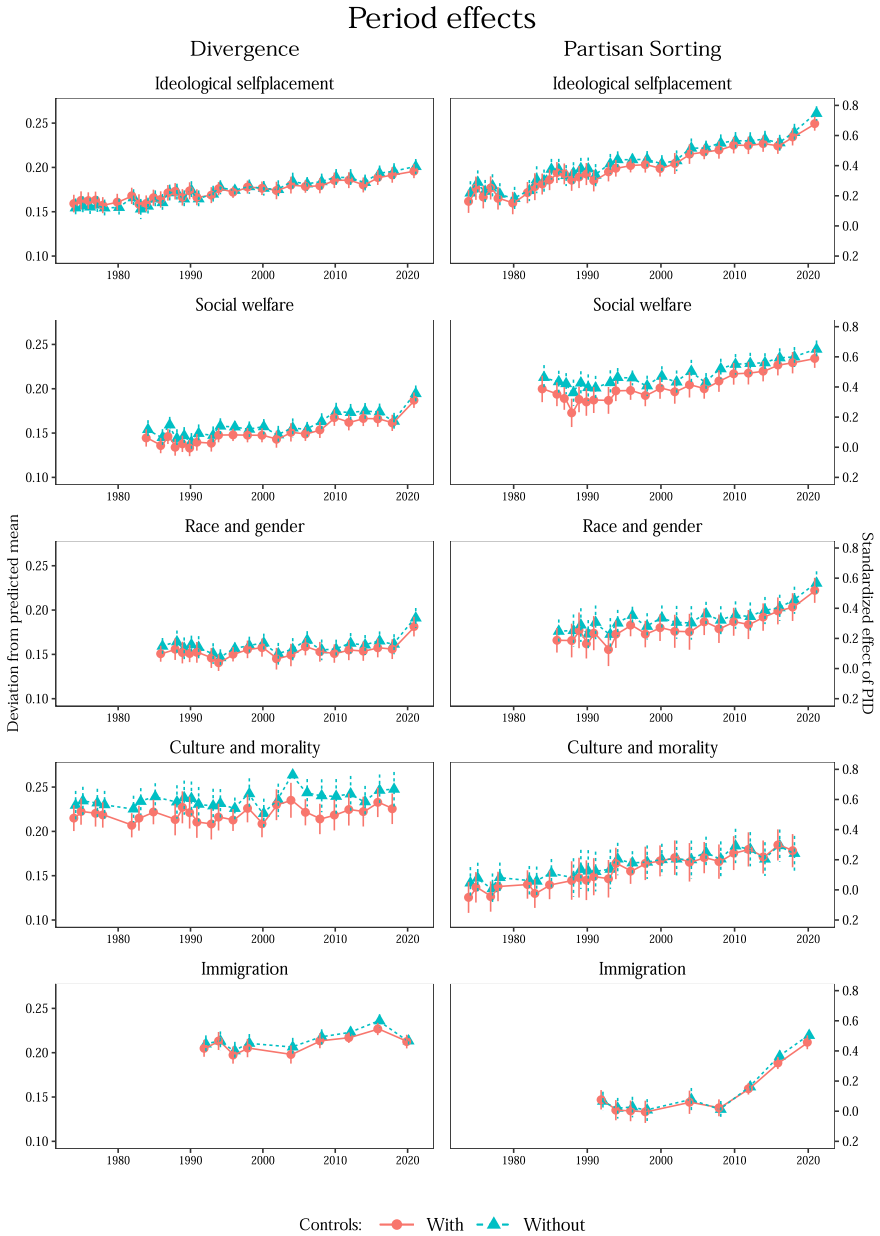


Fig. 2 Period effects in ideological divergence (left column) and partisan sorting (right column). Results based on bootstrapped regression models, with and without demographic controls. See Table B.1 (ideological divergence) and Table B.2 (partisan sorting) in “Online Appendix B”, pp. 4–8 for complete results. Data: GSS, except for immigration (ANES)

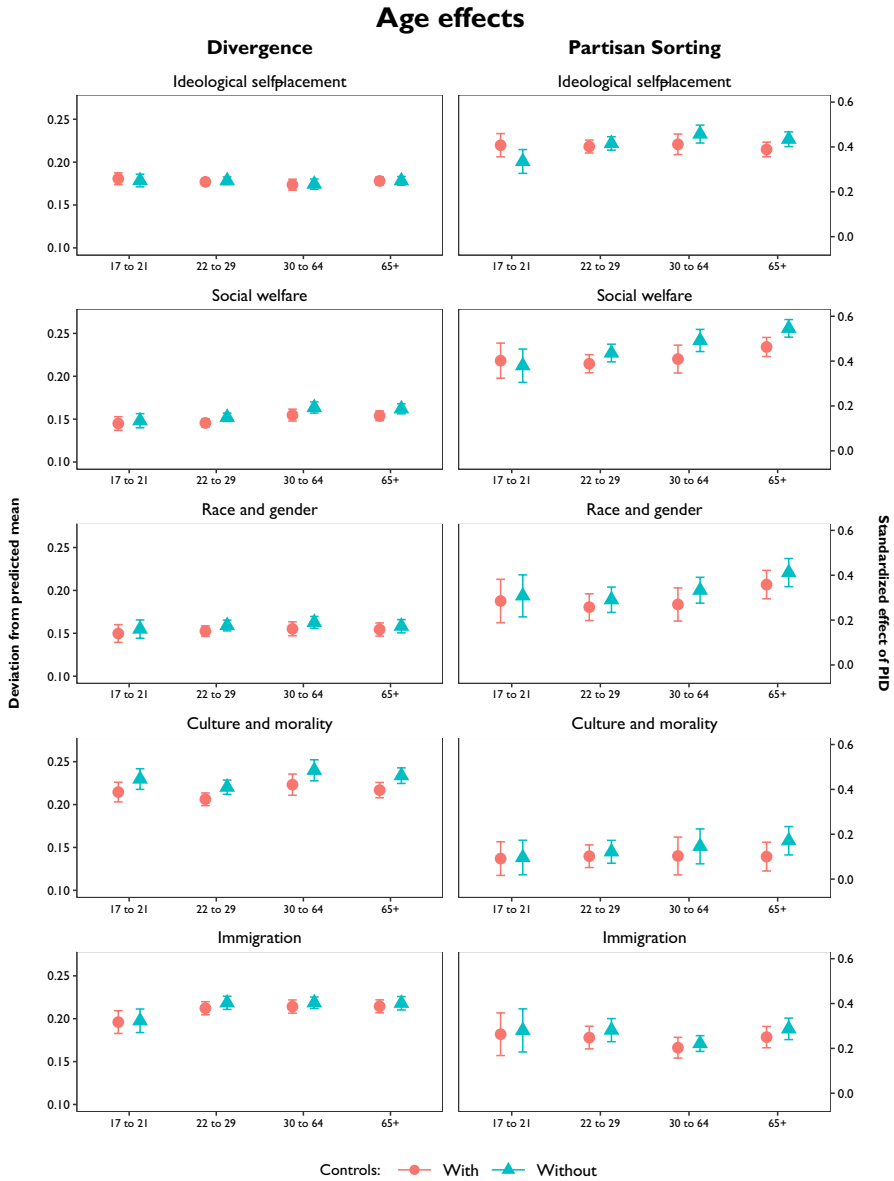


Fig. 3 Age effects in ideological divergence (left column) and partisan sorting (right column). Results drawn from bootstrapped regression models, with and without demographic controls. See Table B.1 (ideological divergence) and Table B.2 (partisan sorting) in “Online Appendix B” (pp. 4–8) for complete results. Data: GSS, except for immigration (ANES)

takes place mainly between 17 and 30, so that party preferences and issue positions become more aligned in this life phase. After that the relationship stabilizes.

Partisan sorting on race and gender-related issues also moves as expected. By contrast, sorting on emerging issues shows no consistent aging patterns.

Discussion and Conclusion

Our study investigates how generational replacement contributes to two manifestations of mass polarization: ideological divergence and partisan sorting. An extensive literature on political socialization suggests that mass polarization could be partially driven by the gradual replacement of less polarized cohorts by new generations that grew up in a period of increased elite polarization. This study is the first to disentangle such generational differences from both period effects and life-cycle effects by focusing not only on ideological self-identification, but also on issue and policy preferences. With few exceptions, our findings clearly reject the idea that newer generations are more polarized than older cohorts. In many instances, the results show that America's recent generations tend to be *less* polarized than earlier cohorts, particularly the Baby Boomers. This is even the case on some issues that emerged recently. These findings demonstrate that newer generations not only hold significantly more liberal views across all political issue dimensions (see "Online Appendix C", e.g. Norris & Inglehart, 2019) but that, at least on some issues, they are also (somewhat) more homogenous in their political opinions.

It is remarkable that the distinctive ideological profile of America's recent generations does not carry over to produce more party-issue constraint, especially since previous research does suggest that younger citizens are more aligned (Levendusky, 2009; Stoker & Jennings, 2008; Twenge et al., 2016). As such, our results are more in line with Phillips (2022), who also did not find strong evidence for a generational increase in partisan sorting on ideological self-placement. A possible explanation for the difference between our results and most previous findings is that the present study provides a more fine-grained picture by disentangling generational and life-cycle effects, by simultaneously analyzing and distinguishing between sorting and divergence, by including a wider range of data and issues, and by including more recent data on the youngest generations. Importantly, we also reject the hypothesis that generational replacement fuels mass polarization through demographic shifts in the American electorate. The overall trend of increasing polarization is dampened by the replacement of older generations by a new generation that is ethnically more diverse, better educated, less protestant, more liberal and less polarized. How demographic shifts affect partisan sorting is less clear-cut. Whereas demographic shifts in ethnicity/race and religiosity weaken partisan sorting, the rising levels of education instead fosters it. As a result, these compositional effects may cancel each other out on aggregate.

Although this study has focused primarily on generational differences, it is clear that period effects are the most consequential factor affecting mass polarization in the US, a finding that is in line with the lifelong openness model (e.g. Alwin & Krosnick, 1991; Tyler & Schuller, 1991). Echoing previous research, party identification and political orientations have become strongly sorted in recent decades. We also find that the American electorate has diverged ideologically, albeit to a lesser

extent. Our research thus underlines the importance of distinguishing between two forms of ideological mass polarization: divergence and sorting.

Finally, our analysis shows that citizens grow somewhat more conservative (see “Online Appendix C”) and polarized throughout their lifespan. Older respondents are more sorted on long-standing issues than youngsters (although not on emerging issues). This aging effect diminishes from middle adulthood, suggesting that people indeed develop their core political dispositions early in life. We expected that this effect would be counterbalanced by higher degrees of ideological divergence among younger citizens. However, our results indicate that people adopt slightly more radical political viewpoints when growing older, roughly until middle adulthood (late 20 s). This may signal political learning as people move from neutral positions to either side of the political spectrum with age. Alternatively, citizens may intensify the attitudes they initially developed during their formative years. Either way, both explanations contest the idea that people become more nuanced as a result of political maturation (Rekker et al., 2015).

A limitation of our study is that we cannot draw definitive conclusions about the causal mechanisms driving generational and age differences in mass polarization. While our analyses suggest that demographic shifts and formative experiences both play an important role, we observe correlations instead of causal pathways. Despite this important limitation, our analyses clearly indicate that mass polarization affects citizens of all ages and generations. In line with previous studies (e.g. Norris & Inglehart, 2019), we find that the youngest generations are significantly more liberal than older ones (see Online Appendix C). Importantly, they show that newer generations tend to be somewhat less polarized than the ones they replace. This should comfort those concerned about increasing mass polarization. Since political orientations imprinted by early socializing experiences are generally less subject to change with age, generational effects tell a story of continuity. Had generational replacement fueled mass polarization, the US would have been on a trajectory of increased ideological divisions for decades to come. However, we find that on many issues, the new entrants to the American electorate tend to be less polarized than previous generations in terms of both ideological divergence and partisan sorting. So, while the overall trend is towards more polarization, our findings suggest that generational replacement dampens this trend instead of fueling it.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11109-024-09917-x>.

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Declarations

Ethical approval We declare that there is no conflict of interest in the research presented in this manuscript.

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