STICKING WITH YOUR VOTE: COGNITIVE DISSONANCE AND VOTING

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ABSTRACT

In traditional models, votes are an expression of preferences and beliefs. Psychological theories of cognitive dissonance suggest, however, that behavior may shape preferences. In this view, the very act of voting may influence political attitudes. A vote for a candidate may lead to more favorable interpretations of his actions in the future. We test the empirical relevance of cognitive dissonance in US Presidential elections. The key problem in such a test is the endogeneity of voter choice which leads to a mechanical relationship between voting and preferences. We use the voting age restrictions to help surmount this difficulty. We examine the Presidential opinion ratings of nineteen and twenty year olds two years after the President's election. Consistent with cognitive dissonance, we find that twenty year olds (who were eligible to vote in the election) show greater polarization of opinions than comparable nineteen year olds (who were ineligible to vote). We rule out that aging drives these results in two ways. First, we find no polarization differences in years in which twenty and nineteen year olds would not have differed in their eligibility to vote in the prior Presidential election. Second, we show a similar effect when we compare polarization (for all age groups) in opinions of Senators elected during high turnout Presidential campaign years with Senators elected during low turnout non-Presidential campaign years. Thus we find empirical support for the relevance of cognitive dissonance to voting behavior. This finding has at least three implications for the dynamics of voting behavior. First, it offers a new rationale for the incumbency advantage. Second, it suggests that there is an efficiency argument for term limits. And finally, our results demonstrate that efficiency may not be increasing in turnout level.

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1 Introduction

While models of voting behavior vary considerably, one common assumption of models of both turnout and voter choice is that voting behavior is an expression of preferences or beliefs. Whether voters are motivated by a desire to shift the outcome of the election to their desired outcome, as in instrumental models, or by the desire to express strong feelings on the part of themselves or of their group, as in intensity and popularity models respectively, economic models assume that preferences are a variable in the voting decision equation. (See for example Aldrich, 1993; Coate and Conlin, 2004; Grossman and Helpman, 2001 and Matsuaka and Palda, 1999 for summaries of voter turnout models.) Psychologists on the other hand have highlighted that causation may also run in the opposite direction: actions themselves may drive preferences and beliefs. Numerous experiments have led to the conclusion that behavioral change may precede attitudinal change (Bandura, 1989). One explanation for the impact of behaviors on beliefs is cognitive dissonance (Festinger, 1957) which refers to one's internal need for consistency. If an individual performs an activity that is antithetical to his beliefs, the individual may unconsciously change his beliefs to alleviate the discomfort of having inconsistent attitudes and actions.[1]

For example, in a classic experiment (Festinger and Carlsmith, 1959), subjects were asked to perform for an hour the boring task of placing knobs on pegs, turning them, and then taking the pegs off again. After the task was completed, each experimental subject was told that that the research assistant had not shown up and that the scientists needed the subject's help in recruiting more participants. Subjects were told they would receive either $1 or $20 ($6 or $122 in 2004 dollars) for their assistance. After each subject convinced the new recruit, really a confederate of the experiment, that the task was fun, the subject was asked for a rating of how much s/he truly enjoyed the experiment. Those who were paid $1 rated the task much more favorably than those who were paid $20. The theory of cognitive dissonance explains the result by assuming that most

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[1]This impact of behavior on attitudes is most commonly known as cognitive dissonance, which is also how we will refer to it. Psychological research on the other hand has shown that several other mechanisms besides the one emphasized by a narrowly defined cognitive dissonance theory could produce a similar effect. For example, self-perception theory (Bem, 1967) provides a second explanation for the impact of behaviors on beliefs: Individuals infer their opinions from their own actions. The publication of the 1967 article sparked great debate. "But as evidence began to accumulate that dissonance was indeed an unpleasant state of arousal, self-perception theory began to wane as an explanation for dissonance phenomena." (Hogg and Cooper, 2003). We continue to use the phrase cognitive dissonance, however, simply because of its use in common parlance, and not to signify a position on which specific psychological mechanism may be at work.

people believe themselves to be truthful unless they have strong incentives to behave otherwise. Those who were told they would receive $20 had a strong incentive to lie. Those who were told they would receive $1 had no such incentive. Therefore those in the $1 group felt the discomfort (dissonance) of having inconsistent actions (lying to new recruit) and beliefs (I am a truthful person and the task was really boring). Unable to change the past action of telling the new recruit that the task was enjoyable, those in the $1 group had no other option but to change their belief that the task was boring to believe that the task was, in fact, enjoyable.[2]

In the intervening years, empiricists have discovered that dissonance can be aroused even when behaviors are in line with attitudes. Aronson et. al (1991) had college students create videos to encourage high school students to practice safe sex. Some of these students were then asked to think about their own failures to use condoms in the past. For this group of students, the discrepancy between their past behavior and the message they were currently preaching appears to have aroused dissonance. Members of this group stated greater intentions to use condoms in the future.[3] Dissonance is not limited to cases in which subjects are trying to persuade others. Since the 1959 study, empiricists have explored the relevance of cognitive dissonance to a large variety of contexts including socialization of children, curing snake phobias, interpersonal attraction, proselytizing, gambling and water conservation (Aronson, 1999). Applying cognitive dissonance to the context of voting, two years after an election a citizen who voted for a candidate may hold a favorable opinion of that politician in part to avoid the internal discomfort of having voted for a person for whom the individual has a poor opinion.[4] Suggestive evidence that dissonance applies in the voting context comes from Besley and John (2001). Using the National Election Study, the authors demonstrate that those who report voting in the Presidential election show greater polarization in their ratings of the two candidates immediately after the election than immediately before (as compared to those who do not report having voted). Clearly, the endogeneity of the voting decision (and the reporting of the voting decision) leaves us unable to treat these results as evidence of a causal link between voting and increased polarization. Suppose that in December

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[2]Because the idea of being a truthful person was a longer held and probably more fundamental part of a person's self-perception, it was likely easier for subjects to change opinions of the experiment than of their own veracity.

[3]The treatment group not only had greater intentions, they also had greater behavioral changes in condom use. (Stone et. al, 1994).

[4]These processes may be reinforced by social networks. Individuals may find it hard to renounce a position that they have not only voted in accordance with, but also announced publicly, previously.

2004 we compare two Republicans, both of whom favored Bush in the 2004 election, but only one of whom actually turned out to vote. Let's call them Persons V (voter) and N (non-voter). It would not be surprising to observe, even under the traditional purview, that Person V had a more positive opinion of Bush than Person N. If probability of turnout is increasing in intensity of preference and preferences linger, such a correlation would arise nearly mechanically. Thus, in our test of the relevance of cognitive dissonance to voting behavior, our identification strategy must rely on variables that impact turnout but that are independent of voter preferences.

The age restriction on voting is one such variable. Consider two individuals in 1996 who both support Clinton and who are seventeen and eighteen years old respectively. Let's call them Persons O (older) and Y (younger). The eighteen year old is able to express his support of Clinton at the polls, whereas the seventeen year old is not. Suppose now we examine their views of Clinton in 1998 when his approval ratings had fallen. Traditional models predict no systematic differences in the trends in views of these two persons. On the other hand, cognitive dissonance theory would lead us to believe that Person Y (now 19) would show a greater fall in his Clinton approval rating than Person O (now 20). Person O having made a concrete act of commitment to Clinton, through voting, would find it harder to walk away from that position. In contrast, if the two had been Dole supporters in 1996, the psychological model would predict a different pattern of change, from before to after the election. Cognitive dissonance theory would now predict that Person O would show the larger decline in Clinton approval, jumping on information that supported his previous action, whereas Person Y would show a smaller decline viewing new information in a more moderated way. This logic implies a fairly simple prediction: voting eligibles should show greater post-election polarization than voting ineligibles.

We test this prediction using data from US elections from 1976 to 1996. Our independent variables are individuals' ratings of Presidential performance, gathered two years after each Presidential election in the National Election Study. Our sample consists of young people who were eligible to vote in the previous election (20 and 21 year olds) as well as those who were ineligible (18 and 19 year olds). We compare the polarization (by party) of these two groups in their attitudes towards the President. For a variety of attitudinal measures, we find a great deal of increased polarization. Eligible youth are nearly twice as polarized as ineligible ones.

We examine a second source of exogenous variation in voter turnout. Senatorial elections vary

4

greatly in turnout depending on whether they are held in Presidential or interim election years. For voters of all ages, we compare attitudes towards Senators based on the year in which the Senator was most recently (re)elected. We again find differential polarization by party. Attitudes towards Senators elected in Presidential years are roughly 22% more polarized than towards Senators elected in non-Presidential years.[5]

Before concluding that these results demonstrate the relevance of cognitive dissonance theory to voter turnout, we first consider the relevance of three potentially confounding factors. First, our results may be driven by age-induced polarization. Perhaps, older Americans have more divergent views.[6] The Senatorial results demonstrate that aging cannot explain all of our results. We further test the aging hypothesis directly in two ways. First, we compare 20 and 21 year olds to 22 and 23 year olds, thus comparing different age groups all of whom were eligible to vote in the previous Presidential election. In contrast to the age induced polarization hypothesis, we find greater polarization among the younger group than the older. However the difference is not statistically significant. In a second placebo test we focus on Presidential election years, comparing opinions of 18 and 19 year olds to those of 20 and 21 year olds. Neither of these groups was eligible to vote for the sitting President. Again, we find no significant difference in polarization between groups. These results suggest that our findings are not due merely to aging.

Second, we consider the possibility that our results are biased by the fact that party is measured at the same time as the attitudinal surveys are conducted. Perhaps a respondent's positive (negative) feelings about the President lead her to report herself as a member (not a member) of the President's party. To address the potential endogeneity of party report, we instrument for hypothetical vote in prior election year with individual characteristics. Results are qualitatively unchanged.

Finally, we consider that increased polarization may be driven by information rather than dissonance. Perhaps those who vote collect more political information in future years. If they interpret this information in a manner that is favorable to their candidate, as confirmatory bias

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[5]That this effect is smaller than our findings using age eligibility may be due to the fact that the impact of our exogenous voting variable is smaller. In our data, in Presidential elections, those below the age restriction vote at a rate of 0%, while 46% of 18 and 19 year olds vote. The difference in turnout between Presidential and non-Presidential election years is only 15 percentage points, 67 and 52 percent respectively. Turnout percentages are calculated using the National Elections Survey's voter verification survey conducted in 1976, 1978, 1980, 1984, 1986, 1988 and 1990.

[6]This would be consistent with (Converse, 1969) evidence that partisanship is increasing in length of membership in party.

would suggest (Lord, Ross and Lepper, 1979) they will show increased polarization. To test this hypothesis, we examine knowledge and interest in politics for eligible and ineligible youth. We find no significant differences in levels of knowledge or interest, suggesting that interest and information are not the mechanism driving the link between voting and increased polarization.

As a whole, these results suggest the practical importance of cognitive dissonance theory for the political arena.[7] This finding has at least three implications for how we think about the dynamics of voter turnout. First, dissonance suggests a new explanation for incumbency advantage. Second, this theory provides an efficiency argument for term limits. Finally, a dissonance model suggests that future electoral efficiency may be decreasing in present turnout. Outside of voting, dissonance may be relevant to other political behaviors as well. For example, mandatory community service for high school students may lead to greater compassion for disadvantaged persons.

In the remainder of the paper we present our results more formally. In Section 2, we discuss the data and methodology. Results that exploit the voting age regulations are presented in Section 3. Results that exploit the variation in turnout between Presidential and non-Presidential years are shown in Section 4. Section 5 concludes by discussing the implications of our results for understanding turnout dynamics.

2   Empirical Methodology and Data

The core hypothesis we would like to test is that voting for a particular candidate today increases one's opinion of that candidate in the future. The key difficulty in testing this theory is that causality also surely runs in the other direction as well. Individuals who have stronger feelings about a particular candidate are more likely to vote. Moreover, conditional on voting, individuals who have more positive feelings about Candidate A are more likely to vote for Candidate A. This reverse causality means that it would be unsurprising to find a positive correlation between voting for a candidate and feelings for that candidate in the future.

To address this concern we need an exogenous factor that drives voters to vote and is unrelated to their preferences at the time. We identify two such factors. The first is age. Only individuals who have reached the age of 18 on Election Day may cast a ballot. The second is the timing of

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[7]Akerlof and Dickens (1982) discuss the potential applications of dissonance theory to social security, innovation and advertising. Rabin (1994) considers the implications of cognitive dissonance for efforts to promote social change.

6

the election. Turnout is higher in Presidential elections than in interim elections. Thus there are exogenous shifts in turnout for congressional elections.

2.1 Age Restrictions

During the time frame of our study (1976-1996) the minimum voting age in the United States was 18. Only individuals who reached their 18th birthday by the date of the election were eligible to vote. Those who were 17 or under on that day were ineligible. This discontinuity allows us to compare the opinions of ineligible and eligible voters two years after the election. Dissonance theory predicts that eligible voters will show more polarization in their opinion of the candidate than ineligible voters.

An empirical problem in implementing this strategy is that we must impute which candidate an ineligible voter would have voted for had they voted. We, therefore, examine polarization by party affiliation for eligible and ineligible voters.[8] Such a procedure is sensible since party identification strongly predicts voter choice (Keith et. al, 1992 and Miller and Shanks, 1996).

Empirically, we estimate an equation of the form:

$$\text{Opinion of President}_{it} = a + bEligible_{i(t-1)} + cParty_i + d(Eligible_{i(t-1)} * Party_i) + \epsilon_{it}. \quad (1)$$

Here the variable "Opinion of President" is a rating of respondents' feelings toward some aspect of the President's leadership. The variable "Eligible" indicates that the respondent was eligible to vote (18 or older on election day) and the variable "Party" is a dummy for whether the political party of the respondent and the President coincide. Thus we would expect the coefficient c to be positive since politicians are typically viewed more favorably by members of their own party. The interaction term "Eligible*Party" is our independent variable of interest. Cognitive dissonance theory says that those who were old enough to vote and did in fact vote for the elected official in period t-1 should have a higher opinion of the official in period t. A positive and significant coefficient d would support this theory.

Our data are drawn form the National Election Study (NES), a survey of the political behaviors and opinions of a cross-section of voting age Americans conducted in the fall of even numbered years.

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[8]Note that we apply this procedure uniformly between eligible and ineligible voters. In other words, we would not use (even if it were available) who the eligible voters voted for.

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As Presidential elections occur every four years, the NES provides data from both Presidential and interim election years. We focus on non-Presidential election years, comparing those who were eligible to vote in the prior election to those who were ineligible.[9] Our sample period is from 1978 to 2000;[10] therefore we have six non-Presidential election years of data.

The great advantage of the NES is its multitude of questions on individuals' opinions of elected officials. In our basic regressions, we restrict our focus to opinions of Presidents. Our main dependent variable is a thermometer question which asks respondents to rate their feelings regarding the President on a scale from 0 to 100. Other questions are more specific and more crudely measured. The NES asks respondents to rate on a scale from 1 to 4 the extent to which they agree that the President is inspiring, is knowledgeable, is moral, is a good leader, is caring, earns your approval in general and earns your approval in his handling of the economy. The NES asks respondents whether they agree (yes or no) with the statement that the President makes you afraid, angry, hopeful and proud and whether you approve of the President.

Since our identification strategy exploits the voting eligibility age threshold, we focus on young people. For greater comparability between eligible and ineligible voters we limit our sample to individuals whose age places them within two years of voting eligibility. Hence we limit our sample to individuals aged 18-21 at time t, the non-Presidential year. This sample consists of two groups. Those who are 18-19 were 16-17 at the time of the election and were ineligible to vote. Those who are 20-21 were 18 and 19 at the time of the election and were eligible to vote.[11]

This reduces our sample to 554, of whom 248 were ineligible and 306 were eligible to vote. Table 1 presents the means for the full sample (column 1) and by age group (columns 2 and 3). The two samples do not differ greatly on observables with the exception of marriage and employment which are, not surprisingly, increasing in age. Income appears high in the sample because it is a measure

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[9]The cross-sectional nature of the data means that we measure party affiliation in the current period and do not know a person's party affiliation two years prior. This could potentially produce some endogeneity issues if party affiliation is changing in this two year period, an issue we discuss in Section 1. One would have thought that since we are looking at changes in opinions, the short panels in the NES would be useful. Unfortunately, because those who are ineligible to vote are too young to be interviewed in the first wave of the NES panels, this data cannot be used with our identification strategy.

[10]The 1974 election is excluded because while individuals voted for Nixon in 1972, he had left office by November 1974, the survey date. The 1968 election is excluded because of the undersampling of 18-21 year olds in 1970. The undersampling of young people prior to 1972 in states in which they did not have the franchise prevents us from exploiting the variation in voting age restrictions across states as an additional source of variation. Elections prior to 1968 are excluded because the NES did not collect the opinion thermometer we use as our key independent variable.

[11]The small sample of young voters in the NES dictates this window. Larger samples would have allowed us to simply compare 19 and 20 year olds.

of household income; some of these young people are still living with their parents. The second part of Table 1 presents the means of the various measures rating the performance of the President. The first four, the thermometer variables, are ratings of respondents' overall feelings on a scale from 0 to 100 for the President, their Congress persons, their Representative and their Senators.[12] The remaining outcome variables focus on more specific aspects of the President's performance and attributes. Variables are rescaled as necessary so that a higher rating is more favorable to the President in power for all outcome measures. Once again the average ratings do not differ between the two groups.[13]

In implementing our regression, we will control for the observables listed in Table 1, as well as state and year effects. We recognize that the impact of observables on one's opinion of the President will vary by the political party of the President. For example, males are more likely than females to support a Republican President during this time period, but less likely to support a Democratic President (Edlund and Pande, 2002). For this reason we also include a full set of observables interacted with a dummy for the political party of the President. Standard errors are clustered by state to allow for possible dependence among voting behavior for individuals within a state over time. Thus we estimate:

$$\text{Opinion of Official}_{it} = a_t + bEligible_{i(t-1)} + cParty_i + d(Eligible_{i(t-1)} * Party_i) + eX_{it} + g_s + \epsilon_{ist}. \quad (2)$$

where a_t and g_s are state and year fixed effects and as noted we allow the error term ϵ_{it} to be clustered by state.

2.2 Presidential Year Turnout

Our second test exploits the fact that there is higher turnout in Presidential election years than in interim election years. Therefore, Americans are more likely to vote for Congress when there is a concurrent Presidential race. For example, in 2000, Senators elected two years prior (an interim election year) saw lower turnout in their most recent elections than their colleagues most recently

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[12]The Congress person variable simply pools respondent responses concerning their Representatives and their Senators. Therefore a single individual may represent up to three observations in our data for this variable: one for the Representative and up to two times for Senators.

[13]Comparing the standard deviation in ratings between columns (2) and (3) is not a good test of our theory. Many other factors may drive overall variance between age groups, which is why we use a regression framework to examine polarization by party, rather than overall variance. It is still worth noting that for the Presidential elections, where our regression estimates are strongest, even the overall variance is larger amongst the eligibles.

elected four years prior (a Presidential election year.) Consequently, cognitive dissonance predicts more polarization in constituent views of a Senator elected in a Presidential election year over one elected in a non-Presidential year.[14] As before, we focus on party polarization. We therefore estimate an equation of the form:

$$\text{Opinion of Senator}_{ijt} = a_t + b\text{Elected in Presidential Year}_{jt} + cParty_{ij} \tag{3}$$
$$+ d(\text{Elected}_{jt} * Party_{ij}) + eX_{it} + g_s + \epsilon_{ijst}.$$

where i indexes individuals, j indexes senators, and t indexes time. The variable "Elected in Presidential Year" indicates that the particular Senator was last elected concurrently with a Presidential election and "Party" indicates that person i is of the same party as Senator j. As before, a_t and g_s are state and year fixed effects and we allow the error term ϵ_{ijt} to be clustered by state. Once again we allow the impact of observables to differ by political party by including as controls the variables listed in Table 2 as well as their interactions with a dummy for political party of the focal Senator.

Using this sampling frame, we increase our sample size greatly as we may now include all NES respondents. In fact given that an individual may be represented by up to two Senators who are not seeking reelection in the focal year, many individuals appear in our dataset twice.[15] The great limitation is that we must focus only on years in which the NES collected the thermometer variable for incumbent Senators not up for reelection. This reduces our sample to the years 1978-1994, excluding 1984. However, because we are no longer restricted to interim election years, we are left with eight years of data.

Table 2 presents summary statistics for this sample. The means (and standard deviations) are presented in three columns: The first provides the statistics for the full sample of 14,192. The second and third provide statistics for 6954 individuals whose Senators were elected in a non-Presidential year and 7238 individuals whose Senators were elected in a Presidential year respectively. Once again, the two samples are quite comparable on observables. Not surprisingly this similarity extends to marriage and employment in this case where average age differs by less than .25 years between

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[14]We cannot perform the same comparison for Representatives who face election every two years because of lack of variation in election timing. At any time all sitting Representatives were elected during a Presidential election year or all sitting Representatives were elected during a non-Presidential election year.

[15]Clustering the error term by state allows for a lack of independence amongst observations from the same individual.

the two groups. The Senate thermometer, a rating of the respondent's feelings toward the Senator on a scale from 0 to 100, also shows no difference in average rating between groups.

3 Results of Age Eligibility Test

In Table 3 we display estimation of equation 2, which compares party polarization for 18 and 19 year olds versus 20 and 21 year olds in our data. The table displays a single regression with controls for log(income) and dummies for being employed, having graduated high school, being married, living in an urban area, being in a union and being a homeowner. Also included are dummies for race, gender, state and year. The first column of the table lists the coefficients on the main effects. Since our identification comes, however, from the interaction of Eligibility and Party, we also include as controls the interaction of all covariates with the Party dummy. The coefficients on the interacted variables are included in the second column.

The first three rows display the primary variables of interest. Recall that "Eligible" is defined as being 20 or 21 in the sample, which would make the person 18 or 19 in the election year two years prior. The party variable is defined as "Same Party as President". So, in 1998, Democrats would be coded as 1 while Republicans and Independents would be coded as 0. For the 1990 data, Republicans would be coded as 1 whereas Democrats and Independents would be coded as 0.[16] The coefficient on Party in this Table is 9.914 which indicates that for the ineligibles there is a nearly 10 point difference in the thermometer between those of the President's Party and everyone else. As we see in Table 1, the mean of the Thermometer variable is roughly 59 with a standard deviation of 24. Thus party affiliation represents 40% of the overall standard deviation in the thermometer variable.

The significant interaction term "Eligible*Party" shows that this polarization increases for those who were eligible to vote. Amongst this population, the members of the President's Party are 9.875 points farther apart from everyone else. This suggests that the eligibles are roughly twice as polarized as the ineligibles. This is consistent with the original hypothesis. The eligibles show

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[16]Allowing party to be represented by two dummies: same party as President and Independent, does not substantively change our findings. The Independent interaction enters insignificantly. We still see that the polarization of eligibles, by party (now defined as the President's party versus the opposition party) is nearly twice as large as amongst ineligibles.

greater party affiliation than those ineligible to vote.[17] These magnitudes are large especially when one accounts for the fact that the eligible voters (18 and 19 year olds) only vote at a 46% rate, implying that the impact of voting itself twice as big. This suggests the impact of voting alone would lead voters to be four times as polarized as non-voters.

Both the main effects and interactions of control variables generally enter insignificantly, with three exceptions. The black and union coefficients suggest that blacks have significantly more positive views of the incumbent President whereas urban residents have significantly more negative views. The black*party interaction enters negatively and significantly suggesting that blacks rate Presidents of their own party less favorably than do whites (omitted group). Blacks rate Presidents of an opposing party on average more favorably than white respondents.

This basic table relates eligibility to a broad measure of one's feelings towards the President. In Table 4, we examine the impact of eligibility on more specific attitudinal measures. The broadest of these twelve measures are the two approval scales: one on general approval and one on the President's handling of the economy. More specific questions ask the respondent to agree or disagree that the President is inspiring, knowledgeable, moral, a good leader and caring. Respondents are also asked whether the President makes them angry, afraid, hopeful and proud. We continue to run regressions of the form of equation 2. We include the same controls and interactions of controls with the Party dummy as in Table 3. For simplicity, we do not show the coefficients on the controls. Each Column of each Panel in Table 4 is a separate regression with a different dependent variable. Because not all of the twelve questions were asked in all the years, the sample size differs across regressions. Moreover, we have redefined negative variables so that they are positive. For example, Question 7 asks "Does the President make you angry?" We have defined 1 on this question to be "No" and 0 to be "Yes". In this way, across all questions, positive or negative, the cognitive dissonance hypothesis predicts a positive coefficient on "Eligible*party".

The prediction is borne out: All the coefficients on the interaction terms, except one, are positive. Both of the two most general questions (the approval ratings) show a significant correlation with "Eligible*Party". In other words, voting eligibles show more polarized views on these measures than voting ineligibles. Increased polarization amongst eligibles is also found in nine of the ten more

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[17]Of course, given general aging effects, the main effect of "Eligible to Vote" is not directly interpretable. Suppose however we assumed that the coefficient solely represented eligibility (and not aging) effects. In this case, the results could be interpreted as saying that voting eligibility decreases liking by 5.2 for the President amongst those outside of his party and increases liking by 4.6 for those in his party.

specific questions. The interaction is significant, however, only in two specifications: those that ask whether the President is knowledgeable and a good leader. This loss in significance is likely due to the drastic drop in sample size for these questions. Even with this smaller sample, the magnitude of "Eligible*Party" is quite large in all of the regressions. If we take the point estimates literally, we see as before that the polarization for the eligibles is at least twice as large as the polarization for the ineligibles.

Evidence of cognitive dissonance is not limited to respondent's many attitudes toward the incumbent President. In a small subsample, we can also perform a similar test for opinions toward those in Congress. In column (1), we examine respondents' opinions of all congress people (Representatives and Senators) who were elected two years ago. Once again, we compare 18 and 19 year olds' opinions to 20 and 21 year olds' opinions.[18] The coefficient on "Same Party" is 4.382 and significant at the 5% level. Since the mean of the Congressional thermometer is 60 with a standard deviation of 19, this suggests that the party polarization accounts for 21% of the standard deviation. The interaction term is significant at the 10% level. Its magnitude is large, 5.347, and suggests that those eligible to vote are more than twice as polarized about their Congress people as those ineligible to vote.

In columns (2) and (3), we decompose this effect into feelings toward Representatives and feelings toward Senators. It appears that the bulk of the polarization is coming from respondents' views of Representatives. Voting eligibles are over four times as polarized as ineligibles in their opinions of Representatives. The interaction term in column 3 is small, negative and insignificant indicating no increased polarization amongst eligibles over ineligibles in views of their Senators. It is unclear whether these differences are due to sampling variation or whether they represent real differences in how voting drives opinions of Representatives and Senators, respectively.[19] The last column performs the same exercise for Senators who were elected four years ago and compares individuals aged 20 to 23. Here we find evidence of increased polarization amongst eligibles. Though the magnitude is large, the effect is noisily estimated and insignificant, however.

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[18]The sample size increases because we can include all years, not only non-Presidential election years. The other effect is that the same person may appear up to three times, once for their Representative and once for each of their two Senators. This introduces a correlation which we deal with by allowing for the error term to be correlated within a state (and therefore within a person). But the congressional opinion questions are not asked in every year, so the net effect on sample size is small.

[19]It is unlikely that this is due to some basic feature of opinions about Senators since in Table 10 we see increased polarization in respondents' views of Senators.

3.1 Confounds

While we have found evidence of increased polarization amongst eligible voters in both Presidential and Senatorial elections, there are three potential threats to our conclusion that the evidence supports the relevance of cognitive dissonance in the political arena. The first difficulty is that age*party effects may be driven by age differences and not voting induced differences in respondents' opinions. In other words, perhaps older people simply have more polarized views than younger people. To test for this possibility, we perform two falsification exercises, the results of which are reported in Table 6. The first column of this Table repeats the basic result from Table 3. Each of the other three columns represents a "placebo" test between two groups who are different in age but not different in eligibility to vote. If aging is the primary cause of increased polarization the "placebo" tests should yield similar results to the basic specification in Column 1. If dissonance is the primary driver, interaction terms in Columns 2 through 4 should show non-positive coefficients.

In the first exercise (column 2), we compare 20 and 21 year olds to 22 and 23 year olds, two years after the Presidential election. As before both groups differ by two years in age, but both were eligible to vote in the prior election. As we see, these two groups do not show significant differences in polarization. In fact, if anything the older group is less polarized, though the difference is not significant. Of course, one could still argue that the polarization effects of aging are concave. It is possible that much of the increase in polarization happens between nineteen and twenty. This story is consistent with our large differences in polarization in Column 1 (which compares 18 and 19 year olds to 20 and 21 year olds) and little or no difference in polarization in Column 2 (which compares 20 and 21 year olds to 22 and 23 year olds).

In column (3) we perform a placebo test that is robust to the concave age effects criticism. Here we compare 18 and 19 year olds to 20 and 21 year olds, exactly the same age groups as in our basic specification. But we now compare their opinions of the incumbent President in Presidential election years. This implies that four years ago, both groups of young people were ineligible to vote. This specification should uncover the relationship between polarization and aging (free of any voting effect) for our sample. As shown in column (3), we find no statistically significant increase in polarization of the older group over the younger group. In fact, if anything the negative point estimates suggests that there is a drop in polarization as individuals age between 18 and 19 and 20 and 21. In column (4) we consider the possibility that the fact that some sitting Presidents

are eligible to run again while others are not is somehow biasing our results. We repeat this exact same exercise but without the election years of 1988 and 2000 when the incumbent President(due to term limits) could not run again. Results are substantively unchanged. In short, these placebo tests suggest that our results are unlikely to be driven by the effect of aging on polarization.

A second potential confound to our dissonance interpretation is the endogeneity of the party affiliation variable. Recall that we do not have an individual's party affiliation in the Presidential election year, which is actually two years prior to the survey date. Instead, we use contemporaneous party affiliation, which has potentially changed in the intervening two years. For example positive feelings toward Ronald Reagan in 1982 could increase the likelihood that a person identifies as a Republican in that same year.[20] To assure that our results are not driven by changing political identities, we rerun equation 2 substituting self-identified party with a predicted party variable, predicted using contemporaneous demographic characteristics. We then include interactions of this predicted party with a dummy for eligibility exactly as before.[21]

To create the prediction we consider all respondents (regardless of age) in each presidential election year. For each election, we regress a dummy for whether the respondent voted for the winner on log income and dummies for education, employment status, marital status, urban, state, gender, race, union member and homeowner. For each election, we create two prediction equations, one that does and one that does not include the party variable because of the variable's potential endogeneity. We then use the coefficients from this regression on the data for the subsequent non-presidential year (t) to predict the likelihood that a respondent voted for the President. These prediction equations are shown in Table 7a. In columns one to six, we see the basic prediction equations. In columns seven to twelve, we see how the prediction equations change when Party is included as a regressor.

We then run the basic regression in equation 2 substituting the predicted vote variable for the potentially endogenous party variable. Results are reported in Table 7b. For comparison, the first column of this table provides results using the basic specification of the form of equation 2, but excluding the covariates. The results are little changed: The coefficient on both the party main effect and interaction terms remain statistically significant, showing an increased in polarization among

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[20]It is worth noting that for this confound to drive our results, this change in party affiliation must be specific to the older cohort.

[21]Given that demographics are used to predict party, it is no longer possible to include these demographics as control variables. Previous results were robust to the exclusion of the demographic controls.

eligibles of 62%. The second column relies on a vote variable predicted only using demographics. Results are similar to the basic specification. The main effect shows that those who would have voted for the President, according to demographics, but were ineligible favor the President on the thermometer by 22 points more. The same demographic groups who would have voted for the President but were eligible are an extra 17 points more polarized. This suggests that eligible voters are 77% more polarized than ineligible voters.

This specification has another advantage. We know that not all voters vote along party lines in an election. The specification in Table 7b allows us to rescale the impact of "Party" to account for this fact. Column (3) of this table, therefore, repeats this exercise including the Party variable as a predictor of voting behavior. Again, we see a large, positive and significant interaction coefficient. Compared to the direct effect of voting for the President, it appears that Eligible voters are 52% more polarized.

Table 8 combines the test for the polarization effects of aging with the test for the potential endogeneity of party. Here we repeat the placebo tests in Table 6 but with the predicted vote variable in place of the contemporaneous party variable. Despite this change, we see that still none of the placebos shows a positive, significant impact of aging on polarization. In fact, all tests except one (column 8) point to a negative, though insignificant, effect of aging.

The third potential confound to our dissonance interpretation is that it is not clear whether our results are due to cognitive dissonance or information effects. Perhaps those who vote collect more political information in future years. Confirmatory bias (Lord et. al, 1979) suggests that they would then interpret that information to favor the candidate for whom they have voted, resulting in greater polarization among voters.[22] This confound need not require active searching of information by 18 and 19 year olds. Instead parties could be specifically targeting them. Suppose campaigns target these "just able to vote" voters effectively. This would result in much greater exposure to information. If this increased exposure generates increase polarization, this produces an important confound. To deal with these possibilities, we examine how political knowledge differs by prior voting eligibility status. Specifically, we compare how informed and politically active 18 and 19 year olds are relative to 20 and 21 year olds during both presidential and interim election years. Our dependent variables of interest are specifically level of political information, interest in the

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[22]Gerber and Green (1998,1999) find evidence against confirmatory bias in interpreting information on politician quality.

election, interest in public affairs, campaign participation, recall the name of the Representative and recall the name of the Senator.

In the first row of Table 9, we compare knowledge by age solely in non Presidential election years. Hence we run regressions of the form:

$$\text{Involvement}_{it} = a_t + bEligible_{it-1} + cParty_i + d(Eligible_{it-1} * Party_i) + \epsilon_{ijst}. \tag{4}$$

where Eligible is a dummy for 20 and 21 years of age. The first rows in Table 9 estimate this regression for different measures of "Involvement". In other words, this is our standard test of the impact of aging on polarization but using knowledge and involvement variables as outcomes. In the second panel, labeled "Presidential Election Years", we reestimate the same regression but only in Presidential years. If the above confound were important, we would expect that knowledge differences between 20/21 and 18/19 year olds would be large in non-presidential years. Moreover, if this effect arises out of campaign targeting or selective attention during campaigns, we would expect this difference to be much smaller when we compare 20/21 year olds to 18/19 year olds in Presidential election years, since both groups were unable to vote in the prior Presidential election. For none of these questions, do we find a significant difference between the actual comparison and the placebo comparison.[23] For two of these questions, the point estimates, though insignificant, show a greater difference in knowledge in the non-Presidential election years (columns 1 and 4) which is consistent with the knowledge story. However, for the remainder, if anything, the difference goes in the other direction, again insignificant. The older cohort shows more knowledge, experience and participation in the election years rather than the non-election years.

These results, especially when combined with the aging results of Table 6 make it hard to interpret our polarization findings as due to differential information or campaign targetting. This discussion provides some reasons why these confounds are unlikely to drive our results. In the next section, we turn to a very different test of cognitive dissonance. Based on turnout for senatorial elections, this next test provides a complement to the results of this section.

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[23]Since these regressions are run on separate samples, we can use the individual standard errors on each estimate to assess significance.

4   Presidential Election Year Turnout Results

A second variable that has an impact on voting that is exogenous to intensity of beliefs is whether or not there is a concurrent Presidential election. Senatorial elections occur both in Presidential and interim election years. Therefore, Americans are more likely to vote for Congress when there is a concurrent Presidential race.

In this section, we move to our second test. In Table 10 we estimate equation 3, comparing party polarization of constituent views of Senators elected in Presidential years with constituent views of Senators elected in non-Presidential years. Column (1) of Panel A reports the results from our basic Senatorial regression, which includes the full sample of individuals who are asked their views of an incumbent Senator not currently seeking reelection.[24] The specification includes demographic controls, demographic controls interacted with the Party dummy and state and year fixed effects.

The coefficient on "Same Party" suggests that members of a Senator's party rate him 8.9 points higher than respondents who belong to another Party. The coefficient on "Elected*Party" suggests that the polarization increases by 23%(2.06/8.9) for Senators elected in a Presidential year. This increase is smaller than in the prior test. That could be due to the fact that the voter turnout differential in this case is smaller than the large difference in voting between eligible and ineligible voters.[25] It may also be due to some feature of opinions about Senators versus Presidents. In either case, these results still represent a large, significant impact of voting on polarization of political views.

In columns (2) and (3) of Panel A we estimate this regression separately for Senators elected two and four years prior. Since a Senator's term lasts for six years, both groups of Senators will still be in office. This split allows us to examine the duration of voting effects on polarization. Results suggest that the duration is at least four years. In both specifications a Senator's own party members rate him 9 percentage points higher than respondents of other parties. Further those Senators elected during a Presidential election, when turnout is higher, see an increased polarization in constituency

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[24]In fact some individuals may appear in the sample twice as they are represented by two Senators who are not currently seeking reelection.

[25]As we noted earlier, young eligible voters vote at a 46% rate in Presidential elections, so the eligible to ineligible comparison is a comparison of 46% to 0%. The turnout differentials for Presidential versus non-Presidential elections is only 15% (67-52%). Thus we would expect an effect that is only $\frac{1}{3}$ as large, and we are getting an effect that is $\frac{1}{4}$ as large.

views of 20 to 22%. However, the increase in polarization is only significant at conventional levels for the four year case.[26]

4.1 Confounds

One potential confound to the interpretation of this test as evidence of cognitive dissonance is that Senatorial elections may have a different flavor when they occur in Presidential election years. Perhaps there is more media spotlight on these elections, which increases polarization for reasons unrelated to voter turnout.[27]

To test this possibility, we examine a twist on the basic Senatorial specification. If the effect estimated in column (1) of Table 10 is due to differential voter turnout, then it ought to be concentrated in the population that tends to turn out in Presidential election years but not in non-Presidential election years. To investigate whether this is in fact the case, we create for each respondent a predicted difference in probability of turnout in Presidential over non-Presidential years. The prediction is created in the following manner. First, we create two Probit regressions of turnout on demographics. We create separate regressions for Presidential and non-Presidential election years. Second, we use the coefficients from these regressions to predict for each individual, their probability of voting in both Presidential and non-Presidential election years. Finally, we subtract the second estimate from the first to obtain the predicted difference in turnout in Presidential and interim election years.

In Panel B of Table 10 we re-estimate the specification in column (1) Panel A for two different groups. Column (1) is the half of the sample that has a below median difference in turnout, whereas column (2) has an above median difference in turnout. Again if Panel A Column (1) results are driven by turnout (and not by increased media or some other aspect of Presidential elections) than we should see that the polarization effect is concentrated in the second group, the group whose turnout behavior is more greatly impacted by the concurrence of the Presidential and Senatorial elections. Results in Panel B indicate that both the below and above median difference groups show increased polarization of views of Senators elected during Presidential years compared with views of those elected during interim elections. However, the increase in polarization is only

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[26]We are not able to do this as easily for the Presidential case because Presidents run every four years and are limited to two terms.

[27]Of course these media effects would have to persist for four years to explain away our results.

significant for the high difference group. Further, the magnitude of effect is much larger for the high difference group. It is only 14% (1.67/11.39) for the low difference group, whereas it is nearly 40% (2.429/6.185) for the high difference group. When unscaled by the base level of polarization, the difference in polarization effects between the low and high difference groups is smaller and insignificant. In short, these results are suggestive of an impact of turnout on polarization of political views.

5 Conclusion

Though each has its limitations, the results of the two estimation strategies together suggest that the act of voting strengthens future opinions of a candidate. Those who are induced to turnout either by age eligibility or by a concurrent Presidential election, show increased polarization in their views toward the candidates two years post-election. Thus we provide direct field evidence of the importance of cognitive dissonance. This finding has implications for understanding the dynamics of voter turnout.

Consider a situation where voters vote based on two factors: personal policy preferences and overall candidate quality. In such a simple world, voters potentially face a tension between voting for the most effective candidate and the one whose position matches their own. Cognitive dissonance adds a wrinkle to this tension. Suppose an individual's perception of candidate quality is colored by past voting behavior. A citizen who voted for a candidate now perceives the candidate to be of higher quality. This small change to this simple voting model provides three insights.

First, it suggests a different rationale for incumbency advantage.[28] Incumbents by definition, received more than half the vote. Therefore, they enter the next election with a "boost" in perceived quality. An objectively equal quality candidate will not have the equivalent boost and therefore would face an electoral disadvantage.[29]

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[28]The incumbency advantage has been estimated at about 10 percentage points in recent elections. See for example Ansolabehere and Snyder (2002)

[29]While results are too imprecise to quantify the impact of dissonance on voting behavior, suggestive evidence that dissonance plays a role in the incumbency advantage comes from the fact that during the period 1984 to 2000, incumbent senators running in non-presidential years (after having last been elected in a high turnout presidential year) won by larger margins than those running in presidential years. The groups received 66 and 63 percent of the vote respectively, a difference that is statistically significant at the 5% level. Examining the role of dissonance on voting behavior would be an interesting topic for future work.

Second, dissonance implies an efficiency reason for term limits. Since incumbents face an unnatural "boost" with more than half the electorate, new information regarding their quality will not be appropriately incorporated. Consequently, there will be an inefficient over-election of incumbents. This in turn suggests that term limits could help to bring the system closer to efficiency.[30]

Third, this model suggests that high voter turnout in a particular election is not necessarily a good thing. Even if voters have private information that needs to be impounded to the election, their turnout could have negative consequences for future elections. High turnout implies that a bigger body of the electorate will be biased in their judgment of the incumbent. Lower turnout implies that there will be a larger mass of individuals who will be neutral in future elections. Beyond efficiency, this prediction also implies a relationship between voter turnout and incumbency advantage in future elections.

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[30]The obvious drawback of such term limits is the usual cost of denying a superior candidate a chance to re-run. The implicit assumption of the benefit of term limits is that cognitive dissonance applies to a voter's view of an individual and not of an entire political party.

Bibliography

Akerlof, George and William Dickens (1982). "The Economic Consequences of Cognitive Dissonance." American Economic Review, 72, 3, 307-319.

Aldrich, John (1993). "Rational Choice and Turnout." American Journal of Political Science, 37, 246-78.

Ansolabehere, Stephen and James Snyder (2002). "Using Term Limits to Estimate Incumbency Advantages When Officeholders Retire Strategically." MIT Working Paper, January.

Aronson, Eliot (1999). "Dissonance, Hpocrisy, and the Self-Concept." in E. Harmon-Jones and J Mills (eds). Cognitive Dissonance: progress on a Pivotal Theory in Social Psychology. Washington, DC: American Psychological Association.

Aronson, Eliot, Fried, C and Stone, J (1991). "Overcoming Denial and Increasing the Intention to Use Condoms Through the Induction of Hypocrisy." American Journal of Public Health, 81, 1636-8.

Bandura, A (1989). "Social cognitive theory. In R. Vasta (Ed.), Six Theories of Child Development. Greenwich, CT: JAI.

Bem, SL (1967). "Self-perception: An Alternative Interpretation of Cognitive Dissonance Phenomena." Psychological Review, 74, 183-200.

Besley, Ryan and Joslyn, Mark (2001). "Cognitive Dissonance and Post-Decision Attitude Change in Six Presidential Elections." Political Psychology, 22, 3, 521-540.

Converse, Philip (1969). "Of Time and Partisan Stability." Comparative Political Studies, 2, 2, 139-171.

Coate, Stephen and Conlin, Michael. (2004). "A Group Rule Utilitarian Approach to Voter Turnout: Theory and Evidence." American Economic Review, 94, 5, 1476-1504.

Edlund and Pande (2002). "Why Have Women Become Left-Wing? The Political Gender Gap and the Decline in Marriage." Quarterly Journal of Economics, 117, 3, 917-961.

Festinger, L (1957). A Theory of Cognitive Dissonance. Evanston, IL: Row Peterson.

Festinger, L., (1964) Conflict, Decision, and Dissonance. Stanford, CA: Stanford University Press.

Festinger, L and Carlsmith, JM (1959) "Cognitive Consequence of Forced Compliance." Journal of Abnormal Social Psychology, 68, 359-66.

Gerber, Alan and Donald Green (1999). "Misperceptions About Perceptual Bias." American Review of Political Science, 2, 189-210.

Gerber, Alan and Donald Green (1998). "Rational Learning and Partisan Attitudes." American Journal of Political Science, 42, 3, 794-818.

Grossman, Gene and Helpman, Elhanan (2001). Special Interest Politics. Cambridge, MA: MIT press.

Hogg, Michael and Joel Cooper (2003). The SAGE Handbook of Social Psychology. London,

England: Sage Publications Ltd.

Keith, Bruce, David B. Magleby, Candice J. Nelson, Elizabeth Orr, Mark C. Westlye, and Raymond E. Wolfinger (1992). The Myth of the Independent Voter. Berkeley and Los Angeles, CA: University of California Press.

Lord, C. G., Ross, L., and Lepper, M. R. (1979). "Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence." Journal of Personality and Social Psychology, 37, 2098-2109.

Matsuaka, John and Palda, Filip (1999). "Voter Turnout: How Much Can We Explain." Public Choice, 77, 855-78.

Miller, Warren and J Merrill Shanks (1996). The New American Voter. Cambridge, MA: Harvard University Press.

Rabin, Matthew (1994). "Cognitive Dissonance and Social Change." Journal of Economic Behavior and Organization, 23, 177-194.

Stone, J, Aronson, E, Craine, AL, Winslow, MP and Fried, CB (1994). "Inducing Hypocrisy as a Means of Encouraging Young Adults to use Condoms." Personality and Social Psychology Bulleting, 20, 116-128.

Table I: Summary Statistics
YEARS:1978-1998 (non-presidential election years)

Variable	Full	Sample Ages 18-19	Ages 20-21
High school?	0.982	0.988	0.977
	(0.133)	(0.110)	(0.150)
Income	19542.140	21450.020	17995.890
	(17371.270)	(18249.100)	(16494.530)
log(Income)	9.446	9.535	9.374
	(0.976)	(1.003)	(0.949)
Employed	0.567	0.516	0.608
	(0.496)	(0.501)	(0.489)
Married	0.218	0.153	0.271
	(0.414)	(0.361)	(0.445)
Urban	0.274	0.278	0.271
	(0.447)	(0.449)	(0.445)
Union	0.139	0.173	0.111
	(0.346)	(0.379)	(0.315)
Homeowner	0.417	0.492	0.356
	(0.494)	(0.501)	(0.480)
Age	19.653	18.585	20.520
	(1.084)	(0.494)	(0.500)
Republican	0.325	0.323	0.327
	(0.469)	(0.468)	(0.470)
male	0.482	0.500	0.467
	(0.500)	(0.501)	(0.500)
RACE:			
Black	0.143	0.141	0.144
	(0.350)	(0.349)	(0.351)
Hispanic	0.099	0.121	0.082
	(0.299)	(0.327)	(0.274)
Asian	0.014	0.020	0.010
	(0.119)	(0.141)	(0.099)
Native	0.032	0.032	0.033
	(0.177)	(0.177)	(0.178)
Sample Size	554	248	306

NOTES:

1)Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set. NES conducts national surveys of the American electorate in presidential and midterm election years.

2)The sample shown here is comprised of survey participants aged 18-21 from the non-Presidential election years from 1978-1998

3)There is some variation in the exact sample size by variable due to not all parameters and questions being asked in each survey year.

Table I(cont.): Summary Statistics
YEARS:1978-1998 (non-presidential election years)

| | | Sample | |
Dependent Variable	Full	Ages 18-19	Ages 20-21
President Thermometer	59.007	59.423	58.670
(100 point scale)	(24.821)	(24.360)	(25.224)
Congressman Thermometer	59.537	58.965	59.907
(100 point scale)	(19.228)	(20.597)	(18.299)
Representative Thermometer	61.329	60.455	61.879
(100 point scale)	(19.713)	(20.892)	(18.849)
Senator Thermometer	56.784	56.772	56.793
(100 point scale)	(18.146)	(20.035)	(16.806)
Is the President inspiring?	2.621	2.740	2.530
(4 point scale)	(0.809)	(0.803)	(0.808)
Is pres. knowledgeable?	2.992	2.974	3.007
(4 point scale)	(0.719)	(0.701)	(0.736)
Is pres. moral?	2.344	2.327	2.356
(4 point scale)	(0.868)	(0.839)	(0.892)
Is pres. a good leader?	2.779	2.845	2.726
(4 point scale)	(0.895)	(0.861)	(0.921)
Does the President care?	2.527	2.549	2.509
(4 point scale)	(0.880)	(0.898)	(0.870)
Does pres. make you angry?	0.541	0.573	0.517
(2 point scale)	(0.499)	(0.497)	(0.501)
...make you afraid?	0.782	0.803	0.765
(2 point scale)	(0.414)	(0.399)	(0.425)
...make you hopeful?	0.474	0.462	0.483
(2 point scale)	(0.500)	(0.501)	(0.501)
...make you proud?	0.404	0.431	0.383
(2 point scale)	(0.492)	(0.497)	(0.488)
Do you approve of the pres?	0.660	0.688	0.638
(2 point scale)	(0.474)	(0.464)	(0.481)
...approve of the pres?	2.720	2.905	2.562
(4 point scale)	(1.106)	(1.069)	(1.115)
...approve of pres's	2.137	2.399	1.904
handling of the economy?	(1.621)	(1.594)	(1.614)
(4 point scale)			
Sample Size	554	248	306

NOTES:

1) The Congressman Thermometer is the pooled variable of the Representative and Senator Thermometers and includes some observations of the same respondents' opinion of both his senator and representative.

2) The sample for Senator and Representative Thermometer differs from the rest of the sample and includes all election years 1978-1994 (ex 1984) for the senator thermometer and all election years (1978-1998) for representatives. The different survey questions of presidential approval were similarly asked of respondents only in particular survey years, so the actual sample size for each dependent variable has variation. Sample sizes are implicit in the regression sample sizes.

3) See previous page for additional notes.

Table II: Summary Statistics for Senate Sample
YEARS:1978-1994 (ALL election years)

Variable	Full Sample	Sample Senator elected in a non-Presidential Election Year	Senator elected in a Presidential Election Year
High school?	0.928	0.926	0.930
	(0.259)	(0.262)	(0.256)
Income	27728.610	27975.860	27491.060
	(18055.350)	(18292.930)	(17822.150)
log(Income)	9.941	9.948	9.935
	(0.849)	(0.852)	(0.845)
Employed	0.643	0.644	0.643
	(0.479)	(0.479)	(0.479)
Married	0.601	0.603	0.600
	(0.490)	(0.489)	(0.490)
Urban	0.246	0.247	0.245
	(0.431)	(0.431)	(0.430)
Union	0.218	0.220	0.217
	(0.413)	(0.414)	(0.412)
Homeowner	0.695	0.697	0.694
	(0.460)	(0.460)	(0.461)
Age	44.598	44.711	44.490
	(16.902)	(16.944)	(16.862)
Republican	0.377	0.376	0.377
	(0.485)	(0.484)	(0.485)
male	0.472	0.475	0.468
	(0.499)	(0.499)	(0.499)
RACE:			
Black	0.100	0.108	0.093
	(0.300)	(0.310)	(0.290)
Hispanic	0.040	0.038	0.042
	(0.196)	(0.191)	(0.202)
Asian	0.010	0.010	0.010
	(0.102)	(0.102)	(0.101)
Native	0.023	0.024	0.022
	(0.149)	(0.154)	(0.145)
Senator Thermometer	58.635	58.582	58.685
	(21.845)	(21.445)	(22.225)
Sample Size	14192	6954	7238

NOTES:

1)Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set. NES conducts national surveys of the American electorate in presidential and midterm election years.

2)The sample shown here is comprised of survey participants who participated in a series of questions relating to congressional attitudes. The congressional surveys were not administered in 1984. The sample is further divided into subsamples of individuals whose senators were last elected (or re-elected) in presidential or non-presidential election years.

3)There is some variation in the exact sample size by variable due to not all parameters and questions being asked in each survey year.

Table III: Voting Eligibility and Attitudes

Variable		
Eligible*Party	**9.875**	
	(3.845)	
Eligible to Vote	-5.186	
	(2.757)	
Same Party as President	9.914	
	(3.023)	

Controls	Own Coefficient	Party Interaction coefficient
High school?	28.062	-15.779
	(18.891)	(19.883)
log(Income)	2.092	0.685
	(2.070)	(2.860)
Employed	4.016	-2.601
	(3.418)	(4.638)
Married	-0.176	1.020
	(3.852)	(5.531)
Urban	-6.826	0.656
	(3.386)	(5.245)
Union	-2.309	4.666
	(4.899)	(6.977)
Homeowner	1.404	-8.193
	(3.727)	(5.164)
male	-2.509	4.955
	(2.783)	(4.173)
Race:		
Black	18.054	-38.125
	(4.380)	(6.631)
Hispanic	8.833	-13.266
	(5.180)	(7.342)
Asian	1.458	-7.697
	(6.999)	(12.131)
Native	3.139	1.028
	(11.058)	(13.328)
Year Fixed Effects	Yes	-
State Fixed Effects	Yes	-
Sample Size	554	
Adjusted R^2	0.345	

NOTES:

1) Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set. Sample is survey respondents aged 18-21 from the non-presidential election years 1978-1998

2) The dependent variable is a "feeling" thermometer (scale 1-100 with 100 being more positive) on the President of the survey year.

3) "Eligible to Vote" is a dummy variable for whether the respondent was able (by age) to vote in the previous election two years ago and "Same Party as President" is a dummy matching self-reported political party affiliation to the president's party.

Table IV: Voting Eligibility and Attitudes: Other Additional Measures

Q1-Q6	Is the President...					Approval?
	Inspiring?	Knowledgeable?	Moral?	A good leader?	Caring?	(2 pt. scale)
Eligible*party	**0.598**	**0.521**	**0.335**	**0.412**	**0.240**	**0.167**
	(0.418)	(0.209)	(0.216)	(0.222)	(0.259)	(0.083)
Eligible to Vote	-0.289	-0.173	-0.061	-0.201	-0.088	-0.143
	(0.257)	(0.130)	(0.131)	(0.147)	(0.164)	(0.055)
Same Party as President	0.144	0.024	0.186	0.132	0.298	0.106
	(0.358)	(0.162)	(0.163)	(0.174)	(0.187)	(0.064)
Observations	117	265	260	263	203	267
Adjusted R^2	0.395	0.255	0.475	0.43	0.53	0.355

Q7-Q12	Does the President make you...				Approval?	Approve of his
	Angry?	Afraid?	Hopeful?	Proud?	Handling of econ.?	(4pt. scale)
Eligible*party	**0.181**	-0.004	0.166	0.149	**0.567**	**0.511**
	(0.128)	(0.112)	(0.137)	(0.125)	(0.390)	(0.229)
Eligible to Vote	-0.079	-0.062	-0.023	-0.037	-0.744	-0.487
	(0.086)	(0.077)	(0.086)	(0.079)	(0.234)	(0.146)
Same Party as President	0.006	0.061	0.188	0.125	0.174	0.180
	(0.100)	(0.080)	(0.111)	(0.091)	(0.284)	(0.165)
Observations	267	267	266	530	390	315
Adjusted R^2	0.237	0.299	0.383	0.294	0.388	0.353

NOTES:

1) Data. Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set. Sample is survey respondents aged 18-21 from the non-presidential election years 1978-1998

2) There are 12 different dependent variables that ask survey respondents of their opinion and approval of the President. Dummy variables (yes/no questions) have been redefined so that dummy=1 is in support of the President. This adjustment applies to Q7 and Q8.

3) Sample size differs since the NES did not ask the full set of questions in each year. Specifically: Q1 was asked in 1980-1988,1992,1996; Q2-4,7-10 in 1982-2000 ex. 1990; Q5, in 1984-2000 ex 1990; and Q6, in 1978-2000;Q11, in 1980-2000; Q12, in 1984-2000. Sample size also differs due to the variation of missing values by survey question. This is due to either refusal or inability to answer some questions.

4) The basic specification includes year and state fixed effects as well as all demographic controls used in the basic specification.

5) "Eligible to Vote" is a dummy variable for whether the respondent was able (by age) to vote in the previous election two years ago and "Same Party as President" is a dummy matching self-reported political party affiliation to the president's party.

Table V: Voting Eligibility and Congressional Attitudes

	Congressman Elected Two Years Ago	Representative Elected Two Years Ago	Senator Elected Two Years Ago	Senator Elected Four Years Ago
Eligible*Party	**5.347**	**9.446**	**-0.449**	**2.854**
	(2.939)	**(4.254)**	**(4.427)**	**(3.505)**
Eligible to Vote	-1.514	-2.173	0.048	0.866
	(1.977)	(3.633)	(2.743)	(3.01)
Same Party as	4.382	2.667	6.295	3.703
Congressman	(1.822)	(2.995)	(3.809)	(2.177)
Observations	799	484	315	425
Adjusted R^2	0.21	0.28	0.26	0.35

NOTES:

1) Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set. Sample is survey respondents aged 18-21 who answered the survey subsection on congressional attitudes from election years 1978-1998. For column 1, the sample is survey respondents aged 20-23 since this column refers to senators elected 4 years ago.

2) The dependent variable is a "feeling" thermometer (scale 1-100 with 100 being more positive) on the particular elected representative. In any year j, a particular individual is asked to rate his or her current representative as well as both of the state's two senators. We have uniquely identified the year of the senator's last election (either two years ago, four years ago, or currently facing reelection).

3) The basic specification includes year and state fixed effects as well as all demographic controls used in Table II.

4) "Eligible to Vote" is a dummy variable for whether the respondent was able (by age) to vote in the previous election two years (or four) ago of their congressman and "Same Party as Senator (or Representative or Congressman)" is a dummy matching self-reported political party affiliation to the elected official's party.

5) Column 1 is the sample of all congressman (senators and congressmen) elected two years ago. Column 2 is the sample of individuals' opinions of their representative. Column 3 is the sample of individuals' opinions of senators elected two years ago. Column 4 is the sample of individuals' opinions of their senator if their senator was elected four years ago. All regressions are run clustered by state.

Table VI: Placebo Tests

Time Period Relative to Presidential Election	BASE Regression Two Years Post Presidential Election	PLACEBO Regressions		
		Two Years Post Presidential Election	Presidential Election Year	Presidential Election Year
Sample Years:	1978-1998	1978-1998	1980-2000	1980-2000 ex. 1988, 2000
Ages Compared	18,19 vs. 20,21	20,21 vs. 22,23	18,19 vs. 20,21	18,19 vs. 20,21
Eligible*party	**9.875**	**-3.473**	**-3.359**	**-5.215**
	(3.845)	**(3.296)**	**(4.317)**	**(5.467)**
"Eligible to Vote"	-5.186	1.372	2.429	3.528
	(2.757)	(2.436)	(3.313)	(3.931)
Same Party as President	9.914	18.127	25.858	25.268
	(3.023)	(2.512)	(3.543)	(4.598)
Observations	554	695	469	341
Adjusted R^2	0.345	0.348	0.373	0.384
Concept Tested:	Base Test	Both Groups Eligible to Vote	No election two Years Prior	No election two Years Prior

NOTES:

1) Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set.

2) The dependent variable is a "feeling" thermometer (scale 1-100 with 100 being more positive) on the President of the survey year.

3) All regressions include year and state fixed effects as well as all demographic controls used in the basic specification.

4) "Same Party as President" is a dummy matching self-reported political party affiliation to the president's party.

5) Sample years and age composition vary by regression. The BASE (column 1) is comprised of those aged 18-21 in non-presidential election years 1978-1998; (2), aged 20-23 in non-presidential election years 1978-1998; and (3), aged 18-21 in presidential election years 1980-2000. Column 4 is the same sample as (3) excluding years 1988 and 2000 when no incumbent President ran due to term limitations.

6) "Eligible to Vote" is a dummy variable for the survey participant being in the older age group in the ages compared line. This variable changes meanings for the different regressions since they test different age groups in different types of election years. The base regression makes the standard comparison: Two years after presidential election year i, how do presidential attitudes vary with voting eligibility at the last election. Column (2) is the BASE regression with a changed age group comparison. This regression tests to see if results (which we do not expect to be present) show up if we compare two contiguous age groups, both of which were able to vote in the presidential election two years ago. This placebo disproves the critique that such a difference is due only to the difference in ages and no to the implied voting eligibility. Column (3) keeps the age groups compared the same as the BASE and simply changes the sample year to the presidential election year (1980-2000) in the same period. This placebo tests for results (which we dont expect to find) if we change the context of the election years. In this test, two years ago, the older group was able to vote, but it was not a presidential election. The absence of results indicates it is not the mere change in voting ability that is a key factor, but rather the voting for the candidate in question.

Table VIIa: Predicting Presidential Vote with Demographic Controls (STAGE 1)

	Regressions do not include party						Regressions Include party					
Winning party	DEM	REP	REP	REP	DEM	DEM	DEM	REP	REP	REP	DEM	DEM
Base year	1976	1980	1984	1988	1992	1996	1976	1980	1984	1988	1992	1996
Prediction years	'78-80	'82-84	'86-88	'90-92	'94-96	'98-2000	'78-80	'82-84	'86-88	'90-92	'94-96	'98-2000
High school?	-0.094	0.061	0.123	0.085	-0.061	-0.162	-0.074	0.021	0.050	-0.011	-0.001	-0.064
	(0.050)	(0.074)	(0.061)	(0.071)	(0.051)	(0.089)	(0.044)	(0.066)	(0.048)	(0.057)	(0.039)	(0.077)
Employed	-0.096	0.030	0.091	0.028	-0.050	-0.058	-0.066	-0.007	0.037	0.016	-0.021	-0.009
	(0.019)	(0.028)	(0.015)	(0.021)	(0.024)	(0.022)	(0.020)	(0.023)	(0.012)	(0.013)	(0.020)	(0.017)
Married	0.019	-0.050	0.036	0.017	0.011	0.094	0.004	-0.048	0.028	0.015	-0.021	0.016
	(0.029)	(0.039)	(0.035)	(0.038)	(0.026)	(0.042)	(0.023)	(0.032)	(0.032)	(0.027)	(0.025)	(0.026)
Male	0.000	-0.039	0.000	0.000	0.000	0.000	0.000	-0.108	-0.076	-0.127	-0.258	0.000
	(0.000)	(0.029)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.026)	(0.018)	(0.015)	(0.026)	(0.000)
Homeowner	0.079	0.086	-0.111	-0.247	0.017	0.132	-0.006	0.017	-0.044	-0.179	-0.023	0.006
	(0.090)	(0.167)	(0.133)	(0.078)	(0.093)	(0.109)	(0.083)	(0.131)	(0.108)	(0.068)	(0.076)	(0.092)
Union	-0.013	0.053	0.016	-0.017	-0.063	-0.011	0.016	0.065	0.042	-0.039	-0.032	-0.001
	(0.032)	(0.042)	(0.045)	(0.041)	(0.044)	(0.038)	(0.031)	(0.036)	(0.031)	(0.027)	(0.028)	(0.027)
log(Income)	0.193	-0.135	-0.235	-0.143	0.097	0.201	0.060	-0.033	-0.107	-0.038	0.012	0.084
	(0.042)	(0.036)	(0.037)	(0.032)	(0.032)	(0.030)	(0.039)	(0.033)	(0.031)	(0.026)	(0.021)	(0.030)
Same Party as President							0.535	0.504	0.575	0.634	0.567	0.647
							(0.035)	(0.032)	(0.024)	(0.035)	(0.030)	(0.025)
Observations	1236	875	1237	1080	1405	1027	1233	875	1234	1078	1403	1027
Adjusted R²	0.169	0.192	0.232	0.214	0.187	0.212	0.399	0.387	0.505	0.537	0.45	0.562

NOTES:
1) Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set. Sample is survey respondents aged 18-21 from the non-presidential election years 1978-1998

2) All regressions include year and state fixed effects as well as race dummies.

3) These regressions are the first stage regressions in an IV approach to the voting eligibility and attitudes specification. In the OLS approach, we use self-reported political party identification to "predict" who survey respondents were likely to have voted for in the previous presidential election. In this instrumental variables approach, we use existing voting data to formally predict expected voting patterns. For each presidential election year, we regress presidential vote on demographic variables to obtain coefficient estimates. These regressions are done under two specifications for each year: with and without self-reported political party as a regressor. Then these coefficient values of year i (including race dummies and state and age fixed effects) are then used to predict for the sample in years i+2 and i+4 who the survey respondents would have voted for in the year i election.

Table VIIb: Voting Eligibilty and Attitudes:
Using Demographics to Predict Vote

Specification	OLS	IV	IV
Eligible*party	**8.392**		
	(3.946)		
Eligible to Vote	-5.118	-10.668	-8.131
	(2.841)	(5.392)	(3.596)
Same Party as President	13.445		
	(3.063)		
Eligible*Pres. vote1		**16.953**	
		(9.300)	
Would Have Voted for President1		22.080	
		(7.621)	
Eligible*Pres. vote2			**13.401**
			(5.589)
Would Have Voted for President2			23.343
			(4.426)
First Stage of IV Includes Political Party as Regressor	–	No	Yes
Observations	554	554	554
Adjusted R^2	0.209	0.185	0.268

NOTES:

1)Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set. Sample is survey respondents aged 18-21 from the non-presidential election years 1978-1998

2)The dependent variable is a "feeling" thermometer (scale 1-100 with 100 being more positive) on the President of the survey year.

3)All regressions include year and state fixed effects.

4)"Eligible to Vote" is a dummy variable for whether the respondent was able (by age) to vote in the previous election two years ago and "Same Party as President" is a dummy matching self-reported political party affiliation to the President's party.

5)These regressions are the second stage regressions of the instrumental variables approach to voting eligibilty and attitudes. (Stage 1 discussed in table Va) In the IV approach, we exclude demographic controls (including race dummies) from the specification since these factors are accounted for in the predicted vote variable obtained from stage 1 coefficient estimates. Column 1 shows the results of the basic specification using the OLS approach but without the demographic controls in order to have a matching baseline comparison the the IV regressions. Column 2 shows the results of the specification using the presidential vote variable predicted by the stage 1 specification that DOES NOT include political party as a stage 1 regressor. Column 3 shows the IV regression using the presidential vote variable predicted by the stage 1 specification that DOES include political party as a regressor.

Table VIII: Placebo Tests: Using Demographics to Predict Vote

	Age Placebo			Year Placebo			Year Placebo		
Time Relative to Presidential Election Sample Years:	Two Years Post Presidential Election 1978-1998			Presidential Election Year 1980-2000			Presidential Election Year 1980-2000 ex. 1988, 2000		
Ages Compared	20/21 vs. 22/23			18/19 vs. 20/21			18/19 vs. 20/21		
Specification	OLS	IV	IV	OLS	IV	IV	OLS	IV	IV
Eligible*party	**-4.03**			**-2.78**			**-3.87**		
	(3.17)			**(4.27)**			**(5.20)**		
Eligible to Vote	3.156	2.784	2.866	3.056	5.827	3.024	4.850	4.887	5.812
	(2.551)	(4.917)	(3.313)	(3.287)	(5.594)	(4.168)	(3.799)	(6.231)	(4.754)
Same Party as President	21.014			27.087			26.138		
	(2.544)			(3.356)			(4.083)		
Eligible*Pres. vote1		**-1.88**			**-5.99**			**0.03**	
		(7.94)			**(9.10)**			**(11.02)**	
Would Have Voted for President1		34.471			40.868			34.844	
		(6.036)			(7.791)			(9.484)	
Eligible*Pres. vote2			**-3.21**			**-1.67**			**-5.52**
			(4.95)			**(5.95)**			**(7.29)**
Would Have Voted for President2			34.299			41.335			41.527
			(3.746)			(4.789)			(5.747)
1st Stage of IV Uses Pol. Party as Regressor	–	No	Yes	–	No	Yes	–	No	Yes
Observations	695	695	695	469	469	469	341	341	341
Adjusted R^2	0.217	0.172	0.267	0.27	0.203	0.347	0.271	0.192	0.327
Concept Tested:	Both Group Eligible to Vote			No election two Years Prior			No election two Years Prior		

NOTES:

1)Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set.

2)The dependent variable is a "feeling" thermometer (scale 1-100 with 100 being more positive) on the President of the survey year.

3)All regressions include year and state fixed effects.

4)"Same Party as President" is a dummy matching self-reported political party affiliation to the president's party.

5)Sample years and age composition vary by placebo type. AGE placebo regressions (1-3) are comprised of survey participants aged 20-23 in non-presidential election years 1978-1998; YEAR placebos (4-6), aged 18-21 in presidential elction years 1980-2000. Regressions 7-9 are the same sample as the YEAR placebos (4-6) excluding years 1988 and 2000 when no incumbent President ran due to term limitations.

6)"Eligible to Vote" is a dummy variable for the survey participant being in the older age group in the ages compared line. This variable changes meanings for the different regressions since they test different age groups in different types of election years. The AGE placebos test to see if results (which we do not expect to be present) show up if we compare two contiguous age groups, both of which were able to vote in the presidential election two years ago. This placebo disproves the critique that such a difference is due only to the difference in ages and no to the implied voting eligibility. The YEAR placebos compares ages 18,19 with 20,21 but changes the sample year to the presidential election year (1980-2000) in the same period. This placebo tests for results (which we dont expect to find) if we change the context of the election years. In this test, two years ago, the older group was able to vote, but it was not a presidential election. The absence of results indicates it is not the mere change in voting ability that is a key factor, but rather the voting for the candidate in question.

7)The placebo tests are done here with the IV approach (see tables Va and Vb)

Table IX: Political Activity

	Level of political info	Interest in the election	Interest in public affairs	Campaign participation	Remembered Name of Rep?	Remembered Name of Senator?
Non-presidential Election Years						
Eligible to Vote	0.158	0.041	0.024	0.076	0.100	0.163
(18/19 v. 20/21)	(0.073)	(0.053)	(0.076)	(0.036)	(0.056)	(0.242)
Observations	557	560	556	560	558	270
Adjusted R^2	0.269	0.131	0.151	0.159	0.195	0.341
Presidential Election Years						
Placebo Comparison	-0.046	0.081	0.038	-0.035	0.173	0.342
(18/19 v. 20/21)	(0.111)	(0.044)	(0.081)	(0.046)	(0.139)	(0.297)
Observations	301	790	662	792	406	148
Adjusted R^2	0.366	0.122	0.184	0.124	0.202	0.401
Difference of Non-presidential and Presidential	0.204	-0.04	-0.014	0.111	-0.073	-0.179

NOTES:
1) Data. Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set.
2) All regressions include year and state fixed effects as well as demographic controls.
3) The sample for the regression includes only those in the specified 4 year age range. In Panel A, sample years are 1978-1998 (non-presidential election years) and in Panel B, sample years are 1980-2000 (presidential election years)
4) The dependent variables are different politics and knowledge related questions from the NES survey. Columns 1-4 are self-reported and run on varying scales (3-5 points). Columns 5,6 are derived from specific questions on the survey participants' recollection of their own congressman's names. Both run on 6 point scales with higher totals having more knowledge of names and parties of senators, reps and/or candidates.
5) The variable of interest "eligible to vote" is an age based dummy. It has value 1 for those who were eligible to vote 2 years ago in the presidential election. In the placebo regressions, it has value 1 for the older half of the regression sample.
6) Data clustered at the state level.

Table X: Voting and Senatorial Attitudes

Is Senate Race in a Presidential Election Year?

Panel A:	Sample divided by Years Since Senator's Last Election		
	Full Sample	Senators Elected Two Years Ago	Senators Elected Four Years Ago
Elected*party	**2.060**	**1.799**	**1.984**
	(0.774)	**(1.205)**	**(1.036)**
Elected in Presidential election year	-1.357	-7.708	0.458
	(0.723)	(2.189)	(1.657)
Same Party as Senator	8.908	9.102	9.016
	(0.872)	(0.958)	(1.144)
Observations	14192	7283	6909
Adjusted R^2	0.121	0.141	0.12

Panel B:	Sample divided by Effect of Instrument Measure at the Median	
	Low Difference	High Difference
Elected*party	**1.671**	**2.429**
	(1.092)	**(0.948)**
Elected in Presidential election year?	-1.289	-1.288
	(0.938)	(0.934)
Same Party as Senator?	11.391	6.185
	(1.103)	(0.919)
Observations	7087	7085
Adjusted R^2	0.150	0.108

NOTES:

1)Data Source is the National Election Studies (NES) Survey 1948-2002 cumulative data set.

2)The dependent variable is a "feeling" thermometer (scale 1-100 with 100 being more positive) on the senator in question.

3)All regressions include year, state, and age fixed effects as well as demographic controls.

4)The regressions show the effect of the type of election year in which a senator was elected on survey respondents' senatorial attitudes. The sample is survey respondents from the national election years 1978-1998. The regression is run separately for senators elected 2 and 4 years ago (from the survey time), as well as the pooled sample. "Elected in Pres. election year" is a dummy for whether a senator (2 or 4 years ago) was elected in a presidential election year. Presumably these election years are more highly publicized and have higher voter turnouts.

5)Data is clustered on the state level.

6)In the pooled sample, some respondents have two observations, one for a senator elected two years ago and one for the senator elected 4 years ago.

7)The sample is divided into 2 subsamples in panel B according to whether the observation has a value above or below median for its calculated variable "effect of instrument" The instrument effect measure is constructed as follows: We use a dprobit model to estimate the effect of demographic characteristics (with state fixed effects) on the probability of voting, separately for presidential and nonpresidential election years. The coefficient estimates are then used to predict voting probability for each individual in a presidential and non-presidential election year. The difference of this predicted likelihood of voting is our "effect of instrument" variable.