Learning and Opinion Change, Not Priming:

Reconsidering the Evidence for the Priming Hypothesis

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According to numerous studies, campaign and news media messages can alter the importance individuals place on an issue when evaluating politicians, an effect called priming. Research on priming revived scholarly interest in campaign and media effects and implied, according to some, that campaigns and the media can manipulate voters. There are, however, alternative explanations for these priming findings, alternatives that previous studies have failed to consider fully. In this paper, I reanalyze previous studies and differentiate priming effects from these alternatives using panel data. Across four diverse cases, I find little evidence of priming effects. Instead, campaign and media attention to an issue creates the appearance of priming through a two-part process: Exposing individuals to campaign and media messages on an issue (1) informs some of them about the parties' or candidates' positions on that issue. Once informed, (2) these individuals often adopt their preferred party's or candidate's position as their own. Combined, this process gives rise to the appearance of priming in the absence of actual priming.

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1 Introduction: the priming hypothesis

Until the 1980s, research had generally failed to produce much evidence of campaign or media effects on vote choice and presidential approval (Graber 1993; Patterson and McClure 1976). This began to change with findings from lab-based experiments on agenda-setting and priming (Iyengar and Kinder 1987; Iyengar et al. 1984). The authors of these studies hypothesized that, by calling attention to some matters while ignoring others, television news alters the issues on which the public judges presidents and candidates for public office. To test this "priming" hypothesis, these studies manipulated the extent to which subjects viewed television news stories on an issue and found that greater exposure led viewers to give greater weight to that issue when evaluating politicians. For instance, when shown television news stories about the economy, subjects were more likely to evaluate the president based on their perceptions of the president's handling of the economy.

Political scientists have shown great interest in the influence of agenda-setting and priming (Riker 1986; Schattschneider 1960), also referring to them as "framing," "manipulating the dimensions underlying vote choice," and "heresthetics." In part, priming is of such interest because it provides an intriguing account of how campaigns and the media influence elections. In Schattschneider's (1960, 66) words, "He who determines what politics is about runs the country, because the definition of the alternatives is the choice of conflicts, and the choice of conflicts allocates power." Lazarsfeld and his colleagues (Berelson et al. 1954) provide the quintessential example in their analysis of the 1948 U.S. presidential campaign. They argue that Truman won the election, to the surprise of many, because his campaign shifted the nation's focus from international issues back to New Deal issues, where he and the Democratic Party had an advantage. Priming also interests scholars because, some have argued, it constitutes evidence of

a dangerous bias in citizens' decision-making. Iyengar and Kinder (1987) find priming effects so large as to imply that voters are overweighting some issues while underweighting others. These results may indicate that campaigns and the media have the power to manipulate voters through priming, a finding that has ominous implications for democracy. In this vein, Krosnick and Kinder (1990, 508) characterize people who manifest priming as being "swept away by [an] avalanche of stories and pictures," and Iyengar and Kinder (1987) describe individuals who fall prey to priming as "victims." Finally, priming interests scholars because of its implications for candidate behavior. It may imply, for instance, that candidates should avoid dialogue on issues with rival campaigns and instead only campaign on the issues most favorable to themselves (Petrocik 1996; Simon 2002).

Subsequent research has consistently supported and extended the initial priming findings on vote choice and presidential approval. Several studies have replicated the lab-based experiments (e.g., Miller and Krosnick 2000; Valentino et al. 2002). Researchers have also addressed concerns about external validity by replicating priming in the field. They have done so by exploiting changes in campaign and media attention to issues between waves of panel surveys (Johnston et al. 1992; Krosnick and Brannon 1993), in the midst of rolling cross-sections (Krosnick and Kinder 1990; Mendelberg 2001; Mutz 1998), or between regions (Carsey 2000). Finally, reviews of the literature on public opinion conclude that campaigns and the media can alter the importance of issues (Iyengar and Simon 2000, 156-157; Kinder 1998a; 1998b). Many other studies have examined the effects of priming on policy issues (e.g., Hurwitz 2005; Mendelberg 1997, 2001; Nelson and Kinder 1996). In this paper, I only consider priming effects on candidate preference or incumbent evaluations.

Given the large number of experimental and survey studies that find priming effects on vote choice and presidential approval, researchers have undoubtedly uncovered something, but is

it priming? I present evidence that it is not. In the four cases examined below, priming effects appear to arise instead because of two processes unrelated to priming. First, exposing individuals to campaign and media messages on an issue informs some of them about the parties' or candidates' positions on that issue. Second, these newly informed individuals often adopt their party's or candidate's position as their own. Combined, these effects give rise to the appearance of priming in the absence of actual priming.

Research has long shown that individuals tend to adopt policy preferences consistent with their partisanship or other predispositions (Abramowitz 1978; Bartels 2002a; 2002b; Berelson et al. 1954; Campbell et al. 1960; Carsey and Layman 2006; Zaller 1992, 1994). Here, I show that learning the parties' or candidates' positions appears to drive this tendency, and that it generates the appearance of priming effects. When campaigns and the media emphasize an issue, many individuals learn these positions. When they learn, they often adopt the position of their preferred party or candidate.

The research on priming and candidate preference is too extensive to be exhaustively evaluated in a single article, and the approach I take limits the analysis in important ways. Researchers have studied the priming on position issues (e.g., Krosnick and Kinder 1990) and on valence or performance issues (e.g., Iyengar and Kinder 1987). For technical reasons, however, this paper's approach cannot be applied to valence or performance issues, and so the analysis is limited to policy issues. Researchers have also found priming in campaign contexts (e.g., Iyengar and Kinder 1987, Ch. 11; Mendelberg 2001), where the dependent variable is often candidate choice, and non-campaign contexts (e.g., Iyengar and Kinder 1987), where the dependent variable is often presidential approval. Here, I only examine priming in campaign contexts because only in these contexts are the necessary data available to apply my approach. Finally, the findings have no bearing on equivalency framing (e.g., Druckman 2004; Tversky and Kahneman

1982), which is supported by evidence from a simpler experimental design not vulnerable to the criticisms I present below.

2 The test for priming

Whether in the lab or in the field, the test generally used by researchers to detect priming is vulnerable to several alternative explanations. Researchers generally test whether an increase in the prominence of an issue leads individuals to increase the weight given to the issue when evaluating rival candidates or incumbent politicians.[1] They measure such increases by regressing presidential approval or vote choice on a series of policy attitudes. The coefficients from these regressions, also called "issue weights," are interpreted as reflecting the importance people place on each issue when evaluating the president or deciding for whom to vote, that is, interpreted as reflecting what politics is about. Researchers then examine whether these issue weights vary with the prominence of the issues. In the Truman case, for instance, increases on the coefficient for New Deal attitudes over the course of Truman's campaign would constitute, according to this test, evidence of priming. The Truman case is an example of a field study. With field studies on priming, researchers compare issue weights across regions or over time as the salience of issues varies in the real world. Researchers also use this test in lab experiments, comparing issue weights across groups randomly assigned to different levels of exposure to campaign or news media messages.

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[1] I use the term prominence to refer to the extent to which an issue is "in the news'' or emphasized by campaigns. I do so because of the debate on whether issue prominence, using this definition, leads to priming through accessibility (issue salience) or other mechanisms (e.g., Miller and Krosnick 2000; Nelson et al. 1997; Valentino et al. 2002).

3 The first alternative explanation: Learning effects

Although widely used, this test of priming leaves findings vulnerable to several alternative explanations. I examine two. The first alternative I discuss results from learning. The second results from individuals adopting their preferred party's or candidate's positions. For ease of presentation, I put aside the second alternative while exploring the first. The treatments in most priming studies are designed to make (or are interpreted as making) one issue more salient than another. However, they often do much more than simply raise an issue's salience. Whether they consist of watching television news or campaign ads in the lab or experiencing a campaign in the field, the treatments usually convey information about the issue being primed. They inform subjects about, for instance, the state of the national economy or the parties' positions on a policy issue or the candidates' support for or opposition to racial or religious groups. This poses a problem for priming studies because learning these facts can itself create the appearance of priming, even in the absence of priming (Jenkins 2002).

To see how, consider again the Truman example. As argued by Lazarsfeld and his colleagues, Truman's campaign may have primed New Deal issues, causing some individuals to place greater weight on these issues and so switch their vote to the candidate who shares their position. Truman's campaign could have induced a similar effect, however, just by conveying information about Truman's position. Lazarsfeld and his colleagues note the remarkable lack of knowledge about Truman's and Dewey's positions in their sample (Berelson et al. 1954, 227-8). Given the low levels of knowledge, some individuals who supported New Deal policies may have assumed that Dewey did too, been unaware that Truman supported them, or both. Instead of priming, Truman's campaign may have simply informed these individuals that, in fact, Truman supported and Dewey opposed New Deal policies. These newly informed individuals may have then switched their votes to Truman, not because they placed greater weight on the issue, but

because they learned the candidates' true positions. I refer to changes in vote choice or candidate evaluations induced by such learning as learning effects. Thus, Truman's come-from-behind victory could have arisen because of a priming or a learning effect.

The same reasoning potentially indicts every published priming study. Their findings could reflect either priming or learning. Which is it? This is an important question because the implications of the priming literature for democratic theory depend on the answer. If the issue-weight increases arise from priming, then they may reflect poorly on democracy because, according to some scholars, they suggest that campaigns and the media have a power over voters that seems incompatible with popular conceptions of democracy. In contrast, if they arise from learning, they may reflect positively on democracy because they constitute evidence that campaigns and the media provide the public with information, such as "Truman supports New Deal policies," information that the public then uses when voting.

Learning effects have received relatively little attention from researchers, though Alvarez (1997) presents evidence for such effects, while Sekhon (2004) finds no evidence that increases in political knowledge lead to vote change in advanced democracies. Only Jenkins (2002) and Johnston et al. (2004) note that learning effects provide an alternative explanation for priming findings.

4 Priming or learning effects: Four panel cases

How can we test whether apparent priming findings arise from priming itself or from learning effects? As noted above, researchers have reported finding priming effects between waves of panel surveys. With panel data, we can potentially measure learning about the parties' or candidates' positions between these waves. If learning lies behind priming findings, then the issue-weight increases that researchers have attributed to priming should occur only among those who learn the parties' or candidates' positions. Such a result would indicate that learning, not

priming, lies behind priming effects.

Carrying out this approach requires instances where researchers have found priming and where I can measure learning about the parties' or candidates' positions. This requires panel data with questions about respondents' perception of these positions before and after the issue became salient. Although researchers have found several instances of priming between panel waves, public opinion surveys often lack such questions, and when they do ask them, they frequently do so only in the early waves of election panels, such as the pre-election wave. I searched the literature for all cases where previous researchers have reported that campaign or media attention to an issue increased dramatically between waves of a panel and produced the issue-weight increases researchers typically attribute to priming. Unfortunately, the best-known panel studies on priming lack pre-questions and post-questions about the parties' positions (Berelson et al. 1954; Krosnick and Kinder 1990; Mendelberg 2001). Cases that do meet these requirements include European integration and the 1997 British election, Social Security policy and the 2000 U.S. presidential election, and defense spending and Reagan in the 1980 U.S. presidential election. Further search revealed an additional case where campaign attention to an issue increased and priming appears to occur: Public Works projects and the 1976 U.S. presidential election.

4.1 Case 1: European integration and the 1997 British election

The issue of European integration in Britain during the 1990s provides a particularly rich example of a priming effect (or at least the appearance of one). The campaigns and the media ignored the issue of European integration in the 1992 British election, but emphasized it heavily in the 1997 election (Norris 1998). According to a content analysis, no front-page campaign article in major newspapers mentioned this issue during the 1992 campaign, but 22 percent of such articles did so during the 1997 campaign, far more than for any other policy issue (Butler

and Kavanagh 1997, 175). Campaign ads by the Conservative Party and other smaller parties appealed to voters in 1997 with anti-integration phrases such as: "with your support we can retain our nation's sovereignty" (ibid). One ad depicted Tony Blair as a ventriloquist's dummy on Chancellor Kohl's knee. Given the rising prominence of this issue between the 1992 and 1997 elections, previous research would lead us to expect priming. Not surprisingly, attitudes about European integration became an increasingly good predictor of support for the major parties during this period (Andersen 2003; Evans 1999).[2] .

Not only did the prominence of this issue soar during this period, but the public also learned about the parties' relatively new positions on this issue. As late as 1983, the Labour Party advocated withdrawal from the European Union (EU), while the Conservatives supported further integration. By the late 1980s, the parties had more or less swapped positions, though the Conservatives continued to experience public splits over the issue (Evans 1998, 574). Although John Major's Cabinet remained divided over integration in the run-up to the 1997 election, Conservative MPs opposed it overwhelmingly by 1997 (Butler and Kavanagh 1997).[3] Because of this switch, much of the public may have been unaware of or confused about the parties'

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[2] Neither author uses the term priming, but both imply that the increasing salience or prominence of this issue caused issue-driven vote change, e.g., "the impact of attitudes towards European integration ... exhibit increasing strength, with voters against integration becoming increasingly more likely to vote Conservative'' (Andersen 2003, 615).

[3] Although the parties sometimes muddled their messages, their positions were clear to knowledgeable respondents. Among the top 10 percent in terms of factual knowledge in the British Election Panel Study (N = 139), more than 75 percent placed Labour as more pro-EU than the Conservative in 1992 and almost 90 percent did so in 1997.

positions, at least until the 1997 campaign. The increased issue weight for European integration may have thus arisen, not because of priming, but because a much larger percentage of the British public became aware of the parties' positions, and some of these newly informed changed their votes to the party that, they had just learned, shares their position.

The 1992-1997 British Election Panel Study provides the data necessary to test priming against learning effects. I first replicate the finding that attitudes about European integration became more related to support for Labour versus the Conservatives during this period (Andersen 2003; Evans 1999). For vote choice, the dependent variable, I code a Labour vote to 1 and a Conservative vote to 0. I measure support for *European integration* with a question that asks respondents on an 11-point scale whether they prefer seeking unity with Europe or protecting Great Britain's independence, which I scale to vary between 0 and 1 (see appendix for details). I use the 1994 wave as a baseline. Since the UK held no national election in 1994, the survey asks for respondents' vote choice "had there been an election." Using probit, the first row of Table 1 presents the coefficients for vote choice regressed on attitudes about integration, each measured in their respective year. Consistent with the previous findings, the coefficient rises more than 60 percent, from .76 in 1994 to 1.23 in 1997. Since media coverage of this issue soared during this period, it seems unlikely that this increase could have arisen because of a third variable that became more important to both vote choice and attitudes about integration. Moreover, the panel design to some extent holds variables constant by construction. Nevertheless, I include a 10-item index of *Ideology* and a 5-item index of *Authoritarianism* (Heath et al. 1994; Heath et al. 1999), but the results remain similar with and without these controls.[4]

[4] All results mentioned but not shown are available in an Internet appendix. See

Did this issue-weight increase arise because the messages primed the issue or because they informed the public about the parties' positions? Data from the 1992-1997 British Election Panel Study suggest that learning did indeed occur. To measure learning, I use questions that ask respondents to place Labour and the Conservatives on the 11-point, European integration scale — the same scale on which respondents place themselves. With this scale, I operationalize knowledge of the parties' positions as whether they place Labour as more pro-EU than the Conservatives. I use this relative measure, as opposed to an absolute measure, because it is probably less sensitive to individual differences in responses to these scales. To present the evidence on learning, I classify individuals into five categories: those who (1) *Knew before*, i.e., correctly placed the parties before and after the issue became prominent; (2) *Learned from*, i.e., incorrectly placed at least one party before, but both correctly afterwards; (3) *Partially learned*, i.e., incorrectly placed both parties before, but correctly placed one afterwards; (4) *Never learned*, i.e., incorrectly placed the parties before and after; and finally (5) *Forgot*, i.e., correctly placed them before but incorrectly placed them afterwards. In coding respondents into these categories, I treat nonresponses to the questions about the parties' positions as incorrect placements. As Table 1 presents, about 44 percent already knew the parties' positions, 22 percent learned, 13 percent partially learned, 12 percent never learned, and 10 percent forgot. Thus, as expected, the campaign and media emphasis on the issue of European integration corresponded with learning about the parties' new positions.

Is this learning behind the priming effect? The next four rows present estimates of the issue weights among each of the knowledge and learning groups. As is evident, the issue weight for European integration is already high among those who *Knew before* and barely changes

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http://web.mit.edu/polisci/research/glenz/lnp_onlapp.pdf.

between 1994 and 1997, rising from 2.27 to 2.36. Instead, the issue-weight does increase dramatically among the 22 percent of the sample that learns the parties' positions, rising from .20 to 2.24. For completeness, this table also presents estimates for the three other groups. For the *Partially learned* row, the estimates suggest a large but imprecisely estimated increase. The *Never learned* and *Forgot* rows present an intriguing pattern of coefficients, but they are also estimated with little precision. Thus, almost all of the issue-weight increase appears to occur among those who learn the parties' positions, indicating that learning, not priming, lies behind the effect. Based on these results, the substantial increase in news media coverage and campaign advertising apparently failed to prime attitudes about European integration. Instead, the issue-weight increases researchers usually attribute to priming appear to arise entirely because the exposure informed the public about the parties' positions. Campaign and media attention to this issue thus apparently played a normatively positive role, informing citizens about the parties' positions, and thereby leading voters to change their votes in light of this information.

Why does priming fail to occur among those who knew before? Since I do not randomly assign but only observe who knew before and who learns, those who knew before could differ in any number of ways that may prevent priming. Those who knew before are somewhat more politically knowledgeable than are those who learn, as measured with factual questions. Although the evidence is mixed, politically knowledgeable individuals may be less affected by priming (Krosnick and Brannon 1993; Miller and Krosnick 2000; Huber and Lapinski 2006). Those who knew before may already vote for the party that shares their position at such high rates that they cannot be further primed — a ceiling effect. Or, they may have such well-developed preferences that campaigns and the media can rarely change the weights they assign to issues. Determining what prevents priming is beyond the scope of this paper. Those who knew before presumably constitute the primary group that campaigns can potentially prime because,

unlike most of the remaining population, they consistently know which positions the parties hold. Whether the failure to find issue-weight increases among them occurs because of a ceiling effect, immovable weights, or something else, it is bad news for the priming hypothesis.

These findings are of course observational and so potentially face inferential threats, such as bias from endogeneity, omitted variables, and measurement error. Most of these threats, however, are arguably avoided. Consider endogeneity. Measuring learning requires the use of posttreatment questions about the parties' positions, which could pose a problem if learning was endogenous to issue-weight increases, but this seems unlikely because people need to learn the parties' positions before the issue weights can increase. Similarly, omitted variable bias seems unlikely to give rise to these findings. These results are robust to numerous control variables and interactions between these controls and European integration attitudes. For example, including political knowledge and interactions between levels of political knowledge and European integration leaves the results unchanged. Moreover, learning predicts the issue-weight increases so well that an omitted variable would have to be highly correlated with learning. Finally, measurement error in issue attitudes or vote choice could be obscuring increases among those who knew before. This too, however, seems unlikely given that measurement error fails to obscure increases among those who learn.

Although these problems are arguably avoided, another problem is not. Priming could be occurring among the "learners," that is, the same messages that inform the learners about the parties' positions could also prime them. In fact, it seems likely that campaign and media messages will concurrently convey information and prime. Can we rule out priming among the learners? Below, I attempt to do so by addressing the broader and more difficult question of reverse causation with issue opinions. Before addressing this question, however, I conduct this test in the three other cases. To streamline the presentation, I briefly describe these three cases

and then present the analysis.

4.2 Case 2: Social Security and the 2000 U.S. presidential election

Is the absence of priming effects and the presence of learning effects particular to the European integration case? Or, does it hold more generally? In the 2000 U.S. presidential election campaign, the issue of Social Security — George W. Bush's proposal to invest some contributions in the stock market and Al Gore's "lockbox" plan — became prominent in the last month of the campaign, providing another case with which to test priming against learning effects. Although Bush ads featured the issue during the summer of 2000 and Gore mentioned it in his acceptance speech, it received relatively little attention until the first debate, when the candidates sparred on the issue (Hershey 2001). Sharp exchanges again occurred over this issue in the third debate, after which television coverage and campaign advertising began to focus on it heavily: 10 to 15 percent of statements on network news mentioned Social Security, as did 40 percent of Democratic and 60 percent of Republican ads (Johnston et al. 2004, 153-57). In the last week of the campaign, this onslaught peaked: the typical television station in media markets where the campaigns were advertising aired about 150 Bush spots and about 60 Gore spots mentioning Social Security (ibid.).

By devoting so much attention to this issue, both campaigns presumably desired to shift the basis of people's voting to Social Security policy. In its insightful analysis, Johnston, Hagen, and Jamieson (2004) finds that the emphasis on this issue corresponded with an increase in the relationship between attitudes about this issue and vote intent. Based on this evidence, it concludes that the messages primed these attitudes, partly explaining Gore's surge in the last few days of the campaign. Although it notes that a learning effect may also have contributed, it does not investigate which gave rise to the issue-weight increase.

To analyze this case, Johnston et al. (2004) uses a rolling cross-section from the 2000

National Annenberg Election Survey (NAES). This survey also includes a pre-election and post-election panel component that asks the necessary questions to apply the same design. Since the issue's rise to prominence began with the first debate, I compare respondents interviewed in the NAES before the first debate, which took place on October 3, to their reinterviews after the election. I use the same set of controls as Johnston et al. (2004) with some exceptions (see appendix). I code *Bush versus Gore vote* intent and choice to 1 for Bush and 0 for Gore. The *Investing Social Security funds* question asks, "Do you personally favor or oppose allowing workers to invest some of their Social Security contributions in the stock market?" Respondents could answer "favor" or "oppose," which I code to 1 and 0, respectively. The questions about the candidates' positions simply asks whether Bush and whether Gore supports the investing policy; respondents could choose "yes," "no," or "don't know" to both questions. As I show below, the results in this case closely match the European integration case.

4.3 Case 3: Public Works jobs and the 1976 U.S. presidential election

In Cases 1 and 2, the public may have lacked sufficient familiarity with the parties' positions and especially the issue itself in the case of investing Social Security funds. Maybe campaign and media messages can only prime issues when the public is sufficiently familiar with an issue. The 1976 U.S. presidential campaign provides an opportunity to test whether messages also fail to cause priming with the long-standing issue of public work projects to reduce unemployment, an issue with which the public may be more familiar. Since the New Deal era, the Democratic Party has consistently supported such programs, while the Republican Party has generally opposed them. Preferring to address unemployment by stimulating the private sector, President Gerald Ford had vetoed public employment bills passed by the Democratically controlled Congress. In the first general election debate since those between Nixon and Kennedy in 1960, Carter criticized Ford's vetoes, and both candidates stated and reiterated their positions

on this issue (Abramowitz 1978).

Did this emphasis prime attitudes about public employment programs? To test this, I use the Patterson (1980) study of the 1976 U.S. election. It asks respondents in Los Angeles, California and Erie, Pennsylvania for their position and their perception of candidates' position on this issue in four of its seven waves. Since the debate occurred on September 23, I compare the August and October waves. Using seven-point scales, the survey asks whether respondents want the government to directly provide jobs, which I scale to vary between 0 and 1 and call *Public Works jobs* (see appendix for wording). The survey also asks where they place Carter and Ford on this scale, and I code a correct placement of the candidates as placing Carter to the left of Ford. Finally, I code vote intent to 1 for Carter and 0 for Ford. As I show below, the results in this case also closely match the European integration case.

4.4 Case 4: Defense spending and Reagan in the 1980 U.S. presidential election

Another issue with which the public may have greater familiarity is defense spending. During the primaries and general election campaign of 1980, the issue of defense spending and willingness to use force became increasingly prominent. Petrocik (1996) argues that the rise of this and other "Republican owned" issues partly explains Ronald Reagan's victory over Carter. Reagan and the Republican Party seized upon the Iranian hostage crisis in November 1979 and the Soviet invasion of Afghanistan in December 1979 "to help crystallize widespread disquiet about the United States' standing in the world, and turn that disquiet into a Republican campaign issue" (Bartels 1991, 459). The Carter campaign also focused on this issue, trying to portray Reagan as trigger-happy. In their person-in-the-street ads, for example, they showed people making statements such as, "I think Governor Reagan in a crisis situation would be very fast to use military force" (Jamieson 1996, 407). Open-ended responses to an American National

Election Studies (ANES) question about the country's most important problem indicate that the issue became increasingly salient: 12 percent of respondents mentioned defense in January, 16 in June, and 25 in November (Miller and Shanks 1982, 316).

To test whether people did indeed place more weight on this issue as the campaign progressed, I use the 1980 ANES Major Panel. I measure attitudes about *Defense spending* with a seven-point question about whether respondents desire more or less. The panel interviewed respondents in four waves: January through February, June through July, September, and after the election. Since the parties did not choose their nominees until after the first two waves of interviews, the standard vote intent question is unavailable until the September wave. Instead, I use feeling thermometers. Curiously, attitudes about defense spending are unrelated to measures of support for Carter in the panel's first wave and fail to become more related to support for Carter in later waves. In contrast, *Reagan support*, as measured with the feeling thermometer, does become more related to defense spending attitudes. I thus use the Reagan feeling thermometer as the dependent variable. (Using the difference between Reagan and Carter feeling thermometers produces similar results, though with a much diminished overall issue-weight increase.) I scale defense spending and feeling thermometer responses to vary between 0 and 1. Since the dependent variable, *Reagan support*, is nearly continuous, I use OLS.[5] Given that the priming effect only appears to emerge for Reagan, and given that Carter worked vigorously to appear as a defense hawk during this period (Wilson 1980, August 19), I measure learning and

[5] Although feeling thermometers take 101 possible values, respondents only use a fraction of these, making other estimators potentially more appropriate than OLS. (I thank an anonymous reviewer for pointing this out.) Reassuringly, the results remain essentially the same when using ordered probit instead of OLS.

knowledge based only on perceptions of Reagan, coding a correct perception as placing him on either of the top two points of the seven-point defense spending scale (using a measure based on relative perceptions of Reagan and Carter produces similar results). Because the study did not ask the defense spending questions in the post-election wave, I compare the January through February interviews to those in September.

4.5 Analysis of Cases 2-4

These three cases present a diverse array of issues and campaign contexts. Yet, all three yield patterns strikingly similar to the European integration case. Instead of priming, they too indicate that campaign and media emphasis changes votes through learning effects. Tables 2-4 present the findings. In each case, priming appears to occur among the full sample (see top row), which is consistent with previous work on these cases. For example, in the Social Security case, the probit coefficients of Social Security attitudes predicting vote intent rise as the issue becomes prominent, from .29 in the pre-debate period to .86 after the election, replicating Johnston et al.'s findings with panel data. In each case, however, this appearance of priming arises almost entirely from those who learn where the candidates stand (see the *Learned from* and *Partially learned* rows). Only among these learners do policy issues become more predictive of vote choice or candidate approval. Among those who already knew the candidates' positions, policy attitudes are already strong predictors of candidate support and fail to become more predictive. Thus, these three other cases confirm the absence of priming effects observed in the European integration case and the presence of learning effects.

Not all of the increases among the learners are statistically significant at conventional levels, and some of the other coefficients are imprecisely estimated. How confident should we be in these findings? I address this question with additional analyses, the details of which are available from the author. In the Cases 1-3, I use vote choice as the dependent variable because

this is what we ultimately want to explain. In these three cases, however, the panel surveys contain alternative measures of candidate and party preference that could also serve as dependent variables, such as candidate and party feeling thermometers. These measures may provide greater information about voters' preferences and reveal the preferences of non-voters. Adopting these measures instead of vote choice as the dependent variable results in much more precisely estimated coefficients that are significant at conventional levels. Given that I have four cases, another approach is to conduct a meta-analysis, though this requires some strong assumptions. For the three probit cases where this is straightforward, the result suggests that we can be confident in these estimates: a precision weighted average of the difference among those who *Knew before* lies close to zero (B=-.04, SE=0.17), whereas this average difference is large and highly significant among those who *Learned from*, with a t-value of about 6 (B=1.0, SE=0.15). Finally, many of the control variables in the models above are potentially endogenous, such as other issue attitudes. Controlling for endogenous variables may bias coefficient estimates downwards and standard errors upwards, resulting in imprecisely estimated coefficients. When I replicate Tables 1-4 without the standard controls, the results remain similar but the precision increases substantially. Thus, these data appear to support these findings with considerable certainty.[6]

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[6] The results in Tables 1-3 examine only individuals who express a vote intent or choice in the prewaves and postwaves. They could thus potentially miss priming among those who develop a vote intent only after the prewaves. As noted above, however, the results remain similar when I replace the dependent variables (vote choice) with more continuous measures of candidate and party preference. In these analyses, the sample sizes increase substantially because they include nonvoters and nonmajor-party voters. Nevertheless, the results remain the same,

These analyses indicate that what researchers have called priming effects can occur, not because the campaign and media attention prime issue attitudes, but because they inform people about the parties' positions. These findings, therefore, suggest a more normatively appealing view of campaigns and their media coverage. Instead of priming, which entails, according to some scholars, elite manipulation of voters, these findings indicate that campaigns and the media play a positive role: they provide the public with information about the parties' policy stands, information that citizens then use in their vote decisions.

5 The second alternative: Issue opinion change

Before drawing this normatively pleasing conclusion, however, there is a less flattering alternative. Research on priming has assumed that the issue-weight increases occur because people are changing their votes to be more consistent with their opinions on these policies. These issue weights, however, can also increase because people are changing their issue opinions to be more consistent with their votes. Both lead to greater issue-vote consistency and thus to issue-weight increases. Priming studies, whether in the lab or the field, are vulnerable to this alternative explanation because they generally suffer from a second methodological flaw: they test for priming with issue opinions measured after the treatments, leaving them vulnerable to bias from this alternative, sometimes called reverse causation or posttreatment bias. Consider

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suggesting that these findings also hold among those who form a vote preference between waves. To address a related concern, I attempt to assess the bias from panel attrition by examining whether these effects change among those with a higher probability of dropping out of the panel compared to those with a lower probability. The results are similar in both groups, suggesting that panel attrition is not biasing the results. Finally, using absolute measures of correct placements, instead of the relative measures used in Cases 1 and 3, yield similar results.

again the Truman case. As the 1948 election campaign progressed, individuals who supported Truman may have become increasingly likely to also support (or claim they support) New Deal policies. They may have done so because they liked Truman, and, as they learned from the campaign, he supported New Deal policies.

Although this alternative explanation for priming has generally been neglected, it is consistent with a large body of research. Numerous studies have found that individuals appear to adopt attitudes and perceptions consistent with their partisan identification or candidate preference (Abramowitz 1978; Bartels 2002a; 2002b; Berelson et al. 1954; Zaller 1994). Researchers have used several terms to describe this behavior, such as projection (Iyengar and Kinder 1987), persuasion (Brody and Page 1972), and rationalization. To avoid implicating a particular mechanism, I refer to it simply as *issue opinion change*.

As with learning effects, this alternative potentially indicts almost every published priming study. Their findings could reflect priming or they could reflect people's tendency to adopt their party's or candidate's issue positions. Which is it?

This is an important question because, as with learning effects, the implications of the priming literature for democratic theory depend on the answer. While discussing the priming of valence issues and referring to this alternative as projection, Iyengar and Kinder (1987, 71) state:

> The political differences between priming and projection are enormous. If priming holds, then television news possesses the capacity to alter the standards by which the President is judged, and therefore the degree of public popularity the President enjoys and the power he can wield. If projection holds, then we will have discovered that people interpret new events or reinterpret old events in order to maintain consistency with their existing predispositions — an interesting discovery, though hardly a new one (e.g. Abelson 1959) and, most important, one that implies a sharply reduced role for television as a molder of opinion.

Finding that "projection holds" may not necessarily reflect poorly on the public or on democracy. Individuals may adopt their party's position on an issue because they think their

party generally reflects their interests. When the costs of developing one's own opinions are high, taking cues from a party that shares one's interest could be reasonable. Of course, adopting the position of one's party may be less flattering if it merely reflects a tendency to blindly follow one's "tribe." Either way, concluding that "projection holds" fundamentally alters the way we see the priming literature.

As I have shown in the cases above, the issue-weight increases that researchers have attributed to priming occur only among individuals who are learning the parties' or candidates' positions. How likely is it that these increases occur because the learners are adopting their party's or candidate's position as their own? Few studies have investigated the effect of such learning on individuals' policy opinions. An exception is Cohen (2003), which, through a series of experimental studies, finds that informing individuals about their party's position causes most to adopt that position, even if it conflicts with other highly relevant predispositions. If this tendency is a strong as Cohen (2003) suggests, then the treatments in priming studies seem likely to create the appearance of priming through learning-induced, issue opinion change.

Beyond addressing this broader question, this section also grapples with a lingering problem: priming could also be occurring among the learners. If I find that the increases among learners arise entirely because they are changing their issue opinions to reflect their votes, then concerns about priming among the learners become moot.

Unfortunately, determining the causal path behind the issue-weight increases among the learners is difficult. To do so, we need to determine whether learners are changing their votes to reflect their issue opinions or changing their issue opinions to reflect their votes. This presents a formidable challenge because it involves unraveling the direction of causation — never easy with public opinion, even with panel data. To tackle this problem, I present the results of two panel-based approaches.

5.1 A cross-lagged approach

A simple approach to determining causation with panel data is to test whether a variable explains later change in other variables. In this case, if earlier issue attitudes explain later changes in vote choice among learners, then the results support learning effects. In contrast, if earlier vote choice explains later changes in issue attitudes, then the results support learning-induced, issue opinion change. Researchers sometimes call this approach a cross-lagged design (Finkel 1995).

As an example, consider the British case. If learning leads people to change their votes to reflect their issue opinions, then attitudes about European integration in 1994 should become a better predictor of vote choice between 1994 and 1997. In contrast, if learning leads people to adopt their party's position, then vote choice in 1994 should become a better predictor of attitudes about European integration between 1994 and 1997.

Applying this approach to the four cases, I find that learning leads to issue opinion change, not vote change. Figure 1 presents the cross-lagged tests, showing mean candidate or party preference by pretreatment issue attitudes (left side), and mean support for the policies by pretreatment candidate or party preference (right side). Increases in differences-in-means (diverging lines) on the left indicate that learning the parties' positions leads people to switch their vote to the party that shares their position. In contrast, increases (diverging lines) on the right indicate that this learning instead leads people to adopt their party's position as their own.

In three of the four cases, Figure 1 indicates that the learners are not changing their votes to reflect their issue opinions, that is, not exhibiting learning effects. Instead, they are changing their issue opinions to reflect their votes. For instance, in the British case, there is no evidence of learners changing their votes to reflect their pre-priming event opinions: compared with learners who opposed integration with Europe in 1994, learners who favored it became only slightly more

likely to support Labour by 1997. In contrast, there is evidence of learners changing their issue opinions to reflect their pre-priming event vote intent: compared with learners who supported the Conservatives in 1994, learners who supported Labour in 1994 became much more favorable towards integration by 1997. They were only two percentage points more favorable in 1994, but 26 percentage points more favorable in 1997, a substantial change.

The tendency of the learners to adopt their preferred candidate's position in the Social Security case is also large. When people who like Bush learn that he supports investing Social Security funds, they also become supportive of investing. When people who like Gore learn that he opposes investing, they also become opposed to investing. Only in the last case, defense spending in the 1980 election, do we find evidence that learning led individuals to change their view of the candidates to reflect their issue preferences, though the effect is small and based on only nine respondents (see appendix for coding details). Thus, this cross-lagged analysis indicates that issue opinion change, not vote change, lies behind the issue-weight increases among learners.[7]

To assess more formally the statistical significance of these findings among the learners, I test these rival alternatives using lagged regression models (see Table 5), which are sometimes called Granger causality tests (Granger 1969). These tests further confirm the findings in Figure 1. The left side of the Table 5 presents tests of learning effects, modeling vote choice or candidate support as a function of lagged policy attitudes and the lagged dependent variable. In three of the four cases, these tests find no evidence that learners change their support for the candidates based on their policy attitudes. The coefficients on the policy attitudes are small,

[7] Abramowitz (1978) finds a similar but larger effect in the 1976 case with a panel survey conducted the week before and after the debate.

ranging from -.04 to .06, and are statistically indistinguishable from zero. (I code all variables to vary between 0 and 1 and use linear regression so that these estimates are comparable to the Issue opinion change estimates. Using probit leaves the results unchanged.) As in Figure 1, the exception is defense spending attitudes, which appear to explain changes in support for Reagan between January and September of 1980. The right side of Table 5 presents the tests of Issue opinion change, using the same model. In each case, the candidate support variables strongly predict changes in policy attitudes among the learners, with coefficients ranging from .17 to .34, all of which are highly statistically significant. The magnitudes of these effects are consistent with Figure 1. Thus, these tests provide further evidence that learning leads to issue opinion change, not vote change.

People's strong tendency to adopt their party's position in Figure 1 and Table 5 is more striking when we consider that this method is probably biased against this finding. Analyses such as these that substitute lagged for current values generally yield consistent estimates only under restrictive assumptions (Finkel 1995, 32). This is in part because lagged values are generally imperfect substitutes for current values. In this case, lagged vote choice is an imperfect substitute for current vote choice. The worse the substitution, the greater the potential downward bias. Especially when pretreatment vote choice is measured much earlier, such as four years earlier in the British case, the downward bias may be large. Given that we observe a strong tendency among learners to adopt the position of their party or candidate despite this bias, we can be more confident that this tendency truly exists.

To further test the robustness of these results, I conduct two additional analyses (available from the author). First, I use an Instrumental Variables (IV) approach, instrumenting all variables, including the lagged dependent variable, with variables from earlier waves. Second, I examine the results among those who maintain consistent policy opinions across the panel and

those who change their opinions. The results from both of these analyses strongly confirm the above findings, showing that the issue-weight increases arise because citizens are learning and then adopting their party's or candidate' positions. They also suggest that issue-attitude instability and measurement error are not masking learning effects in Figure 1.[8]

In sum, the normatively appealing interpretation of these results turns out to be false. Both methods point to this conclusion. When individuals learn the parties' or candidates' positions, they generally fail to switch their vote to the party or candidate that they now know shares their position (a learning effect). Instead, campaign and media attention to these issues primarily causes people to change their issue opinions, adopting their preferred party's or candidate's issue position as their own, and creating the appearance of priming effects. Finally, these findings also rule out the possibility that individuals who learn the parties' or candidates' positions are, at the same time, being primed.

6 Conclusion

Above, I noted that while the numerous priming studies have undoubtedly found something, there are reasons to suspect that it is not priming. In particular, two flaws — conveying facts in the treatments and measuring key explanatory variables posttreatment — render them vulnerable to alternative explanations. In light of these suspicions, I have reassessed the evidence for the priming hypothesis. Examining four cases of (apparent) priming with panel surveys, I found that these priming effects occur only among individuals who learn the parties' positions. I then tested whether the effects arise among these "learners" because they switch their vote choice to the party that (they now know) shares their issue position or because they adopt

[8] I have also replicated these results using a panel survey experiment on the issue of SCHIP (details available from the author).

their preferred party's or candidate's position as their own. Employing several methods, I primarily find support for the latter. Thus, rather than causing priming, the analyses reveal that campaign and media attention to an issue leads some individuals to learn the issue positions of the candidates or parties and then to adopt the position of their preferred party or candidate as their own.

How generalizable are these findings? These four cases canvas a wide range of issues, from national sovereignty in the British case, to defense spending in the 1980 U.S. election, to the bread and butter of the American ideological divide in the Public Works projects in the 1976 election case. These issues range from the familiar to the unfamiliar, and the analyses span varying lengths of time, from five years to just weeks. Nevertheless, concerns about generalizability remain. Most importantly, these findings are based on only four cases, though they may be the only cases with the necessary data. Priming may occur on other kinds of issues, such as those where people have previously developed strong attitudes from their social experiences, religious institutions, or popular entertainment. Researchers have sometimes called these "easy issues" (Carmines and Stimson 1989). Some evidence on priming and racial predispositions supports these suggestions (Mendelberg 2001; Valentino et al. 2002). Unfortunately, the panel data necessary to test this suggestion with the method I use here do not exist.[9] Priming may also occur with valence issues, such as the economy, in part because such issues may be generally easier for citizens to understand. But this method cannot be easily applied to these issues either. As noted above, these findings do not apply to priming studies with policy variable outcomes.

[9] Such analyses would require multiple panel waves that contain questions about racial attitudes before race became a prominent issue.

Researchers can design priming studies that lack the two flaws described above and so are invulnerable to the alternative explanations presented here. To eliminate the possibility of learning effects, researchers can carefully control the information content of the experimental treatments (Berinsky and Kinder 2006). In survey studies, researchers cannot of course control information, but can measure its reception, as in the analysis above. In lab studies, however, researchers can ensure that only the prominence of issues varies between treatment groups; the facts conveyed about that issue should remain constant — especially facts that could influence the issue attitude or vote choice, such as the state of the economy or candidates' positions on the issues. To eliminate bias from reverse causation, researchers could test for priming with issue attitudes measured before the treatment. This increases the cost of experiments, since researchers often cannot measure issue attitudes immediately before the treatment (because of fears about subjects' reactivity) and so must conduct panel studies.

Research on priming revived scholarly interest in campaign and media effects and implied, according to some, that campaigns and the media can manipulate voters through automatic processes. The findings in this paper suggest that these conclusions were premature. Campaigns and the media may lack the power to decide elections through agenda-setting, voters' decision-making may not be subject to manipulation (at least not through priming), and setting the agenda should not necessarily be candidates' first priority, as some have argued. Moreover, these findings indicate that issue salience may be less important and the informational content of messages more important than current research suggests. In their landmark study, Lazarsfeld and his colleagues' conclude: "It is difficult to change people's preferences; it is easier to affect the priorities or weights they give to subpreferences bearing on the central decision" (Berelson et al. 1954, 202). When evaluated more carefully, this mantra of the priming literature may not only be false, but the opposite may be true.

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Data Appendix

British Election Panel Study 1992-1997. Face-to-face interviews were conducted in the spring of 1992, 1994, 1995, 1996, and 1997. The question about European integration asks respondents to place themselves on an 11-point scale with the endpoints marked: "Some people feel that Britain should do all it can to unite fully with the European Community. ... Other people feel that Britain should do all it can to protect its independence from the European Community." The scale was marked with the letters A-K and the midpoint was unmarked. The other controls, which I mention in the text, are an index of authoritarian attitudes and an index of ideology. In constructing these indices, I only excluded those who failed to respond to all the items in the scales.

National Annenberg Election Study 2000. The question about investing Social Security funds in the stock market asks, "Do you personally favor or oppose allowing workers to invest some of their Social Security contributions in the stock market?" The question about candidates' positions ask of each candidate, "do you think he favors or opposes allowing workers to invest some of their Social Security contributions in the stock market?" Respondents could answer "favor," "oppose," or "don't know." I include the controls used by Johnston et al. (2004) in Table A6.1 with a few exceptions. I include party identification, tax policy, black racial identification, evangelical religious identification, union member, gender, 1996 turnout, and dummy variables for liberal self-placement and conservative self-placement. I exclude several variables that appear highly endogenous: feeling thermometer about former President Clinton, perceptions of the national economy, and ratings of candidates' competence and character. Including these variables reduces all the other variables coefficients to near-trivial levels. I also exclude attitudes about abortion because the survey did not include this question in the post-election wave.

Patterson 1976 election study. Interviews with the necessary questions were conducted in February, April, June, August, and October. The question about unemployment programs asks,

> "As a way to reduce unemployment, most people feel that the government should help business to prosper so that more jobs are created. But people have different opinions about the government directly providing jobs. Some people want a federal job program, where the government directly provides jobs to those who could not otherwise find employment. Others do not want the government directly to provide jobs to those out of work."

Controls include support for welfare spending, busing to achieve integration, tougher laws and longer jail sentences, increased defense spending, tax cuts, legalized abortion, price and wage controls, involvement in the internal affairs of other countries, as well as party identification, and a dummy variable for residing in Los Angeles. Because of the high level of missingness in these controls, I imputed missing values with demographic variables. The results remain substantively similar with and without the imputation.

1980 ANES Major Panel. For the defense spending question wording, see http://www.electionstudies.org/. I control for party identification. For Figure 1, respondents do not appear to change their attitudes about defense spending from January to September to become more consistent with their feelings for Reagan in January. This may reflect a greater stability in attitudes about defense spending, but it could also arise because the public knew little about Reagan "the candidate" in January of 1980, and so lacked strongly formed opinions about him. I therefore use an index of partisan identification and attitudes about Reagan in January 1980, which performs better than either does individually.

All results mentioned but not shown are available in an online appendix. See http://web.mit.edu/polisci/research/glenz/lnp_onlapp.pdf.

Table 1: Priming or learning? European integration and the 1997 British election

	Place Labour more pro-European integration than Conservatives				*Attitude towards European integration coef.*		
	1994	1997	N	%	1994	1997	Diff.
All	-	-	796	100	0.76***	1.23***	0.47
					(0.21)	(0.21)	(0.30)
Knew before	Yes	Yes	352	44	2.27***	2.36***	0.09
					(0.38)	(0.40)	(0.55)
Learned	No	Yes	172	22	0.20	2.24***	2.04***
					(0.36)	(0.40)	(0.54)
Partially learned	No	Better	101	13	-0.43	0.56	0.99
					(0.48)	(0.47)	(0.67)
Never learned	No	No	94	12	-0.88	-1.48**	-0.60
					(0.68)	(0.75)	(1.01)
Forgot	Yes	No	77	10	0.91	-0.17	-1.08
					(0.62)	(0.65)	(0.90)

* p< .10, ** p< .05, *** p< .01. Probit estimates (standard errors in parentheses). The dependent variable is major-party vote choice: Labour (1) versus Conservatives (0). Since the UK held no election in 1994, the question asks for vote choice "had there been an election." This table shows that the apparent priming effect (top row) occurs only among individuals who learned the parties' positions, indicating a learning effect, not priming. The first row shows the original priming finding: attitudes about European integration became more related to vote choice between 1994 and 1997. The next rows show that the increased relationship arose among those who learned the parties' positions on this issue by reestimating these models with interactions for each of the knowledge categories. See the data appendix for control variables.

Table 2: Priming or learning? Social Security and the 2000 U.S. presidential election

	Correctly report Bush's and Gore's positions				*Investing Social Security funds coef.*		
	Pre-debates	Post-election	N	%	Pre-debates	Post-election	Diff.
All	-	-	927	100	0.29***	0.86***	0.57***
					(0.10)	(0.15)	(0.19)
Knew before	Yes	Yes	375	40	1.20***	1.14***	-0.06
					(0.18)	(0.19)	(0.26)
Learned	No	Yes	292	31	0.14	0.59***	0.43*
					(0.17)	(0.20)	(0.26)
Partially learned	No	Better	86	9	-0.58*	0.44	1.02**
					(0.32)	(0.34)	(0.47)
Never learned	No	No	135	14	-0.58**	-0.37	0.21
					(0.26)	(0.28)	(0.38)
Forgot	Yes	No	53	6	0.39	-0.15	-0.54
					(0.44)	(0.42)	(0.61)

* p< .10, ** p< .05, *** p< .01. Probit estimates (standard errors in parentheses). The dependent variable is vote intent and choice for Bush (1) versus Gore (0).This table shows that the apparent priming effect (top row) occurs only among individuals who learned the candidates' positions, indicating a learning effect, not priming. The overall increase in the relationship between attitudes about investing Social Security funds and vote choice arises from those who learned or partially learned the candidates' positions on this issue. See the data appendix for control variables. See the note to Table 1 for more details.

Table 3: Priming or learning? Public works jobs and the 1976 U.S. presidential election

	Place Carter more pro Public Works than Ford				*Public Works jobs coef.*		
	Aug.	Oct.	N	%	Aug.	Oct.	Diff.
All	-	-	379	100	0.65**	1.42 ***	0.77*
					(0.30)	(0.34)	(0.45)
Knew before	Yes	Yes	162	43	2.67***	2.31***	-0.36
					(0.77)	(0.60)	(0.98)
Learned	No	Yes	96	25	0.30	1.37**	1.07
					(0.50)	(0.55)	(0.74)
Partially learned	No	Better	36	9	-1.81**	1.19	3.00***
					(0.73)	(0.79)	(1.08)
Never learned	No	No	61	16	0.25	0.92	0.67
					(0.58)	(0.62)	(0.85)
Forgot	Yes	No	24	6	0.87	0.37	-0.50
					(0.92)	(0.80)	(1.22)

* p< .10, ** p< .05, *** p< .01. Probit estimates (standard errors in parentheses). The dependent variable is vote intent for Carter (1) versus Ford (0). This table shows that the apparent priming effect (top row) occurs only among individuals who learned the candidates' positions, indicating a learning effect, not priming. The overall increase in the relationship between attitudes about the government directly providing jobs and vote intent arises from those who learned or partially learned the candidates' positions on this issue. See the data appendix for control variables. See the note to Table 1 for more details.

Table 4: Priming or learning? Defense and Reagan in the 1980 U.S. presidential election

	Correctly report Reagan's position				*Defense spending coef.*		
	Jan./Feb.	Sept.	N	%	Jan./Feb.	Sept.	Diff.
All	-	-	531	100	0.19***	0.30***	0.11*
					(0.05)	(0.04)	(0.06)
Knew before	Yes	Yes	125	24	0.54***	0.55***	0.01
					(0.09)	(0.08)	(0.12)
Learned	No	Yes	167	31	0.09	0.32***	0.23*
					(0.09)	(0.09)	(0.13)
SoPartially learned	No	Better	89	17	-0.04	0.06	0.10
					(0.10)	(0.12)	(0.16)
Never learned	No	No	108	20	-0.02	0.01	0.03
					(0.10)	(0.11)	(0.15)
Forgot	Yes	No	42	8	0.45**	0.16	-0.29
					(0.19)	(0.21)	(0.28)

* p< .10, ** p< .05, *** p< .01. OLS estimates (standard errors in parentheses). The dependent variable is feeling thermometer for Reagan. See the data appendix for control variables. This table shows that the overall increase in the relationship between defense spending attitudes and support for Reagan arises from those who learned or partially learned the candidates' positions on this issue. See the note to Table 1 for more details.

Table 5: Do the apparent priming effects arise among the learners because citizens are changing votes to match issue opinions (learning effects) or changing issue opinions to match votes (issue opinion change)? Granger causality tests among those who *Learned from*.

	(1)	*(2)*	*(3)*	*(4)*		*(5)*	*(6)*	*(7)*	*(8)*
	Learning effect tests					*Issue opinion change tests*			
Case	*EU integration*	*Investing S.S. funds*	*Public Works jobs*	*Defense spending*	*Case*	*EU integration*	*Investing S.S. funds*	*Public Works jobs*	*Defense spending*
DV	Vote	Vote	Vote	Reagan Support	DV	EU integration	Investing S.S. funds	Public Works jobs	Defense spending
Lagged Issue opinion (from DVs in Cols. 5-8)	0.02	-0.04	0.06	0.17**	Lagged DV	0.28***	0.35***	0.48***	0.36***
	(0.05)	(0.04)	(0.09)	(0.07)		(0.07)	(0.05)	(0.09)	(0.07)
Lagged DV	0.90***	0.68***	0.74***	0.53***	Lagged Vote (from DVs in Cols. 1-4)	0.27***	0.34***	0.22***	0.17***
	(0.03)	(0.04)	(0.07)	(0.07)		(0.05)	(0.05)	(0.07)	(0.05)
Constant	0.03	0.11***	0.05	0.17***		0.16***	0.20***	0.15**	0.39***
	(0.03)	(0.04)	(0.06)	(0.06)		(0.04)	(0.05)	(0.06)	(0.06)
n	172	292	96	167		172	292	96	167
R^2	0.798	0.482	0.571	0.301		0.237	0.246	0.361	0.207
SER	0.224	0.351	0.320	0.222		0.294	0.433	0.305	0.203

* p< .10, ** p< .05, *** p< .01. OLS estimates (standard errors in parentheses). This Table further confirms the findings of Figure 1. The left side presents tests of learning effects, modeling vote choice or candidate support as a function of lagged policy attitudes and the lagged dependent variable. The right side presents the tests of Issue opinion change, using the same model. I code all variables to vary between 0 and 1 and use linear regression so that these estimates of both effects are comparable. In Column 8, I use an index of partisan identification and Reagan support as the Lagged Vote variable. Using probit in the vote choice cases leaves the results unchanged, as does adding the controls used in Tables 1-4.

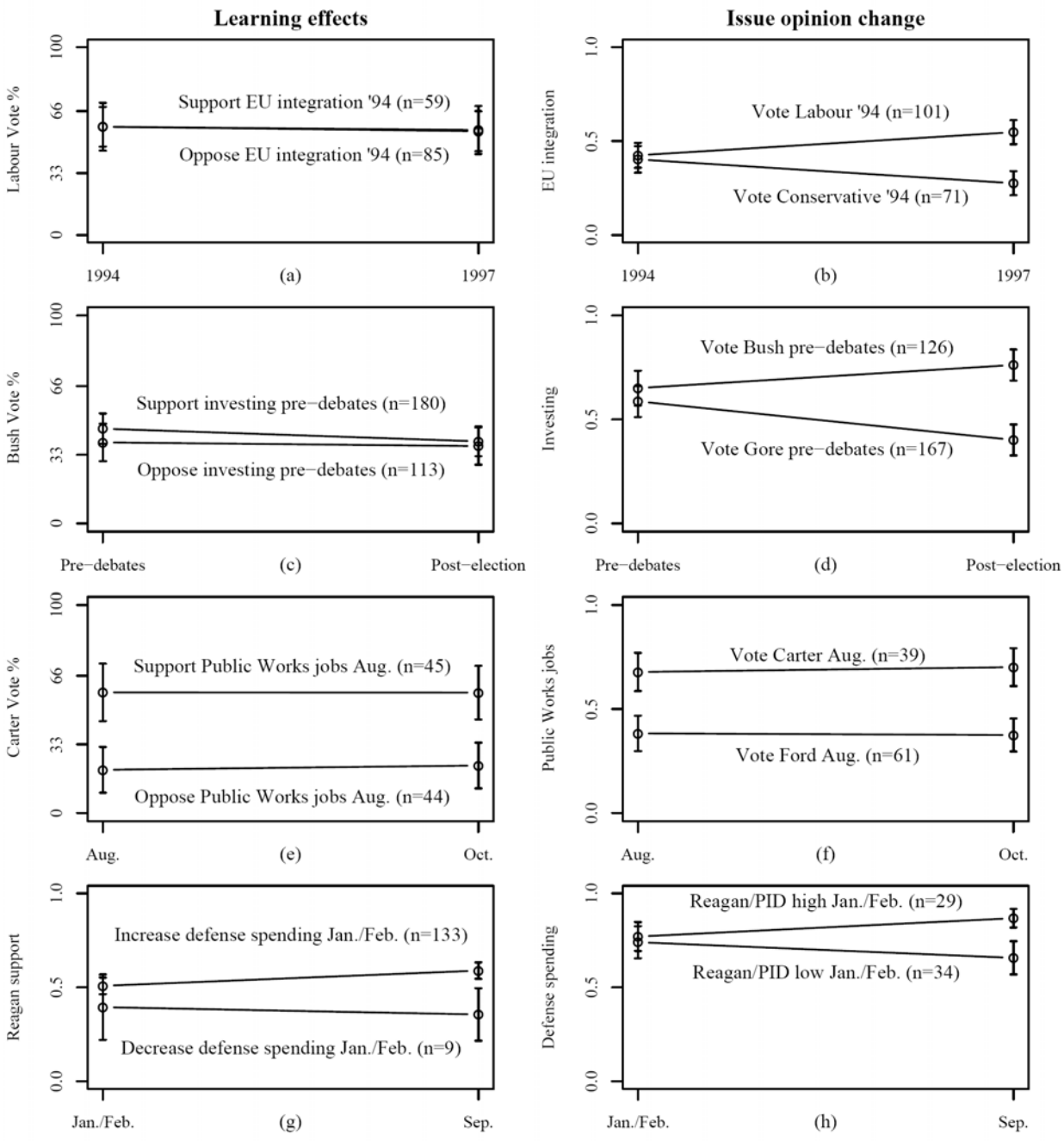

Figure 1: This figure tests whether the apparent priming effects observed among the learners in Tables 1-4 occur because the learners are changing their vote to the party or candidate that, they have just learned, shares their position or because they are changing their issue position by adopting their party's or preferred candidate's position. It primarily finds evidence for the latter, that is, when people learn the parties' or candidates' positions on these issues, they do not change their vote to the party or candidate that shares their position on the issue (left column), but instead adopt the position of their preferred party or candidate (right column). For example, the second row shows that individuals who support the investing Social Security funds (pre-debates) did not become more likely to vote for Bush (relative to people who were opposed) as they learned the Bush's and Gore's positions. Instead, people who said they would vote for Bush before the debates became more supportive of investing, and people who said they would vote for Gore before the debate became more opposed to investing. Neutral responses are not shown. For the *Reagan thermometer-Party ID index*, "strongly support" is coded as above .75 on a one-point scale, and "strongly oppose" is coded as below .25. Error bars show 95 percent confidence intervals. See data appendix for sources.