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Perceiving Political Polarization in the United States:  
Party Identity Strength and Attitude Extremity Exacerbate the Perceived Partisan Divide

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**Abstract**

An important component of political polarization in the United States is the degree to which ordinary people perceive political polarization. We use over thirty years of national survey data from the American National Election Study to examine how the public perceives political polarization between the Democratic and Republican parties and between Democratic and Republican Presidential candidates. People in the United States consistently overestimate polarization between the attitudes of Democrats and Republicans. People who perceive the greatest political polarization are most likely to report having been politically active, including voting, persuading others, and making campaign contributions. We present a three-factor framework to understand ordinary people's perceptions of political polarization. We suggest that people perceive greater political polarization when they: (a) estimate the attitudes of those categorized as being in the "opposing group"; (b) identify strongly as either Democrat or Republican; and (c) hold relatively extreme partisan attitudes—particularly when those partisan attitudes align with their own partisan political identity. These patterns of polarization perception occur among both Democrats and Republicans. .

200 words

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The current political polarization in the United States is alarmingly high. The division between congressional Democrats and Republicans has arguably stagnated economic growth, both in the United States and globally, and poses substantial barriers to enacting bipartisan policies that address the major economic, environmental, and social challenges of our time (McCarty, Poole, & Rosenthal, 2006; Nivola & Brady, 2008; Zurcher, 2013). Some social scientists have argued that polarization in Washington reflects and is caused by polarization among the American electorate (Abramowitz, 2013). Ordinary Democrats are believed to hold partisan attitudes that are qualitatively different from ordinary Republicans, as reflected in the oft-cited distinction between “blue states” and “red states.” Liberal Democrats are believed to support expanded government and increased spending, whereas conservative Republicans support smaller government and reduced spending. Yet other social scientists have argued that the degree of attitude polarization between Democrats and Republicans is exaggerated, both in the minds of the public and in the estimates of social scientists (Fiorina, Abrams, & Pople, 2010; Seyle & Newman, 2006).

What has been missing from much of the discourse on political polarization—both within academe and in the popular punditry—is a consideration of how everyday Americans *perceive* polarization between Democrats and Republicans. Psychologists, in particular, should appreciate the importance of examining perceptions of political polarization because one of psychological science’s fundamental insights is that the perception of social reality has potent—if not prepotent—influence on cognitions, emotions, and behaviors (Allport, 1954). An important set of questions for psychological scientists therefore concerns the nature of everyday Americans’ perception of attitude polarization between Democrats and Republicans. Do Americans overestimate or underestimate political attitude polarization between Democrats and

Republicans? If Democrats genuinely support government spending on services more than Republicans, do Americans accurately perceive the magnitude of the difference? Are Americans' perceptions of political polarization associated with voting, campaign contributions, and other forms of political action? How do Americans' own political attitudes and identities relate to their perceptions of political polarization?

We suggest that three psychological factors shape everyday Americans' perception of political polarization: (a) the categorization of people into distinct partisan groups of Democrats and Republicans that define "our side" and the "opposing side," with the opposing political group seen as more polarized than one's own; (b) the strength with which people identify as a Democrat or Republican, which heightens tendencies to differentiate Democrats versus Republicans; and (c) the extremity of people's own attitudes on partisan issues, which causes people to project more extreme attitudes onto both Democrats and Republicans. These three factors—categorization, partisan identification strength, and attitude extremity—provide a novel framework for understanding Americans' perceptions of political polarization.

### **American National Election Study**

We use a comprehensive dataset to examine predictions derived from the three-factor framework. The data include more than 20,000 responses to the American National Election Study (ANES), conducted from 1970 until 2008, regarding various political issues. The ANES is a nationally representative cross-sectional survey, repeated biennially. Psychologists have used the ANES to glean valuable insights about political psychology in the United States (a brief list of recent example include, Chambers, Schlenker, & Collisson, 2012; Napier & Jost, 2008; Payne et al., 2010; Rabinowitz, Sears, Sidanius, & Krosnick, 2009; Shoots-Reinhard, Petty, DeMarree, & Rucker, 2014). Although the ANES is a mainstay of political science research—akin to

psychology's laboratory rats and university undergraduates—neither political scientists (for an exception, see Granberg & Brown, 1992) nor psychologists have used the ANES to examine psychological predictors of perceived political polarization.

Our analysis included ten different issues that ANES respondents have considered over the years. The top panel of Table 1 presents the full set of issues and the scale endpoints of each issue. The bottom panel of Table 1 presents the years in which each issue was measured, and the sample size for each issue in each year. For example, respondents in 2004 read (for issue G):

Some people think the government should provide fewer services, even in areas such as health and education, in order to reduce spending. Suppose these people are at one end of a scale, at point 1. Other people feel that it is important for the government to provide many more services even if it means an increase in spending. Suppose these people are at the other end, at point 7. And of course, some other people have opinions somewhere in between, at points 2, 3, 4, 5, or 6.

Other topics include whether “government should help Blacks” and minority groups or whether Blacks and minority groups should help themselves, and whether “women and men should have an equal role” or whether “women’s place is in the home.” For each issue, the option at one end of the scale represents a stereotypic liberal response while the option at the other end the scale represents a stereotypic conservative response.

On each issue, respondents reported their own attitude, estimated the attitudes of the Democratic party, the Republican party, and, in Presidential election years, the Democratic and Republican candidates. Considering the question about government spending on services, respondents first placed themselves on the provided scale and then indicated, separately, where they would place the Democratic and Republican parties on the same scale. In Presidential

election years, respondents also placed the two Presidential candidates on the same scale. For ease of interpretation, we coded all responses such that  $-3$  (on the left side of 0) represented the most liberal attitude and  $+3$  (on the right side of 0) represented the most conservative attitude.

We calculated our key measures from these responses. For example, we calculated respondents' perceptions of political polarization between the parties and between the candidates by subtracting their estimates of Democrats' attitudes from their estimate of Republicans' attitudes. Positive numbers indicate that people estimate that Republicans hold more conservative attitudes than Democrats.

Extended details about the data, and the specifics of model estimation, and the statistical support for our conclusions is contained in the online supplemental materials. These supplemental details are crucial to a full understanding of our results.

### **Americans Overestimate Political Polarization Between Parties**

Do ordinary Americans overestimate, underestimate, or accurately perceive political attitude polarization between Democrats and Republicans? There are several reasons why Americans might overestimate political polarization (Seyle & Newman, 2006). Chief among these reasons is perceptual categorization and its typical perceptual consequences. Merely placing individuals into distinct groups of *Democrats* and *Republicans* can make those groups seem further apart (Corneille & Judd, 1999; Rutchick, Smyth, & Konrath, 2009; Tajfel, 1959; Tajfel & Wilkes, 1963), just as categorizing purplish colors into *blue* and *red* makes those colors seem more different than if they were not so categorized (Downing, Judd, & Brauer, 1992; Roberson, Davidoff, Davies, & Shapiro, 2004). Mere categorization can therefore cause people to overestimate political polarization between Democrats and Republicans.

Over the years, several studies demonstrated instances of polarization overestimation. During the Vietnam War, pro-war “hawk” and anti-war “dove” students at the University of Oregon estimated the attitudes of hawks and doves to be further apart than they actually were (Dawes, Singer, & Lemons, 1972). Partisans on college campuses and from convenience community samples have overestimated the differences between partisans on topics of abortion (Chambers, Baron, & Inman, 2006; Chambers & Malnyk, 2006; Robinson, Keltner, Ward, & Ross, 1995), affirmative action (Sherman, Nelson, & Ross, 2003), the potential revision of traditional literary cannon in English departments (Robinson & Keltner, 1996), and even partisan differences in moral foundations (Graham, Nosek, & Haidt, 2012).

-- Please place Table 1 and Figure 1 close together and about here --

Our analysis of the ANES confirms that Americans do, in fact, overestimate political polarization between attitudes of Democrats and Republicans, and that they overestimate polarization across issues and across four decades. Figure 1 presents the actual and estimated levels of polarization for each of the 10 issues included in the ANES, collapsing across all years. For each issue, the actual attitude polarization is calculated as the difference between the average attitude of respondents who self-identified as a Democrat (on the left) and the average attitude of respondents who self-identified as a Republican (on the right).<sup>1</sup> The estimated attitude polarization is the difference between the average of respondents’ estimates of Democrats’ attitudes (the blue dots on the left) and their estimates of Republicans’ attitudes (the red dots on the right). The figure also displays the effect size (Cohen’s *d*) for actual polarization and

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<sup>1</sup> On some issues, respondents misperceived the average attitude of both Democrats and Republicans. Respondents thought that both parties held more liberal attitudes toward the rights of the accused and school busing than they actually did, and that both parties held more conservative attitudes toward women’s equal role than they actually did. One interpretation of this pattern is that people tend to center their perceptions around the midpoint of the scale, with Democrats to the left and Republicans to the right. Such a centralizing tendency in perceived attitudes could produce overall mean misperception when both Democrats and Republicans hold relatively liberal or conservative attitudes. Because our interest is in people’s perception of differences between groups, these mean level misperceptions are not relevant to the present investigation.

perceived polarization on each issue. Although actual polarization effects are of “medium” size on most issues, perceived polarization effects are “large” on all issues, and typically exceed actual polarization by a factor of two.

That Americans overestimate political polarization naturally raises the question of whether polarization has increased over the four decades represented in the ANES. There is mounting evidence that political polarization in the United States has increased (Abramowitz, 2013; Abramowitz & Saunders, 2008; McCarty et al., 2006; Pew Research Center, 2014). If actual polarization has increased over time, it might be that the overestimation of polarization decreased over time.

When interpreting analyses of polarization over time, two cautions must be borne in mind. First, changes over time might partially reflect changes in issues: questions about rights of the accused, school busing, and urban unrest were asked only in the 1970s; questions about defense spending and government services were not asked until the early 1980s. Second, and potentially of more consequence, because the ANES is a cross-sectional survey and our analysis compares self-identified Democrats and Republicans, we cannot know whether changes over time reflect changes in individuals’ attitudes (e.g., particular Democrats becoming more liberal) or changes in the composition of groups (e.g., more liberal people joining the Democratic party). Properly accounting for this “party sorting” is among the most daunting challenges facing analyses of polarization over time (Fiorina et al., 2010; Gelman, 2009; Levendusky, 2009).

Bearing these cautions in mind (if not throwing caution to the wind), Figure 2 suggests that both actual and perceived polarization have increased from 1968 to 2008, and both have nearly doubled during that time. Because actual and perceived polarization have both increased, the overestimation of polarization has remained relatively stable. The continued overestimation

of political polarization even as actual polarization has increased cries out for an explanation of who is most likely to overestimate political polarization.

### **Perceived Polarization Predicts Political Actions**

Adding to the urgency of understanding Americans' overestimation of political polarization is the fact that perceived polarization predicts political actions. People who perceive greater polarization between Democrats and Republicans, and between Democratic and Republican presidential candidates, are more likely to report engaging in various forms of political action including: voting, trying (legally) to influence others' votes, attending political meetings or rallies, working for a party or candidate, displaying buttons or stickers, and donating money to a party or candidate. We examined these six different political actions, predicting them from two measures of perceived polarization: People's perception of polarization between Democrats and Republicans, as described in the preceding section, and people's perception of polarization between Democratic and Republican presidential candidates (i.e., perceived Republican candidate stance minus perceived Democratic candidate stance).

Each measure of perceived polarization, aggregating across issues, independently predicted all of the political actions.<sup>2</sup> Importantly, these effects were independent of people's own partisan identification and of the extremity of their partisan attitudes. The more people perceive the parties as polarized, the more likely they are to engage in political action (Figure 3, left panel). And the more people perceive the presidential candidates as polarized, the more likely they are to engage in political action (Figure 3, right panel).

We suspect that the associations between perceived polarization and political actions arise from the seeming conflict-laden nature of politics: Only one party's candidate becomes

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<sup>2</sup> The model's estimated voting rates of 60–80% exceed actual voter turnout rates, which are approximately 60% during presidential elections and 40% during midterm elections. The over-reporting of voter turnout in the ANES is well documented (Bernstein, Chadha, & Montjoy, 2001; McDonald, 2003).

president; only one party can hold a majority in each Congressional chamber; and government services are either increased or not. Given the conflict between partisan groups, those who perceive greater polarization may feel a greater need to support their own political group (Asch, 1952; Cialdini & Goldstein, 2004; Prentice & Miller, 1996) and to take defensive action to combat the opposing group (Riek, Mania, & Gaertner, 2006). Indeed, politicians from one group often inflate the threat from the other group in an effort to “rally the base.” For example, during the terms of Presidents George W. Bush and Barack Obama, the parties of each President fanned the flames of threatened impeachment: Republicans suggested that Democrats would impeach President Bush for Iraq-related war crimes, and Democrats suggested Republicans would impeach President Obama for abuse of executive orders on immigration (FiveThirtyEight, 2014). Although the ANES data obviously cannot resolve the causal relations between perceived polarization and political actions, these findings sound a call for future research on the consequences of perceived political polarization. That those who perceive greater polarization are more politically active naturally raises the question, who is more inclined to see polarization?

### **Who Perceives Polarization?**

We suggest that three psychological factors exacerbate perceived polarization: the *categorization* of partisans into “our group” and the “opposing group,” *partisan identification strength* as either a Democrat or Republican, and people’s personal *attitude extremity* on political issues. Each of these three factors predicts exaggerated perceptions of political attitude polarization between Democrats and Republicans.

### **People Exaggerate Polarization of the “Opposing Group” More Than “Our Group”**

There are at least two reasons why the categorization of Americans into Democrats and Republicans might exaggerate perceived political polarization. We earlier discussed how mere

perceptual categorization accentuates perceived differences between Democrats and Republicans. Notice that categorization not only places other people into different groups, it also places other people into “our group” and the “opposing group,” at least for those who identify as either Democrat or Republican.

This political “groupiness” binds people into moral tribes (Graham & Haidt, 2010) that can exaggerate perceived polarization. People typically assume that other people’s attitudes are more swayed by ideological bias than their own, and that ideology holds particularly strong sway over partisan opponents (Pronin, Lin, & Ross, 2002; Robinson et al., 1995; Ross & Ward, 1995). People assume that their own attitudes—and presumably those of others in their group—reflect careful, reasoned, dispassionate analyses of evidence, whereas the attitudes of those in opposing groups are more biased, shaped by motivational and ideological concerns (Ross & Ward, 1995).

Democrats may see Democrats’ support for increased government services and spending as a rational evaluation of the responsibilities of a government “for the people,” but see Republicans as brazenly biased in their assessment, concerned with their own material advancement over the government’s moral obligations, and therefore opposed to government services and spending. Republicans may have the mirror-image perception, seeing Republican opposition to increased government services and spending as a rational concern for fiscal prudence, individual responsibility, and a realistic skepticism of government (as opposed to private) efficiency, but see Democrats as having naïve, blind faith in government rather than free markets, at the cost of fiscal recklessness and an erosion of individual responsibility. These perceptions of opposing group bias mean that people should exaggerate perceived polarization of those in the opposing group more than in their own group.

Analysis of the ANES reveal that both Democrats and Republicans see the other group as more polarized than their own group (Figure 4). This can be seen most clearly by first considering the views of Independents (shown in the middle rows of Figure 4), who do not belong to either group. These non-partisan respondents perceive the stances of both the parties and the presidential candidates as being closer together than do the partisan respondents on either side. Considering the perceptions of Independents compared with the perceptions of Democrats and Republicans demonstrates three further points. First, partisan respondents perceive the side that opposes them (e.g., Democrats' perceptions of Republicans and vice versa) as holding more polarized political attitudes compared with non-partisans' perceptions of that same party. Because both Democrats and Republicans are outgroups for Independents, this pattern suggests that partisans exaggerate polarization of the group that *opposes them*, beyond simply exaggerating the polarization of outgroups. Second, partisan respondents perceive their own group as holding more polarized political attitudes compared with Independents' perceptions of Democrats and Republicans (cf., Robinson et al., 1995). This may reflect a general tendency for partisans to see other partisans as more biased compared with the perceptions of non-partisans—a tendency that we consider in the next section. Third, when compared with Independents' perceptions, partisans' perceived polarization of the opposing group is always substantially more exaggerated than the perceived polarization of one's own group (compare the effect sizes in Figure 4). Thus, each group perceives the opposing side as having more polarized attitudes than their own group.

### **Partisan Identification Strength Predicts Perceived Polarization**

If partisans exaggerate perceptions of political attitude polarization more than non-partisans (i.e., Independents), are there some types of partisans who perceive greater

polarization? The strength of people's personal identification as a member of a partisan group—as a Democrat or Republican—can powerfully shape perceptions of the differences between groups. People who identify with partisan groups embrace their group as an extension of themselves, and they perceive their group in ways that affirm their group's distinctiveness from, and superiority over, opposing groups (Mullen, Dovidio, Johnson, & Copper, 1992; Turner, Hogg, Oakes, Reher, & Wetherell, 1987). People often affirm the distinctiveness of their group by exaggerating differences between “our group” and the “opposing group” (Brewer, 1999; Mackie, 1986).

To the extent that people have a strong rather than weak identification as a Democrat, for example, they may see Democrats as more differentiated from Republicans in their attitudes toward government spending. Accentuating these perceived differences both affirms Democrats' distinctiveness from Republicans—and might even imply that the Democratic stance is more correct than the Republican stance. This analysis implies that the more strongly people identify as either Democrat or Republican, the more polarization they should perceive between Democrats and Republicans.

The ANES bears out this predicted association between strength of partisan identification and perceived polarization (Figure 5, left panel). Our measure of perceived polarization has a quadratic relationship with partisan identification. The more strongly people identify as either Democrat (moving away from center to the left) or Republican (moving away from center to the right), the more polarization they perceive between Democrats and Republicans.

An analogous pattern occurred for perceptions of presidential candidates. Note that presidential candidates are both group leaders and prototypical members of Democratic and Republican groups (Dow, 2001; Schofield & Schnidman, 2011). The same factors that cause

strong partisan identifiers to exacerbate perceived differences between Democrats and Republicans should therefore also cause them to exacerbate differences between Democratic and Republican presidential candidates. As seen in Figure 5 (right panel), the more strongly people identify as either Democrat (moving away from center to the left) or Republican (moving away from center to the right), the greater difference they perceive between the attitudes of the Democratic and Republican candidates. Importantly, the effects of partisan identification strength on perceived polarization between the parties and between the candidates are independent of people's own partisan attitudes. Strong partisan identifiers do not perceive greater polarization simply because they hold more extreme stances.

It is important that partisan identification strength predicts perceived polarization of both the Democratic and Republican parties and of the Democratic and Republican presidential candidates. Because political parties are comprised of groups of individuals, different estimates of Democratic and Republican attitudes could reflect differences in people's beliefs about the composition of those groups. People with stronger partisan identities might believe that the parties are more "sorted" (Levendusky, 2009)—that is, they might believe the parties are comprised of more ideologically coherent assortments of individuals—and therefore have more extreme average attitudes. Unlike parties, Presidential candidates are individuals, so different perceptions of candidates' attitudes cannot be due to different beliefs about party sorting. That strength of partisan identification predicts perceived polarization of specific individuals (presidential candidates) implies that different beliefs about party sorting do not explain the effect of partisan identification strength on perceived polarization.

### **Attitude Extremity Predicts Perceived Polarization**

Attitude extremity is the final factor in our framework. We suggest that the extremity of people's partisan attitudes is associated with perceived polarization because people project the extremity of their attitudes onto others (Bartels, 1985; Conover & Feldman, 1982; Koestner, Losier, Worren, Baker, & Vallerand, 1995; Van Boven, Judd, & Sherman, 2012).<sup>3</sup> People assume that other people, both in their own group and in the opposing group, approach partisan issues in a similar way, with similar levels of engagement, emotion, and moral concern (Van Boven et al., 2012). This assumption of at least partial similarity of partisan psychological processes implies that those factors that lead people to hold extreme attitudes should lead them to believe that others hold similarly extreme attitudes.<sup>4</sup>

Before analyzing the effects of attitude extremity, it is worth considering how distinct the extremity of people's attitudes is from the strength of their partisan identification. Democrats obviously have more liberal attitudes than do Republicans. And it stands to reason that more strongly identified Democrats have more extreme liberal attitudes than do weakly identified Democrats.

The ANES reveals that the association between partisan identification strength and partisan attitude extremity is relatively weak. Figure 6 displays the relative frequency of ANES responses in a two dimensional space defined by partisan identification and partisan attitudes. The overall simple correlation is .19, consistent with other research (cf., Baldassarri & Gelman,

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<sup>3</sup> The tendency to project the extremity of partisan attitudes onto others is independent of the well-documented tendency to project simple attitudes onto others (Marks & Miller, 1987; Robbins & Krueger, 2005; Ross, Greene, & House, 1977). The projection of attitude extremity and simple attitudes are distinct, yet simultaneous phenomena (Van Boven et al., 2012).

<sup>4</sup> Many studies in intergroup contexts have found that whereas people project their own attitudes onto their own groups, they do not project their attitudes onto others who are not in their group, a pattern of differential projection to the ingroup versus the outgroup (Robbins & Krueger, 2005). Political contexts seem to be unique from other contexts, however, in that it is widely understood that partisan groups stand in opposition to each other such that people negatively project their own attitudes onto opposing groups (Cadinu & Rothbart, 1996)

2008). To be sure, strong Democrats tend to have extreme liberal attitudes (the dark blue circles in Figure 6) and strong Republicans tend to have extreme conservative attitudes (the dark red circles in Figure 6). We refer to these responses as having high “issue partisanship” (Baldassarri & Gelman, 2008).<sup>5</sup> But there are also substantial numbers of responses with low issue partisanship, that is, Democrats with conservative attitudes and Republicans with liberal attitudes (the light colored circles in Figure 6). The distribution of responses indicates that strength of partisan identification and attitude extremity are both conceptually and empirically distinguishable.

There is strong evidence in the ANES that attitude extremity predicts perceived polarization. People with more extreme partisan attitudes perceive greater polarization between the parties (Figure 7, left panel) and between the presidential candidates (Figure 7, right panel) than do people with less extreme partisan attitudes. The finer details of the data analysis (see the online supplemental materials) reveal two forms of the effect of attitude extremity. First, generalizing across issues, respondents with more extreme attitudes, on average, perceive greater polarization than do respondents with less extreme attitudes (as displayed in Figure 7). Second, respondents perceive greater polarization on those issues for which they hold more extreme partisan attitudes than on those issues for which they hold less extreme partisan attitudes. This second version of the association between attitude extremity and perceived polarization is particularly informative because it rules out response bias (an overall tendency to see the social world in extremes) as a complete explanation of the association between attitude extremity and perceived polarization.

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<sup>5</sup> Our terminology follows Baldassarri and Gelman (2008) who differentiate *issue partisanship*, the extent to which attitudes on a particular issue are associated with party identification, from *issue alignment*, the extent to which attitudes on one issue are associated with attitudes on another issue. Both issue partisanship and issue alignment are forms of “constraint” in more traditional terminology, which does not differentiate between the two (Converse, 1962; Zaller, 1992).

**Issue Partisanship Predicts Perceived Polarization**

Although we did not expect it, the pattern of results in Figure 7 makes clear that the effect of attitude extremity on perceived polarization is moderated by partisan identification:

Respondents who hold relatively extreme attitudes that are in the same direction of their partisan identification (the high issue partisans in Figures 6 and 7) perceive greater polarization than do respondents with extreme attitudes that are on the opposite end of the spectrum as their political identification (the low issue partisans in Figures 6 and 7). Moreover, as with the effects of attitude extremity, the finer details of the data analysis indicate that the interaction between attitudes and partisan identification occurs both between respondents and within respondents. Averaging across issues, people perceive greater political polarization when the direction of their average attitude corresponds with their partisan identification. Within respondents, people perceive greater political polarization on those issues where their attitudes more closely correspond with their partisan identification than on those issues where their attitudes correspond less closely. Democrats perceive greater polarization on those issues for which they hold liberal stances than on those issues for which they hold conservative stances; and Republicans perceive greater polarization on those issues for which they hold conservative stances than on those issues for which they hold liberal stances.

That issue partisanship predicts perceived polarization indicates that the United States' political landscape seems very different to those whose partisan identities and attitudes are aligned than to those whose identities and attitudes are not aligned. We suspect that these differences reflect the unique social, motivational, and cognitive realities of issue partisans. Cognitively, those high in issue partisanship are likely to have more coherent mental representations that exert greater constraint on the interpretation and weighting of new

information (Read & Simon, 2012; Simon & Holyoak, 2002; Simon, Snow, & Read, 2004). Socially, high issue partisans are more likely to have homogeneous partisan social networks (Bosveld, Koomen, & van der Pligt, 1994; Deutsch, 1988) or “echo chambers” (Wallsten, 2005) that may reinforce the idea of a politically polarized United States. And these coherent cognitive and social networks may increase the motivation of high issue partisans to maintain their sense of group distinctiveness. In short, high issue partisans are ideologues (Jost, Nosek, & Gosling, 2008; Tetlock, 1984) who may be highly motivated to perceive social-political reality in a consistent and protective manner.

### **Conclusion**

Social commentators are deeply concerned about political polarization in the United States and the attendant dysfunctional political processes. Political attitude polarization between Democrats and Republicans can pose substantial barriers to a healthy democracy. And to the degree that Democrats and Republicans seem polarized, people are more likely to engage in various forms of political action, from voting in elections to donating money and trying to persuade other people. Yet our analysis indicates that political attitude polarization is not as large as it seems, and that political attitude polarization seems larger to some people than to others.

People’s perception—and exaggeration—of political polarization can be understood using three conceptual factors and their interactions. We found that people perceive greater polarization: when partisans are categorized and people estimate the attitudes of the opposing group versus their own group; when people strongly identify with their partisan group, whether Democrat or Republican; and when people hold relatively extreme partisan attitudes. These latter two factors interacted such that people high in issue partisanship—that is, people whose attitudes correspond with their partisan identity—perceived the greatest levels of political attitude

polarization. That these three factors simultaneously, independently, and interactively predict perceptions of polarization in a comprehensive, extensive, longitudinal study of political attitudes in the United States provides evidence for different strands of psychological theories of categorization, social identity, and egocentric social projection.

Our findings raise pressing questions about psychological foundations of perceived and actual political polarization in the United States. First and foremost is whether the associations we have demonstrated reflect causal relations—do the predictors of perceived polarization actually cause perceived polarization? The ANES is an immensely valuable resource to psychological scientists because it provides a realistic, comprehensive picture of the social-political reality among everyday Americans. Yet the ANES, with rare exception, is not experimental and so does not afford causal inferences, which is perhaps why psychologists underutilize ANES in favor of more convenient and controllable, yet patently unrepresentative samples of university undergraduates (Henrich, Heine, & Norenzayan, 2010; Sears, 1986) and internet respondents (Kahan, 2013). Understanding the causal relations among the associations demonstrated here is a paramount task for future research.

Future research might also examine other measures of perceived polarization between groups. By necessity of the measures in the ANES, our analysis focused on mean differences between Democrats and Republicans. Yet to the degree that polarization refers to how separable Democrats and Republicans are, measures of actual and perceived polarization should incorporate both mean differences and the variability in distributions surrounding those differences—essentially a Cohen's  $d$  that captures degree of overlap between the distribution of attitudes (Judd & Van Boven, 2014; Levendusky & Pope, 2011).

These open questions notwithstanding, our results have at least two direct implications for contemporary political discourse. First, nearly all of the effects reported here are symmetrical for Democrats and Republicans. The tendency to overestimate polarization, the association between perceived polarization and political actions, and the factors associated with perceived polarization are true of both Democrats and Republicans. Our framework is a nonpartisan way of conceptualizing the similarities of psychological factors associated with perceived polarization.

Second, among the more striking findings from our analysis is that those who perceive the greatest political attitude polarization in the United States—and, hence, those who most exaggerate political polarization—are those who are themselves most polarized, strongly identifying as party members and holding relatively extreme attitudes that align with their partisan identities. These partisans who perceive the most polarization are also most likely to be politically active, contributing to campaigns, trying to persuade others, and voting in elections. What are the consequences for a healthy democracy when those who are most engaged are most inclined to exaggerate political polarization?

We believe that one consequence is that extreme party candidates are more likely to be nominated and elected. Given perceptions of polarization, extreme candidates are likely to be seen as better representing the party sentiment and better suited to defend against extreme opposing parties. If the exaggeration of polarization shapes the selection of political leaders, the prospects for reduced partisan conflict are rather slim.

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Table 1

*Political issues used and initial number of responses (respondent-issue pairs) by year and issue.*

	<b>Political Issue</b>	<b>Liberal Response (-3)</b>	<b>Conservative Response (+3)</b>
(A)	Rights of the Accused	Protect rights of the accused	Stop crime regardless of rights of accused
(B)	School Busing	Bus to achieve integration	Keep children in neighborhood schools
(C)	Defense Spending	Greatly decrease defense spending	Greatly increase defense spending
(D)	Government Health Insurance	Government insurance plan	Private insurance plan
(E)	Guaranteed Jobs and Income	Government see to job and good standard of living	Government let each person get ahead on his own
(F)	Aid to Minorities/Blacks	Government should help minority groups/Blacks	Minority groups/Blacks should help themselves
(G)	Government Services/Spending	Government should provide many more services: increase spending a lot	Government should provide many fewer services: reduce spending a lot
(H)	Urban Unrest	Solve problems of poverty and unemployment	Use all available force
(I)	Cooperation with U.S.S.R.	Cooperate more/try to get along with Russia	Get much tougher/big mistake to try to get along with Russia
(J)	Women Equal Role	Women and men should have an equal role	Women's place is in the home

Year	Issue									
	A	B	C	D	E	F	G	H	I	J
1968								1268		
1970	1295			1286		1351		1469		
1972	1940	2491		1112	2131	2001		949		2544
1974	1298	1380			1310	1344		1287		1461
1976	1845	1987		1769	1790	1851		1457		1723
1978	1934			1884	1820	2037				2155
1980		1303	1365		1179	1203			1186	1308
1982			1125		1210	1195	1119			1302
1984		882	1933	792	1918	1944	1866		1864	2025
1986			2061		1009	1950	2068		1956	
1988			1870	1823	1843	1878	1828		1703	1908
1990			1690		1692	1779	1635			901
1992			2325	2140	2353	2229	2284	1960		2364
1994			1642	1637	1652	1654	1567			1650
1996			1650	1668	1662	1669	1682			1686
1998					1122	1155	1254			1264
2000			955	935	970	979	972			991
2002										
2004			1196	1112	1187	1172	1194			1203
2006										
2008			1123	1130	1118	2237	1129			1143

Figure 1. Perceived and actual attitudes of Democrats and Republicans across ten issues. Blue circles indicate perceived Democrat positions; red circles indicate perceived Republican positions; and black lines represent actual positions of both parties, with actual mean Democrat attitude always on the left hand (liberal) side and actual mean Republican attitude always on the right hand (conservative) side. The distance between black lines is less than the distance between blue and red circles, indicating that respondents overestimated political polarization. On every issue, the effect size of the perceived difference (computed as Cohen’s *d*) is larger than the effect size of the actual difference, often by a factor of 2.

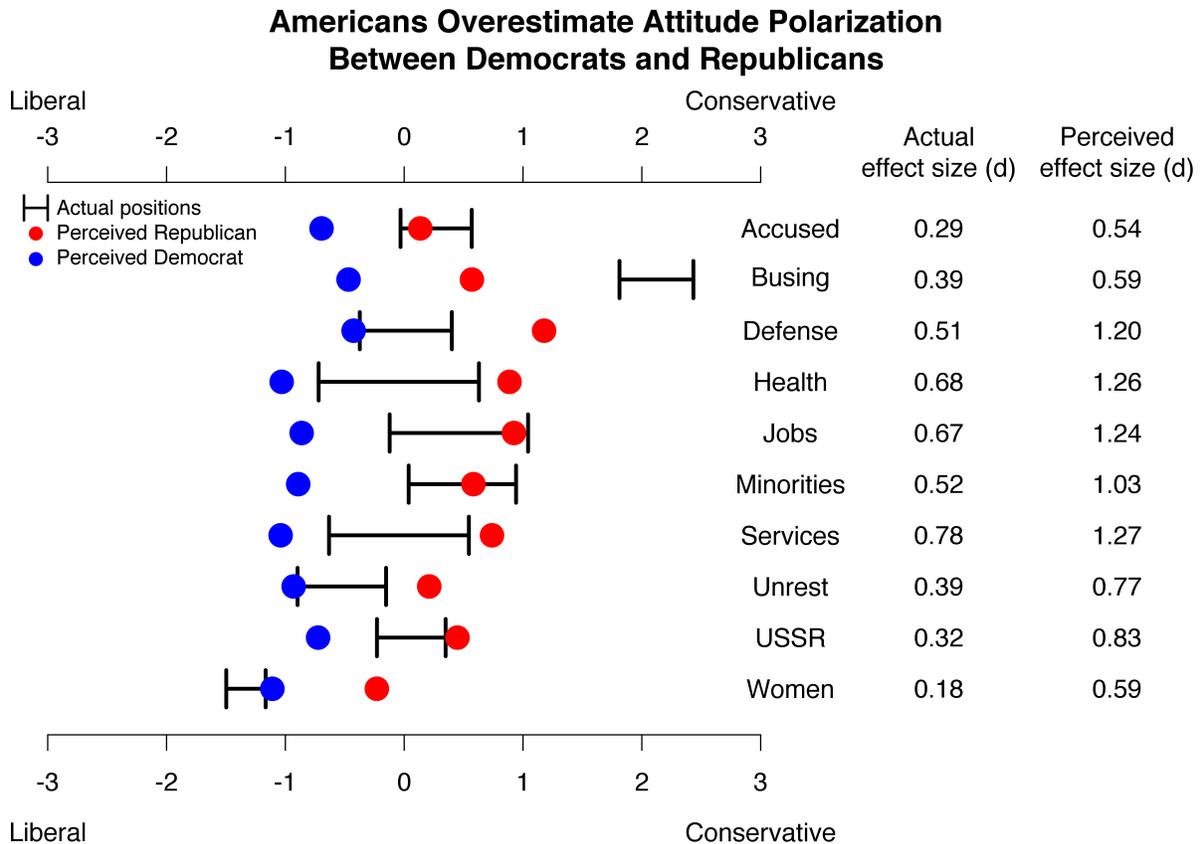


Figure 2. Perceived and actual polarization between Democrats and Republicans, computed as the mean Republican attitude minus the mean Democrat attitude, plotted over time. The dots are simple means across all respondents (for perceived polarization) or across all non-Independents (for actual polarization). There is no perceived polarization dot for 2008 because those measures were not collected in that cycle. The shaded smoothed lines represent +/- two standard errors from nonparametric regression fits (penalized cubic splines). Both actual polarization and perceived polarization between Democrats and Republicans have increased over time and the difference between them has remained approximately constant.

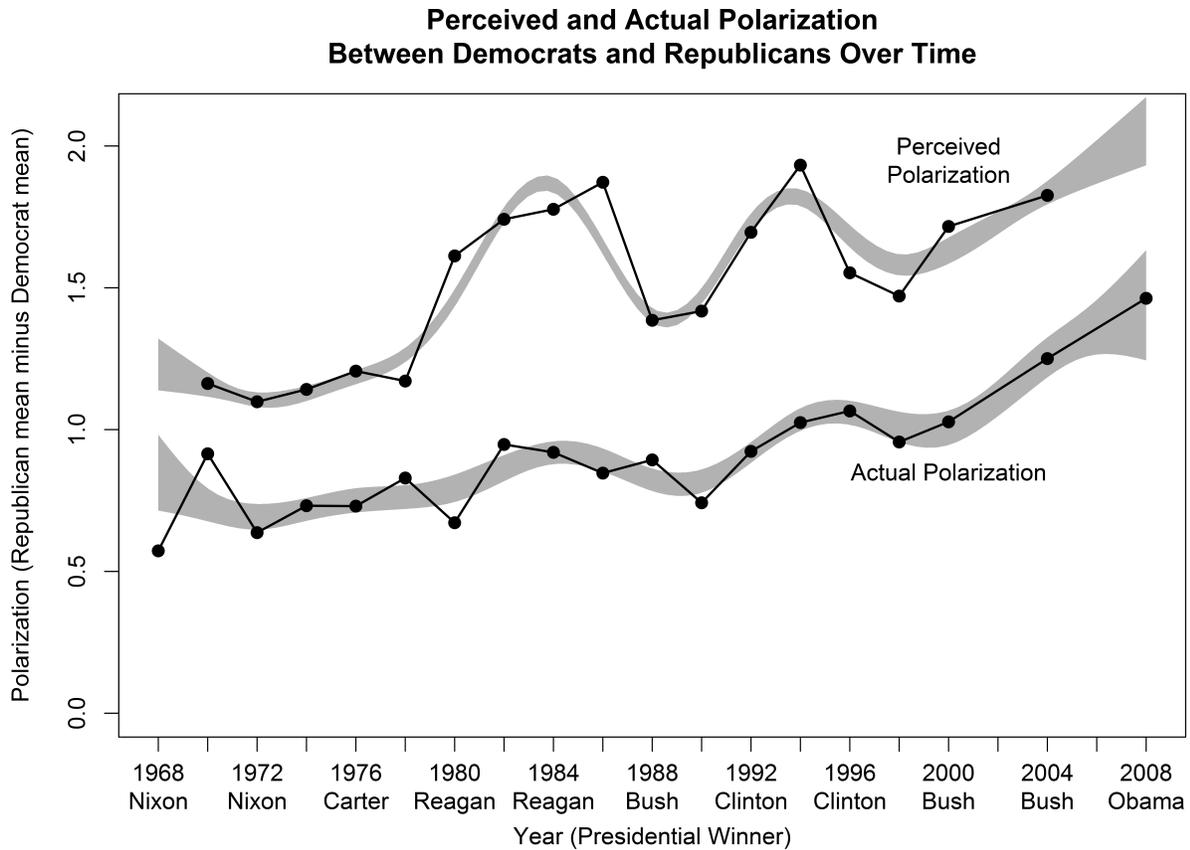


Figure 3. Probabilities of six political actions (left y-axis) as a function of perceived polarization between Democrats and Republicans (left panel) and between Democrat and Republican presidential candidates (right panel), independent of the effects of strength of party identification, direction of own attitude, extremity of own attitude, and demographic variables. The probabilities are derived from generalized additive models fit to each action with smooth functions for perceived polarization. Background histograms display the frequency of respondents at each level of perceived polarization (right y-axis).

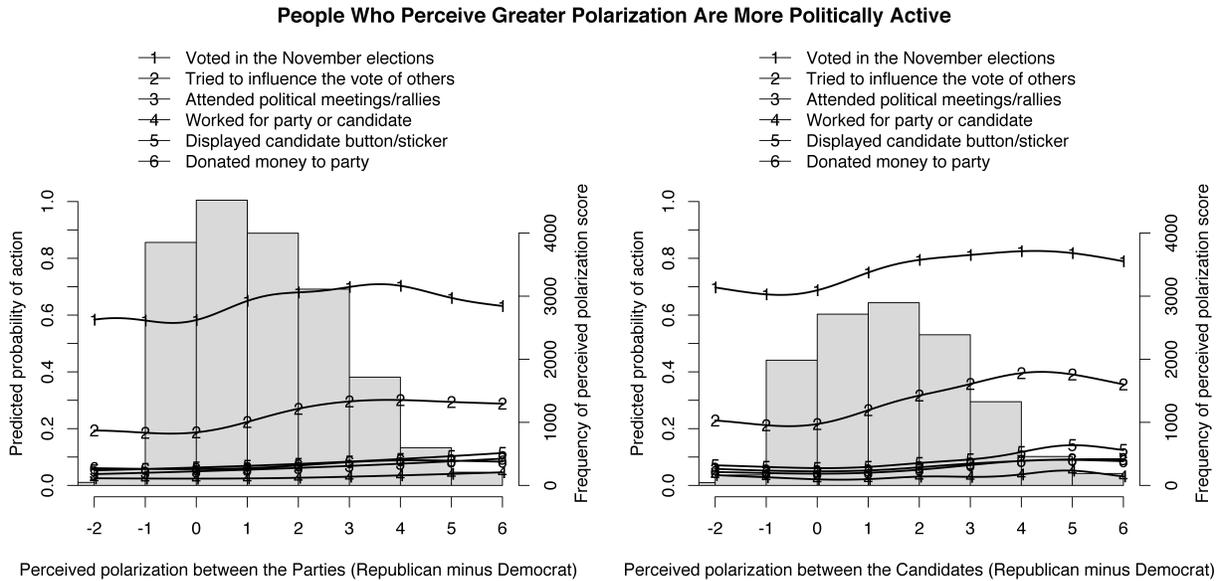


Figure 4. Democrats', Independents' and Republicans' perceptions of the attitudes held by the Democrat and Republican parties and their presidential candidates. Stripes going across indicate who is making the estimates of stances; bubble color indicates whose views are being estimated (blue = Democrat, red = Republicans). Estimates are aggregated across 10 partisan issues.

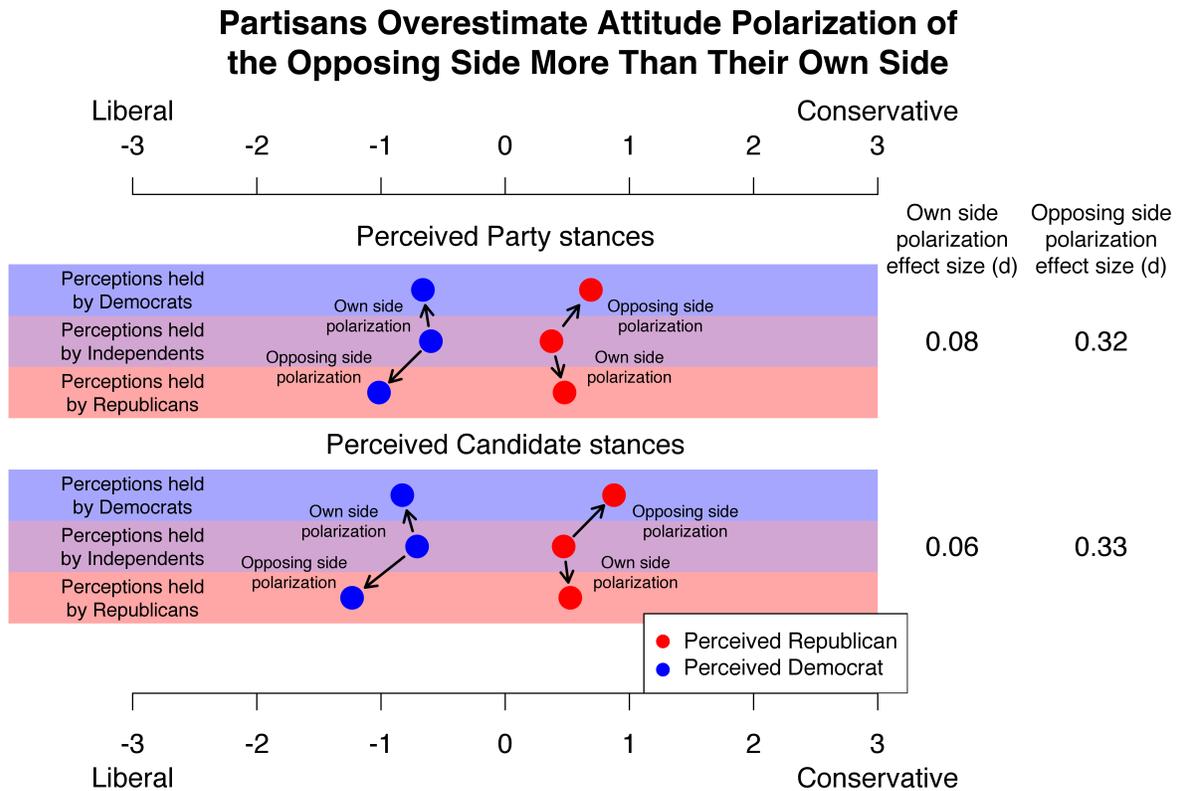


Figure 5. Perceived polarization between the Democratic Party and the Republican Party (left panel) and between Democrat and Republican presidential candidates (right panel) as a function of respondent party identification. At each level of partisan identification, vertical histograms indicate the frequency of the raw data, and black connected dots indicate the simple means.

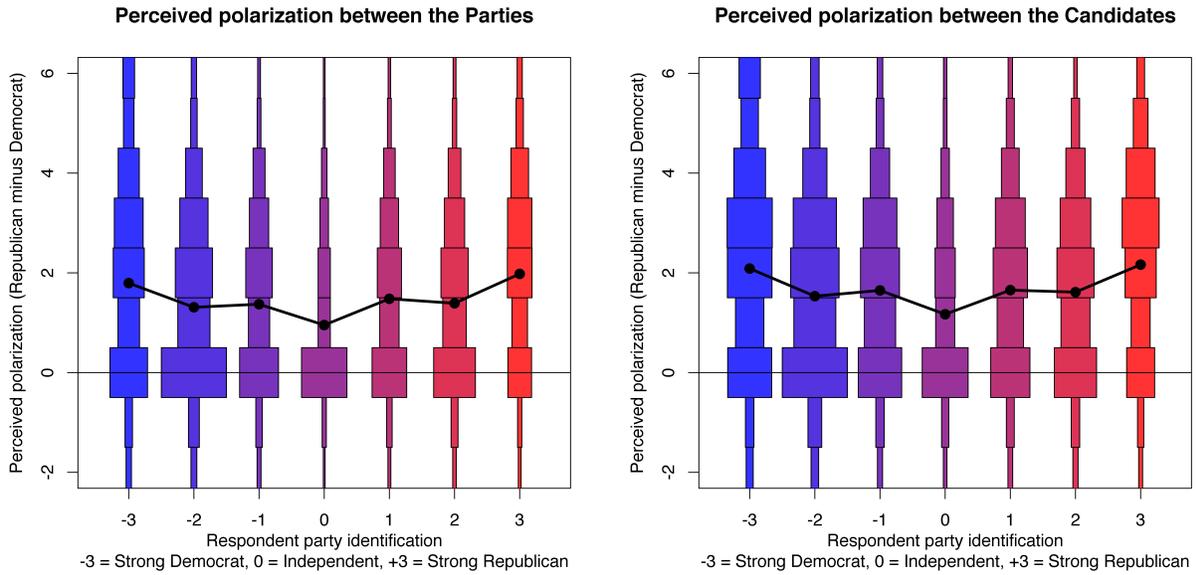


Figure 6. Plot of respondents' self-reported political attitudes vs. their strength of party identification. Each of the 49 unique response combinations (7 levels of party identification × 7 levels of issue attitude) are represented by a circle, with the area of the each circle proportional to the number of responses at that response combination. The circles are colored according to the corresponding party identification, and the lightness of the color is proportional to the issue partisanship of the response. Democrats who respond with liberal attitudes and Republicans who respond with conservative attitudes manifest high issue partisanship, whereas Democrats who respond with conservative attitudes and Republicans who respond with liberal attitudes manifest low issue partisanship. The overall distribution of circles reflects low overall levels of consistency between—and, hence, independence of—party identification and attitudes (i.e., the low issue-partisanship regions are well populated).

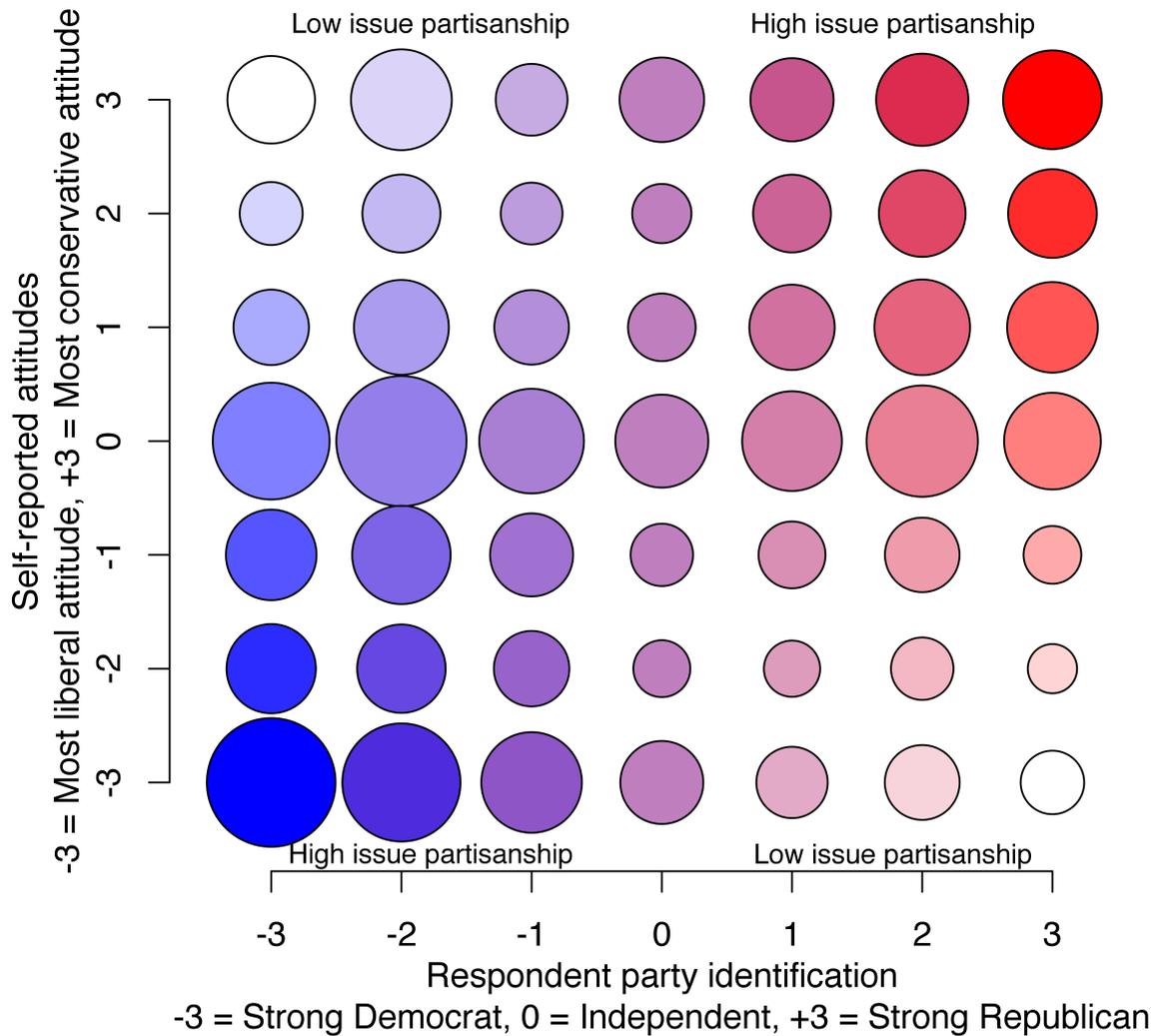
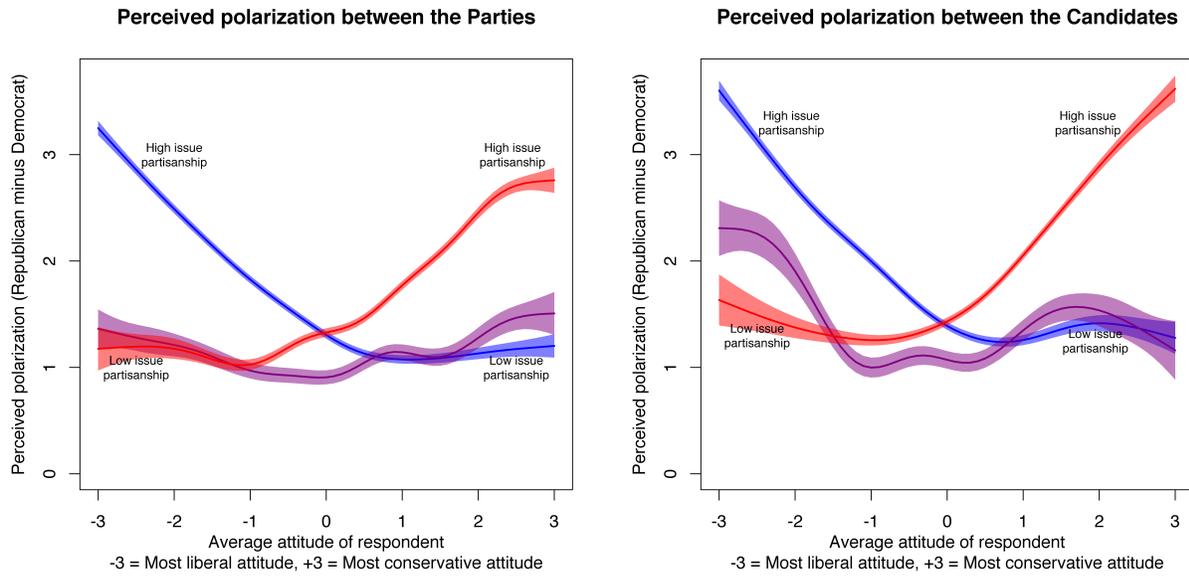


Figure 7. Perceived polarization between the Democratic Party and Republican Party (left panel) and between Democrat and Republican presidential candidates (right panel) as an interactive function of party identification and personal attitudes. The shaded smoothed lines represent +/- one standard error from nonparametric regression fits (penalized cubic splines), and are color-coded with the blue line representing Democrats (including leaners), the red line representing Republicans (including leaners), and the purple line representing Independents and other nonpartisans.



## SUPPLEMENTAL ONLINE MATERIAL

(To accompany Westfall, Van Boven, Chambers, & Judd: Perceiving Political Polarization in the United States: Party Identity Strength and Attitude Extremity Exacerbate the Perceived Partisan Divide)

### Method

#### Data selection and definition

The American National Election Study (ANES) is a nationally representative repeated cross-sectional survey.<sup>6</sup> Over the years, respondents to these surveys were asked to report their own attitude on ten different partisan issues. As an illustration of one of the issues, which was presented in the main text, respondents in 2004 read:

Some people think the government should provide fewer services, even in areas such as health and education, in order to reduce spending. Suppose these people are at one end of a scale, at point 1. Other people feel that it is important for the government to provide many more services even if it means an increase in spending. Suppose these people are at the other end, at point 7. And of course, some other people have opinions somewhere in between, at points 2, 3, 4, 5, or 6.

Respondents placed themselves on this 7-point scale. For data analysis, we coded all responses such that -3 represented the most liberal attitude (e.g., government providing more services and increasing spending) and +3 represented the most conservative attitude (e.g., government providing fewer services and decreasing spending). Table 1 presents the 10 issues, the liberal and conservative scale labels, the years in which each issue was measured, and the sample size for each issue in each year.

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<sup>6</sup> Technically, although the ANES cumulative data file consists mostly of repeated cross-sectional surveys, some respondents in the 1970s were re-interviewed up to 3 election years in a row. All of the analyses that we report appropriately account for this incomplete nesting of respondents under years.

For each of the 10 issues, respondents were also asked, separately, to place the Democratic party and the Republican party on the same scale. And in Presidential election years, respondents were asked to place the two Presidential candidates on the same scale. We used these responses to measure perceived polarization between Democrats and Republicans and between the Presidential candidates.

Respondents' own level of partisan identification was measured using a branched question about political identification. This question resulted in a 7-point scale (coded with  $-3 = \textit{Strong Democrat}$ ;  $-2 = \textit{Moderate Democrat}$ ;  $-1 = \textit{Weak Democrat}$ ;  $0 = \textit{Independent/Undecided}$ ;  $1 = \textit{Weak Republican}$ ;  $2 = \textit{Moderate Republican}$ ;  $3 = \textit{Strong Republican}$ ).

The ANES data that we analyzed included all of the years in which the necessary variables were measured. Questions about the perceived placement of the Democratic and Republican parties were included every election year (presidential and mid-term) from 1970 to 2004, except the year 2002. Questions about the self-reported attitudes of respondents toward the same set of issues were included every election year from 1968 to 2008, except for the years 2002 and 2006. Questions about the perceived placement of Democratic and Republican presidential candidates were only included in presidential election years, beginning in 1972 and continuing every 4 years until 2008. Final sample sizes of respondents vary across models depending on the availability of relevant data for that model, ranging from 10,473 to 21,602 (see Table 1).

### **Analyses of Exaggerated Polarization Perception**

To analyze exaggerated perception of polarization between Democrats and Republicans, we calculated two variables for every issue and respondent: perceived polarization and actual polarization. *Perceived polarization* was the respondent's estimated attitude of the "Republican

Party” minus the respondent’s estimated attitude of the “Democratic Party” for that issue. Higher numbers indicate greater perceived polarization. *Actual polarization* was calculated as the mean attitude of all respondents who self-identified as Republican minus the mean attitude of all respondents who self-identified as Democrat. We calculated actual polarization separately for each issue in each year. We then calculated *exaggerated polarization* as *perceived polarization* minus *actual polarization* for each respondent on each issue in every year. Positive scores indicate that the respondent overestimated (i.e., exaggerated) the actual level of polarization; negative scores indicate that the respondent underestimated polarization; and a score of zero indicates that the respondent’s perceptions of the difference between Democrats and Republicans were accurately calibrated with the actual difference.

We modeled these exaggerated polarization scores using linear mixed effects models that simultaneously tested multiple predictors (Gelman & Hill, 2007; Snijders & Bosker, 2011). These models incorporate uncertainty due to random effects of both respondents and issues, avoiding potential problems of traditional regression procedures for analyzing data with multiple random factors, and allowing for generalization of results simultaneously across both respondents and issues (Judd, Westfall, & Kenny, 2012). The model thus reflects that both the respondents and the issues are but samples drawn from populations of respondents who might have been interviewed and from political issues that might have been asked about. Just as we wish to make inferences about the population of respondents, we also wish to make inferences about the population of partisan issues. The confidence intervals reported in our models therefore reflect both respondent variability and uncertainty associated with variability within and between issues. We assumed that random effects were uncorrelated in our models.

In the primary models, we included several predictors to control for effects that are not the primary focus of investigation (see Table A1). We included demographic variables for age, gender, race/ethnicity, level of education, and income. Because demographics are not central to our hypotheses, they are not discussed in the text. The full results are reported in the relevant tables.

Because our measure of perceived polarization was computed as a respondent's estimate of the Republican party attitude minus the estimate of the Democratic party attitude, the possible range was +6 (indicating that respondents thought that Republicans held the most conservative attitude and Democrats held the most liberal attitude) to -6 (indicating that respondents estimated that Republicans held the most *liberal* attitude possible and Democrats held the most *conservative* attitude). In actuality, the vast majority of perceived polarization scores were between 6 and 0, indicating that most respondents correctly identified the *direction* of the difference between Republicans' and Democrats' attitudes. (There were no years and no issues for which the actual average Republican attitude was more liberal than the actual average Democrat attitude.) A minority of respondents consistently reversed the positions of the parties, estimating that Democrats held more conservative attitudes than did Republicans or that Republicans held more liberal attitudes than did Democrats. We excluded from analysis those 4.9% of respondents for whom we had estimates on at least three issues and who gave reversed estimates on more than half of these issues. These respondents were factually incorrect about the parties' respective attitude positions. All sample sizes reported in this paper are after applying this exclusion criterion.

### **Analysis of Change Over Time**

We analyzed the actual and perceived polarization between the Democratic and Republican Parties in separate linear mixed models (see Table A3). Both models included a full set of orthogonal contrast codes for the years of the study in order to avoid autocorrelation in the model residuals across years. To examine increases in actual polarization over time, we included a contrast code comparing the average attitudes of self-identified Democrats to self-identified Republicans and allowed this code to interact with the linear effect of time. To examine increases in perceived polarization over time, we included a contrast code comparing the perceived attitude of the Democratic Party to the perceived attitude of the Republican Party and allowed this code to interact with the linear effect of time. In both cases, the interaction term is indicative of increased actual or perceived polarization between Democrats and Republicans over time.

Because of gaps in the time series (the years 2002 and 2006), the full set of contrast codes for years must be constructed with care: conventional orthogonal polynomial contrasts would not be orthogonal in the case of missing groups, and would thus test slightly different hypotheses. To deal with this, we first constructed a linear contrast by mean-centering a vector containing the unique non-missing year values for that analysis (e.g., for actual polarization: 1968, 1970, ..., 2000, 2004, 2008). We then used singular value decomposition to find a remaining set of orthogonal vectors, which, together with the linear contrast, would comprise a complete set of orthogonal contrast codes. In this way we can examine the linear effect of time (denoted as  $Year_L$ ) while also controlling for all nonlinear effects of time (denoted as  $Year_N$ ) in order to avoid autocorrelation of the model residuals.

### **Analyses of Perceived Presidential Polarization**

During presidential election years, respondents were asked to estimate the attitudes of the Democrat and Republican presidential candidates on many of the same political issues for which

they estimated the attitudes of the Democratic and Republican parties. We analyzed respondents' estimates of the attitudes of the presidential candidates using linear mixed models that had the same structure and included the same predictors as the models used to analyze respondents' estimates about the parties.

Although it is not possible to compare respondents' estimates of the presidential candidates' attitudes to the criterion of their actual attitudes (given that we have no measure of the candidates' actual attitude) we can still examine factors associated with perceived polarization between the two candidates. The perception of polarization between candidates is particularly important, because variation in perceived polarization between presidential candidates implies that different respondents attribute different political attitudes to the same concrete individuals. The analysis avoids the possibility, as might occur with estimates of the parties, that different individuals estimate different party attitudes because they construe the makeup of the parties differently. For example, respondents who identify more strongly with a party or who hold more extreme partisan attitudes might believe that the parties are more sorted (Fiorina et al., 2010) compared with individuals with weaker partisan identification and more moderate attitudes.

### **Analyses of Perceived Polarization in Own Group versus Opposing Group**

Respondents' reported partisan identification also affords examination of whether people perceived polarization to a greater or lesser degree when estimating their political ingroup or their political outgroup (see Figure 4). We did this by comparing the perceived positions of Democrats and Republicans held by self-identified Democrats and Republicans with those held by respondents who did not identify with either party, treating the Independents as a control

group (see Table A5). For Independents, both Democrats and Republicans are outgroups, but neither is an opposing group.

### **Analyses of Political Action**

We also tested whether perceived polarization between the parties and the candidates was predictive of political behaviors, which as a set we refer to as *political action*. In these models, measures of perceived polarization were predictors, rather than the criteria. These models simultaneously controlled for partisan identification (i.e., as Democrat, Republican, or independent), strength of partisan identification, attitude, attitude extremity, and all of the demographic variables included in our other models of perceived polarization. The measures of political action that we used in these analyses included responses to six binary behavioral items related to political action:

1. Did respondent vote in the November elections?
2. Did respondent try to influence the vote of others during the campaign?
3. Did respondent attend political meetings/rallies during the campaign?
4. Did respondent work for party or candidate during the campaign?
5. Did respondent display candidate button/sticker during the campaign?
6. Did respondent donate money to party or candidate during the campaign?

We analyzed these six items simultaneously using a mixed-effects logistic regression with crossed random effects for respondents and actions, including all predictors and covariates used in the models of polarization perception. We allowed varying slopes of perceived polarization across actions. Model estimates thus allow for generalization across the different forms of political action (see Table A6).

### **Results**

### **People Exaggerate Polarization Between Democrats and Republicans**

Respondents substantially exaggerated polarization between Democrats and Republicans, Wald  $\chi^2(1) = 167.70, p < .001$  (see Figure 1). Even respondents who perceived the lowest levels of polarization, those with moderate or centrist attitudes and the lowest levels of partisan identification, significantly exaggerated polarization, Wald  $\chi^2(1) = 13.91, p < .001$  (see Table A2 for a summary of the statistical model).

Because our primary measures of perceived polarization were based on survey questions that asked respondents about the attitudes held by “the Democratic party” and “the Republican party,” it is possible that respondents interpreted these questions as being not about typical party members, but rather about party elites such as political operatives, elected officials, or the most strongly identified party members, all of whom might be expected to hold relatively extreme partisan attitudes. The results of a follow-up study cast doubt on this possibility, however.

We recruited 270 participants from Amazon.com’s Mechanical Turk (Burmester, Kwang, & Gosling, 2011; Paolacci, Chandler, & Ipeirotis, 2010). They placed themselves and the Democratic and Republican parties on 7-point attitude scales for 6 issues from the ANES that were pertinent in 2012: Defense, Health, Jobs, Minorities, Services, Women. The question formats were identical to those in the ANES. We experimentally manipulated the phrasing used to describe the intended Democratic and Republican targets using one of the four following targets: (a) the Democratic [Republican] Party, exactly as in the ANES; (b) those people who identify as Democrats [Republicans], which explicitly includes all self-identified party members; (c) Democratic [Republican] Party officials, that is, Democrats [Republicans] who hold an elected position at any level of government; and (d) people who identify as Strong Democrats [Republicans]. We analyzed these data using linear mixed models with crossed random effects

for respondents and issues, similar to our primary models of the ANES data, and tested fixed effects using the Kenward-Roger approximate denominator degrees of freedom method (Kenward & Roger, 1997).

The possibility that people interpret questions about the party as being about party officials or strong party members implies that estimates of the party should be more polarized than estimates of all identified party members. They were not. Participants did not perceive significantly more polarization when estimating the parties, as in the ANES ( $M_{polarization} = 1.86$ ), than when estimating all self-identified party identifiers ( $M_{polarization} = 1.74$ ),  $F(1, 258.69) = 0.64$ ,  $p = .422$ . Participants also did not estimate the parties to be more polarized than strong Party identifiers ( $M_{polarization} = 2.12$ ),  $F(1, 253.54) = 2.36$ ,  $p = .126$ . In fact, participants estimated that the parties were *more* polarized than “Party officials” ( $M_{polarization} = 1.46$ ),  $F(1, 256.71) = 12.56$ ,  $p < .001$ , suggesting that even if people did interpret the ANES questions as being about party officials, such an interpretation would undermine rather than artificially inflate polarization. More generally, these results suggest that question interpretation does not fully account for exaggeration of political polarization between Democrats and Republicans.

### **Change Over Time**

Actual polarization between Democrats and Republicans—defined as differences in the average attitudes of self-identified Democrats and Republicans—has increased over time, Wald  $\chi^2(1) = 28.88$ ,  $p < .001$  (see Table A3). Along with this, the perceived degree of polarization between the Democratic and Republican Parties—defined as differences in the average perceived attitudes of the two parties—has also increased over time, Wald  $\chi^2(1) = 202.22$ ,  $p < .001$ .

### **Perceived Polarization Predicts Political Action**

We analyzed 82,142 responses from 10,473 respondents toward the six reported political actions described earlier using a mixed-effects logistic regression model, structured similarly to those in the previous analyses, with crossed random effects for respondents and actions (Table A6). The more that respondents perceived polarization between typical Democrats and typical Republicans, the more likely they were to report having engaged in these political actions, Wald  $\chi^2(1) = 28.80, p < .001$ . Likewise, the more that respondents perceived polarization between the Democratic and Republican presidential candidates, the more likely they were to report having engaged in these actions, Wald  $\chi^2(1) = 50.52, p < .001$ .

These two associations between reported political actions and perceived polarization remain significant when entering perceptions of polarization between the parties and perceptions of polarization between candidates in the model simultaneously so that each effect is independent of the other. Respondents who perceived greater polarization between the parties were more likely to report having engaged in the political actions, holding constant perceptions of polarization between the candidates, Wald  $\chi^2(1) = 11.27, p < .001$ . And respondents who perceived greater polarization between the presidential candidates were also more likely to report having engaged in the political actions, holding constant perceptions of polarization between the parties, Wald  $\chi^2(1) = 38.44, p < .001$ .

Because of its central interest as an instrumental form of political action, we also tested models estimating reports of voting alone. The more that participants perceived polarization between the parties, the more likely they were to report having voted in the previous election, likelihood-ratio  $\chi^2(1) = 92.20, p < .001$  (see line 1 in Figure 3, left panel). Compared to respondents who perceived *no* polarization between Republicans and Democrats (i.e., perceived polarization = 0; reported voting probability = 58.3%), those who perceived wide polarization

were more likely to report having voted (i.e., perceived polarization = 4; reported voting probability = 70.3%).

The results were similar for perceptions of polarization between presidential candidates, likelihood-ratio  $\chi^2(1) = 98.03, p < .001$  (see line 1 in Figure 3, right panel). The more that respondents perceived the candidates as polarized, the more likely they were to report having voted in the election. Respondents who perceived *no* polarization between the presidential candidates (i.e., perceived polarization = 0; reported voting probability = 68.7%) were less likely to report having voted than were respondents who perceived wide polarization between the presidential candidates (i.e., perceived polarization = 4; reported voting probability = 82.5%). Again, both associations remained significant in a separate mixed model where both perceptions of polarization were entered simultaneously,  $\chi^2_s > 9, p_s < .0001$ .

### **Predicting Perceived Polarization**

We expected that the strength of respondents' partisan identification and their attitude extremity would be independently associated with their perceived polarization between the parties and between the presidential candidates. We analyzed these effects simultaneously in the same model. Our four key predictors were the 7-point measure of the respondent's partisan identification (where  $-3 = \textit{Strong Democrat}$  and  $+3 = \textit{Strong Republican}$ ), the 7-point measures of the respondent's attitude on each issue (where  $-3 =$  the most liberal response and  $+3 =$  the most conservative response), and the quadratic effects of both partisan identification and attitude (i.e., partisan identification squared and attitude squared, with values of 0, 1, 4, or 9). The quadratic effects reflect the strength of respondents' partisan identification and the extremity of respondents' attitudes.

**Partisan Identification Strength.** The analysis yielded significant associations between the quadratic of respondents' partisan identification and perceived polarization between the parties, Wald  $\chi^2(1) = 83.57, p < .001$ , and between the two presidential candidates, Wald  $\chi^2(1) = 44.86, p < .001$  (summarized in Figure 5 and Table A4). Respondents with stronger partisan identification as Democrat or Republican thus perceived greater polarization between the parties and between the presidential candidates than did respondents with weaker partisan identification. Moreover, the lack of a significant linear association with partisan identification in either model indicates that Democrats and Republicans did not significantly differ in their tendencies to perceive polarization between the parties and the presidential candidates.

**Own Group versus Opposing Group.** Testing and comparing the effects of own group polarization and opposing group polarization involve testing somewhat complicated linear combinations of the coefficients of the model shown in Table A5. There are six relevant groups of responses that are used to test these effects. Those six groups, and the linear combinations of model coefficients (labeled  $\beta_0$  through  $\beta_5$ ; see Table A5) that give their predicted group means, are the following:

$$\text{Republicans perceiving Democrats: } L_{RD} = \beta_0 - \beta_1 - \beta_2 - \beta_3 + \beta_4 + \beta_5$$

$$\text{Independents perceiving Democrats: } L_{ID} = \beta_0 + 2\beta_2 - \beta_3 - 2\beta_5$$

$$\text{Democrats perceiving Democrats: } L_{DD} = \beta_0 + \beta_1 - \beta_2 - \beta_3 - \beta_4 + \beta_5$$

$$\text{Republicans perceiving Republicans: } L_{RR} = \beta_0 - \beta_1 - \beta_2 + \beta_3 - \beta_4 - \beta_5$$

$$\text{Independents perceiving Republicans: } L_{IR} = \beta_0 + 2\beta_2 + \beta_3 + 2\beta_5$$

$$\text{Democrats perceiving Republicans: } L_{DR} = \beta_0 + \beta_1 - \beta_2 + \beta_3 + \beta_4 - \beta_5$$

Own group polarization can be tested against the following null hypothesis:

$$H_0: L_{Own} = (L_{ID} - L_{DD}) + (L_{RR} - L_{IR}) = -2\beta_1 - 6\beta_5 = 0$$

Opposing group polarization can be tested against the following null hypothesis:

$$H_0: L_{Opp} = (L_{ID} - L_{RD}) + (L_{DR} - L_{IR}) = 2\beta_1 - 6\beta_5 = 0$$

And the difference between own group polarization and opposing group polarization can be tested against the following null hypothesis:

$$H_0: L_{Opp} - L_{Own} = 4\beta_1 = 0$$

These linear combinations of coefficients were tested using the `linearHypothesis()` function from the `car` package in R. Respondents tended to perceive their own group's attitudes as more extreme, compared with how their group's attitudes were perceived by Independents. This was true for both the overall attitudes of their party, Wald  $\chi^2(1) = 6.29, p = .012$ , as well as the attitudes of the presidential candidate from their own group, Wald  $\chi^2(1) = 2.96, p = .085$ . Far stronger than respondents' tendency to exaggerate the extremity of their own group's attitudes was their tendency to exaggerate the extremity of the opposing group's attitudes, both the overall attitudes of the opposing party, Wald  $\chi^2(1) = 118.13, p < .001$ , as well as the attitudes of the presidential candidate from the opposing party, Wald  $\chi^2(1) = 85.91, p < .001$ . Most importantly, relative to the estimates made by non-identifiers, partisan respondents' estimates of the opposing political group showed greater polarization than did respondents' estimates of their own political group (Robinson, Keltner, Ward, & Ross, 1995). This was true both for perceptions of polarization between the parties, Wald  $\chi^2(1) = 69.27, p < .001$ , and perceptions of polarization between presidential candidates, Wald  $\chi^2(1) = 113.2, p < .001$ . Participants thus exaggerated polarization of their partisan outgroup more than their ingroup.

**Attitude Extremity.** People perceived greater polarization between both the parties and the candidates to the extent that their own attitudes were extreme. Notice that attitude extremity,

unlike partisan identification strength, varies both between-respondents and within-respondents. That is, some respondents generally hold more extreme attitudes than other respondents (between-respondents variability), and respondents often have more extreme attitudes on some issues than on other issues (within-respondents variability). We separately estimated the effects of within- and between-respondent variation in average attitudes on perceived polarization (see Table A4).<sup>7</sup>

People who generally held more extreme attitudes across issues perceived more polarization than people who held less extreme attitudes across issues, both for polarization between the parties, Wald  $\chi^2(1) = 245.32, p < .001$  (see Figure 7, left panel), and for polarization between presidential candidates, Wald  $\chi^2(1) = 166.51, p < .001$  (see Figure 7, right panel). People also perceived greater polarization on those issues for which their own attitudes were more extreme compared with those issues on which their own attitudes were less extreme. There were significant quadratic effects of respondents' own attitudes, both for parties, Wald  $\chi^2(1) = 20.29, p < .001$ , and for candidates, Wald  $\chi^2(1) = 24.98, p < .001$ . These results indicate that people who generally held relatively extreme attitudes perceive the greatest levels of polarization, and that people perceived greater polarization on those issues on which they held relatively extreme attitudes compared with those issues on which they held relatively less extreme attitudes. Of course, these effects of attitude extremity are independent of the effects of the respondent's partisan identification strength, partisan identification (i.e., Democrat or Republican) and the respondents' attitude position on specific issues (liberal or conservative).

**Issue Partisanship: Partisan Identification  $\times$  Attitude Extremity.** To examine the effect of issue partisanship—that is, the correspondence between attitudes and partisan identity—

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<sup>7</sup> The separate estimation of between-respondent and within-respondent effects also solves the potential problem of random effects correlating with predictors in mixed effects models (Bafumi & Gelman, 2006; Bell & Jones, 2015; Mundlak, 1978).

we added to the model of perceived polarization the linear and quadratic interactions between partisan identification and attitude position (and extremity; see Table A4). Perceived polarization was largest among respondents whose attitudes were coherent with their partisan identification—that is, among Democrats with liberal attitudes and Republicans with conservative attitudes—than among respondents whose attitudes were not coherent with their partisan identification (see Figure 7).

This effect of issue partisanship was found both at the within-respondent and the between-respondent levels. Within respondents there was a significant linear strength of partisan identification  $\times$  linear attitude interaction, both for perceived polarization between the parties, Wald  $\chi^2(1) = 99.87, p < .001$ , and perceived polarization between presidential candidates, Wald  $\chi^2(1) = 53.14, p < .001$ . These effects indicate that when respondents hold an attitude that is more consistent with their partisanship (e.g., a Democrat whose position on an issue is more liberal) than an attitude that is less consistent, perceived polarization is greater. At the between-respondent level, perceived polarization was substantially larger among respondents who were strong, extreme, and consistent in their partisan identification and attitude positions (i.e., high issue-partisanship respondents) compared with respondents whose partisan identification and attitude positions were less consistent (i.e., low issue-partisan respondents), both for parties, Wald  $\chi^2(1) = 232.2, p < .001$ , and for candidates, Wald  $\chi^2(1) = 232.74, p < .001$ .

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Table A1

Description of all predictor variables used in primary models reported in the paper, and the ANES variable codes from which they were derived.

<b>Predictor</b>	<b>Description</b>
Attitude <sub>ij</sub>	7-point score indicating respondent <i>i</i> 's self-reported attitude toward political issue <i>j</i> , scaled such that a score of -3 represented the most "liberal" response (e.g., government should increase services and spending) and a score of +3 represented the most "conservative" response (e.g., government should decrease services and spending).
Attitude <sub>W</sub>	Within-respondent mean-centered attitude, representing attitudes that are more or less liberal and the average attitude for a respondent. Computed as $\text{Attitude}_{ij} - \overline{\text{Attitude}_{i.}}$ .
Attitude <sub>B</sub>	Respondent mean on the Attitude predictor. Computed as $\overline{\text{Attitude}_{i.}}$ .
Attitude <sub>W</sub> <sup>2</sup>	Quadratic within-respondent mean-centered Attitude score, representing attitude extremity. Computed as $\text{Attitude}_{ij}^2 - \text{Attitude}_B^2$ .
Attitude <sub>B</sub> <sup>2</sup>	Respondent mean on the squared Attitude predictor, representing extremity of average attitude.
Party	7-point score indicating respondent's political identification, scaled so that -3 represented Strong Democrats, 0 represented Independents, and +3 represented Strong Republicans.
Party <sup>2</sup>	Quadratic Party score, representing strength of partisan identification, ranging from 0 (Independents) to 9 (strongest identification with the Democratic or Republican party).
Age	Continuous covariate, grand-mean centered.
Gender	Categorical covariate, coded with males = -1 and females = +1.
Race <sub>1</sub> -Race <sub>5</sub>	Categorical covariate indicating race of respondent, coded with a complete set of orthogonal contrast codes
Education	Seven-point scale with response categories ranging from "8 grades or less" to "Advanced degree including LLB." Entered as a grand-mean centered continuous covariate.
Income	Five-point scale with response categories ranging from "0 to 16 percentile" to "96 to 100 percentile." Entered as a grand-mean centered continuous covariate.
TargetParty	Contrast code comparing perceptions of the Democratic Party (code = -1) with perceptions of the Republican Party (code = +1).
OwnParty	Contrast code comparing respondents identifying with the Democratic Party (code = -1) to respondents identifying with the Republican Party (code = +1). Independents had missing values on this variable.
OwnDvsR	Contrast code comparing respondents identifying with the Democratic Party (code = +1), the Republican Party (code = -1), or as Independents (code = 0).
OwnIvsNI	Contrast code comparing respondents identifying as Independents (code = +2) to respondents identifying with either of the major parties (both with code = -1).
Year	Complete set of 18 orthogonal polynomial contrast codes representing election years (presidential and mid-term) from 1968 to 2008, with data from 2002 and 2006 missing (see Table 1).
Year <sub>L</sub>	The linear effect of time (i.e., the first polynomial contrast code for Year).
Year <sub>N</sub>	All nonlinear effects of time (i.e., the set of all 17 other polynomial contrast codes for Year beyond the first, linear code.)
PartyPol.	Perceived polarization between "the Democratic Party" and "the Republican Party," computed as the estimated attitude position of Republicans minus the estimated attitude position of Democrats. This is the dependent variable in the "party members model" from Table A4, and a predictor in the model in Table A6.
CandPol.	Perceived polarization between the Democrat presidential candidate and the Republican presidential candidate, computed as the estimated attitude position of the Republican minus the estimated attitude position of the Democrat. This is the dependent variable in the "presidential candidates model" from Table A4, and a predictor in the model in Table A6.

Table A2

Parameter estimates from linear mixed models of exaggerated polarization scores. SD = standard deviation; SE = standard error. Random effect standard deviations listed as “—” were not estimated in the model. Fixed effects estimates and standard errors listed as “—” are multiple-degree-of-freedom tests that have been collapsed to a single row to save space.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Random effects (standard deviations):**

Predictor	Respondents	Issues
Income	—	0.04
Education	—	0.05
Race <sub>5</sub>	—	0.01
Race <sub>4</sub>	—	0.06
Race <sub>3</sub>	—	0.03
Race <sub>2</sub>	—	<0.01
Race <sub>1</sub>	—	0.14
Gender	—	0.02
Age	—	<0.01
Party <sup>2</sup>	—	0.01
Party	—	0.07
Attitude <sub>B</sub> <sup>2</sup>	—	0.03
Attitude <sub>B</sub>	—	0.08
Attitude <sub>W</sub> <sup>2</sup>	0.05	0.01
Attitude <sub>W</sub>	0.39	0.04
Intercept	0.98	0.12
Sample sizes:	19,384	10
Residual SD:	1.46	
Total observations:	80,973	

**Fixed effects:**

Predictor	Estimate	SE	Wald $\chi^2$
Intercept	0.194	0.071	7.43**
Attitude <sub>W</sub>	-0.033	0.015	4.96*
Attitude <sub>W</sub> <sup>2</sup>	0.021	0.005	20.85***
Attitude <sub>B</sub>	-0.108	0.026	17.07***
Attitude <sub>B</sub> <sup>2</sup>	0.169	0.011	227.18***
Party	0.037	0.023	2.64
Party <sup>2</sup>	0.053	0.005	93.14***
Age	0.005	0.002	8.44**
Gender	-0.053	0.011	24.60***
Education	0.178	0.017	111.33***
Income	0.072	0.015	22.31***
Race	—	—	26.96***
Year	—	—	305.88***

Table A3

Parameter estimates from linear mixed models of actual and perceived polarization over time. SD = standard deviation; SE = standard error. Random effect standard deviations listed as “—” were not estimated in the model. Fixed effects estimates and standard errors given as “—” are multiple-degree-of-freedom tests that have been collapsed to a single row to save space, or if the Wald  $\chi^2$  statistic is also missing, were not estimated in the model. †  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Random effects (standard deviations):**

Predictor	Actual polarization model		Perceived polarization model	
	Respondents	Issues	Respondents	Issues
TargetParty	—	—	0.53	0.17
OwnParty	—	0.15	—	—
Intercept	0.77	0.85	0.47	0.26
Sample sizes:	21,602	10	21,398	10
Residual SD:	1.59		1.26	
Total observations:	124,340		183,158	

**Fixed effects:**

Predictor	Actual polarization model			Perceived polarization model		
	Estimate	SE	Wald $\chi^2$	Estimate	SE	Wald $\chi^2$
Intercept	0.158	0.269	0.34	-0.085	0.084	1.04
Year <sub>L</sub>	-0.006	0.001	37.52***	0.010	0.001	316.70***
OwnParty	0.405	0.047	74.57***	—	—	—
OwnParty*Y <sub>L</sub>	0.004	<0.001	28.88***	—	—	—
TargetParty	—	—	—	0.705	0.055	166.69***
TargetParty*Y <sub>L</sub>	—	—	—	0.008	0.001	202.22***
Year <sub>N</sub>	—	—	361.24***	—	—	425.77***

Table A4

Parameter estimates from linear mixed models of perceived polarization between typical party members and presidential candidates. These models were first estimated without the interaction terms, and the estimates from this first model are what are reported for all coefficients other than the interaction terms. SD = standard deviation; SE = standard error. Random effect standard deviations listed as “—” were not estimated in the model. Fixed effects estimates and standard errors given as “—” are multiple-degree-of-freedom tests that have been collapsed to a single row to save space.

†  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Random effects (standard deviations):**

Predictor	Party model		Presidential candidates model	
	Respondents	Issues	Respondents	Issues
Income	—	0.03	—	0.05
Education	—	0.05	—	0.03
Race <sub>5</sub>	—	0.01	—	0.02
Race <sub>4</sub>	—	0.05	—	—
Race <sub>3</sub>	—	0.02	—	0.03
Race <sub>2</sub>	—	<0.01	—	0.02
Race <sub>1</sub>	—	0.13	—	0.12
Gender	—	0.01	—	0.02
Age	—	<0.01	—	<0.01
Party <sup>2</sup>	—	0.01	—	0.01
Party	—	0.07	—	0.05
Attitude <sub>B</sub> <sup>2</sup>	—	0.02	—	0.03
Attitude <sub>B</sub>	—	0.07	—	0.10
Attitude <sub>W</sub> <sup>2</sup>	0.04	0.01	0.04	0.01
Attitude <sub>W</sub>	0.38	0.04	0.43	0.03
Attitude <sub>W</sub> *Party	—	0.04	—	0.05
Attitude <sub>W</sub> *Party <sup>2</sup>	—	<0.01	—	<0.01
Attitude <sub>W</sub> <sup>2</sup> *Party	—	<0.01	—	<0.01
Attitude <sub>W</sub> <sup>2</sup> *Party <sup>2</sup>	—	<0.01	—	<0.01
Attitude <sub>B</sub> *Party	—	0.03	—	0.02
Attitude <sub>B</sub> *Party <sup>2</sup>	—	<0.01	—	<0.01
Attitude <sub>B</sub> <sup>2</sup> *Party	—	0.01	—	<0.01
Attitude <sub>B</sub> <sup>2</sup> *Party <sup>2</sup>	—	<0.01	—	<0.01
Intercept	0.97	0.24	0.96	0.27
Sample sizes:	19,382	10	13,547	7
Residual SD:	1.46		1.51	
Total observations:	80,971		52,299	

## Fixed effects:

Predictor	Party model			Presidential candidates model		
	Estimate	SE	Wald $\chi^2$	Estimate	SE	Wald $\chi^2$
Intercept	0.970	0.099	95.77***	0.886	0.110	64.89***
Attitude <sub>W</sub>	-0.032	0.016	4.05*	0.010	0.016	0.40
Attitude <sub>W</sub> <sup>2</sup>	0.021	0.005	20.29***	0.036	0.007	24.98***
Attitude <sub>B</sub>	-0.110	0.025	18.49***	-0.067	0.041	2.68
Attitude <sub>B</sub> <sup>2</sup>	0.168	0.011	245.32***	0.213	0.017	166.51***
Party	0.038	0.023	2.65	0.022	0.022	0.94
Party <sup>2</sup>	0.052	0.006	83.57***	0.055	0.008	44.86***
Age	0.005	0.002	7.99**	0.002	0.002	1.46
Gender	-0.053	0.011	24.85***	-0.064	0.016	16.70***
Education	0.178	0.018	102.52***	0.168	0.017	99.17***
Income	0.072	0.015	23.58***	0.072	0.023	10.16**
Race	—	—	26.85***	—	—	13.70**
Year	—	—	549.45***	—	—	447.73***
Attitude <sub>W</sub> *Party	0.124	0.012	99.87***	0.147	0.020	53.14***
Attitude <sub>W</sub> *Party <sup>2</sup>	0.001	0.002	0.12	0.004	0.002	3.11†
Attitude <sub>W</sub> <sup>2</sup> *Party	-0.001	0.002	0.29	-0.003	0.002	3.67†
Attitude <sub>W</sub> <sup>2</sup> *Party <sup>2</sup>	0.000	0.001	0.16	-0.004	0.001	12.57***
Attitude <sub>B</sub> *Party	0.164	0.011	232.20***	0.187	0.012	232.74***
Attitude <sub>B</sub> *Party <sup>2</sup>	0.004	0.003	1.92	0.008	0.004	4.13*
Attitude <sub>B</sub> <sup>2</sup> *Party	-0.006	0.004	2.92†	-0.006	0.004	2.12
Attitude <sub>B</sub> <sup>2</sup> *Party <sup>2</sup>	0.002	0.002	1.26	-0.004	0.002	3.49†

Table A5

Parameter estimates from linear mixed models of perceived attitudes of typical party members and presidential candidates. SD = standard deviation; SE = standard error. Random effect standard deviations listed as “—” were not estimated in the model. Fixed effects estimates and standard errors given as “—” are multiple-degree-of-freedom tests that have been collapsed to a single row to save space.

†  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Random effects (standard deviations):**

Predictor	Party model		Presidential candidates model	
	Respondents	Issues	Respondents	Issues
Income	—	0.01	—	0.02
Education	—	0.02	—	0.04
Race <sub>5</sub>	—	0.01	—	0.02
Race <sub>4</sub>	—	0.03	—	0
Race <sub>3</sub>	—	0.03	—	0.02
Race <sub>2</sub>	—	0.03	—	0.06
Race <sub>1</sub>	—	0	—	0
Gender	—	0.01	—	0.01
Age	—	0	—	0
(β <sub>3</sub> ) TargetParty	0.53	0.17	0.52	0.19
(β <sub>2</sub> ) OwnIvsNI	—	0.03	—	0.04
(β <sub>1</sub> ) OwnDvsR	—	0.05	—	0.04
(β <sub>5</sub> ) TP*OINI	—	0.03	—	0.04
(β <sub>4</sub> ) TP*ODR	—	0.12	—	0.1
(β <sub>0</sub> ) Intercept	0.44	0.25	0.44	0.4
Sample sizes:	19,453	10	13,708	7
Residual SD:		1.24		1.29
Total observations:		164,566		108,356

**Fixed effects:**

Predictor	Party model			Presidential candidates model		
	Estimate	SE	Wald $\chi^2$	Estimate	SE	Wald $\chi^2$
(β <sub>0</sub> ) Intercept	-0.047	0.086	0.30	-0.113	0.164	0.48
(β <sub>1</sub> ) OwnDvsR	0.141	0.017	69.27***	0.189	0.018	113.20***
(β <sub>2</sub> ) OwnIvsNI	0.005	0.012	0.17	0.015	0.015	0.99
(β <sub>3</sub> ) TargetParty	0.636	0.055	135.22***	0.774	0.071	117.57***
(β <sub>4</sub> ) TP*ODR	-0.035	0.038	0.87	-0.013	0.039	0.11
(β <sub>5</sub> ) TP*OINI	-0.075	0.010	59.85***	-0.092	0.016	34.55***
Age	0.000	0.001	0.04	-0.001	0.001	0.37
Gender	0.016	0.006	7.50**	0.007	0.008	0.77
Education	-0.006	0.006	0.95	-0.008	0.017	0.25
Income	-0.020	0.007	9.20**	-0.010	0.008	1.42
Race	—	—	34.85***	—	—	14.71*
Year	—	—	683.95***	—	—	717.45***

Table A6

Parameter estimates from logit mixed models of political actions. SE = standard error. Random effect standard deviations listed as “—” were not estimated in the model. Fixed effects estimates and standard errors given as “—” are multiple-degree-of-freedom tests that have been collapsed to a single row to save space, or if the Wald  $\chi^2$  statistic is also missing, were not estimated in the model.

†  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Random effects (standard deviations):**

Predictor	Party model		Presidential candidates model	
	Respondents	Actions	Respondents	Actions
PartyPol.	—	0.05	—	—
CandPol.	—	—	—	0.05
Intercept	1.25	1.81	1.27	1.88
Sample sizes:	10,473	6	10,661	6
Total observations:	82,142		68,699	

**Fixed effects:**

Predictor	Party model			Presidential candidates model		
	Estimate	SE	Wald $\chi^2$	Estimate	SE	Wald $\chi^2$
Intercept	-3.007	0.762	15.56***	-2.885	0.768	14.12***
Attitude <sub>R</sub>	-0.022	0.018	1.38	-0.038	0.018	4.54*
Attitude <sub>R</sub> <sup>2</sup>	0.061	0.011	33.38***	0.027	0.010	7.72**
Party	-0.001	0.009	0.00	0.005	0.009	0.30
Party <sup>2</sup>	0.114	0.005	536.51***	0.120	0.005	515.96***
PartyPol.	0.118	0.022	28.80***	—	—	—
CandPol.	—	—	—	0.156	0.022	50.52***
Age	0.012	0.001	122.70***	0.010	0.001	85.47***
Gender	-0.074	0.017	18.01***	-0.067	0.018	14.29***
Education	0.293	0.012	624.28***	0.300	0.012	614.23***
Income	0.226	0.017	181.68***	0.229	0.018	167.23***
Race	—	—	60.80***	—	—	36.01***
Year	—	—	852.61***	—	—	244.63***