Competing Rhetoric Over Time: Frames Versus Cues

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Citizens' preferences form the foundation of democratic governance. When they form their preferences, they typically do so in the presence of various types of competing arguments that reach them at different times. Surprisingly, public opinion research offers little guidance on how competition and time affect preference formation. We fill this gap by exploring the relative influence of two prominent types of competing arguments, frames and cues, over time. We find that only frames have initial direct effects, although cues exert initial indirect effects on opinion formation. Over time, the relative impact of frames and cues depends on individual differences in processing style. Our results have important implications for opinion formation, political communication, and democratic responsiveness.

Voters respond to the messages that they receive from politicians and the news media. When a media outlet endorses a candidate, voters often become more supportive of that candidate. Similarly, a newspaper that emphasizes a certain issue (e.g., the economy) during a campaign can cause voters to focus on that issue (e.g., the economy) when evaluating the candidates. The effects of both cues and frames have been documented, but what happens when voters receive cues that allow them to make evaluations based on very little information (e.g., endorsements) *and* frames that tell them how to think about a candidate, problem, or event? Do both cues and frames shape opinions? Does one predominate? What happens if a cue and a frame lead to conflicting conclusions about whom to support? What happens over time: do framing and cue effects endure?

These questions are of obvious importance to campaigns and to democratic theorists. Campaigns want to know which types of communications will be most effective. Scholars interested in understanding how democracies function hope to pinpoint the origins and nature of public opinion, including the relative impact of different mass communications. Yet, extant scholarship provides virtually no insight on these topics. We have not yet discovered what citizens do when they receive competing types of communications, such as cues and frames, despite the reality that most campaigns and news stories offer both kinds of information (Druckman, Kifer, and Parkin 2009).

In what follows, we explore how individuals respond when simultaneously exposed to both cues and frames. We also explore what happens to their opinions over time. In the next section, we discuss the difference between frames and cues, and offer some speculations about their effects over time. We then present the results from an over time experiment where individuals are exposed to a mix of cues (i.e., endorsements) and frames prior to watching a political debate. Our results are the first to provide insight into how voters make sense of competing types of information, suggesting—at least in the case of our experiment—which type is most effective, among whom, and when.

Framing and Cue Effects

Our first task is to distinguish framing effects and cue effects. Typically, a framing effect occurs when in the course of describing a campaign, issue, problem, or event, a speaker's emphasis on a subset of potentially relevant considerations causes individuals to focus on

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those considerations when constructing their opinions (Druckman 2001b, 226–31). In other words, a communication induces an individual to alter the weight—in an automatic accessibility fashion and/or more deliberately—that he or she attaches to an attribute. This, in turn, may lead to a change in overall attitude (Nelson, Clawson, and Oxley 1997; Price and Tewksbury 1997; Wood 2000). For example, if a speaker describes a hate group rally in terms of free speech, then members of the audience will be more likely to base their opinions about the rally on free speech considerations, possibly making them more supportive of the right to rally. In contrast, if the speaker uses a public safety frame, audience members will be more likely to base their opinions on public safety considerations and oppose the rally (Nelson, Clawson, and Oxley 1997). Alternatively, an election news story focusing on the economy might induce a voter to focus on John McCain's economic plan instead of his leadership skills, which may make him a less desirable candidate. Such examples of framing effects abound (e.g., Chong and Druckman 2007c).[1]

Defining a cue effect is less straightforward, as cues come in a variety of forms. Most generally, a cue is a piece of information that allows individuals to make inferences without drawing on more detailed knowledge (Eagly and Chaiken 1993; Rucker and Petty 2006). As such, a frame could be seen as an example of a cue insofar as a frame constitutes information that individuals use to simplify the decision-making process (by focusing on a subset of possible evaluative dimensions). Other examples of cues include visual features, party identification, and perceptions of consensus (e.g., McLeod and Shah 2008; Sniderman, Brody, and Tetlock 1991). We limit our focus on cues, however, to those that enable individuals to make simplified evaluations without analyzing extensive information. Perhaps the prime example of such a cue—and the one that we study—is advice from others, or, endorsements. For instance, a voter may come to see a candidate's economic program as beneficial when it is endorsed by a Nobel Prize-winning economist (without considering the program's implications for inflation and unemployment). Endorsements have been shown to play a particularly important role in political settings (e.g., Downs 1957; Lau and Redlawsk 2006, 232; Lupia 1994; Lupia and McCubbins 1998; Popkin 1994). Kuklinski and Quirk explain that "in judging either candidates or policies, people can use public statements by elected officials, interest-group leaders, or others as cues" (2000, 155).

Countless studies—across issues, contexts, and individuals—show that frames and cues independently shape opinions. Yet, this work ignores the reality that citizens typically receive a mix of cues and frames. When receiving a cue (endorsement) or frame, what do citizens do? On one hand, a rational cue-taking theory suggests that individuals will use cues as quick ways to formulate their opinions, without having to consider any other information (including frames that suggest relevant evaluative dimensions; e.g., Downs 1957; Lupia 2006, 227–29; Lupia and McCubbins 1998). On the other hand, psychological work suggests that when constructing opinions, individuals automatically and nonconsciously construct their attitudes based on the dimensions that come to mind (even if they subsequently deliberately reevaluate those dimensions; see Chong and Druckman 2007a). If true, then individuals draw upon accessible frames that drive their opinions, and the frames will have a greater impact than cues. As Lakoff explains, "People think in frames . . . To be accepted, the truth must fit people's frames. If the facts do not fit a frame, the frame stays and the facts bounce off" (2004, 17; also see Bargh 2007, 39; Eagly and Chaiken 1993, 327; Fazio 2000, 14; Kunda 2001, 16; Turner 2001, 68–69). We will test these varying expectations—of whether cues or frames have larger effects (or perhaps they have equal or no effects)—in the context of a political debate where individuals receive both types of information.[2]

Attitude Formation over Time

We also explore how cues and frames affect opinions over time. While scholars recognize the importance of incorporating an over time element in studies of opinion formation (e.g., Gaines, Kuklinski, and Quirk 2007, 6–7), only a few studies have done so. These studies suggest framing and cue effects are short-lived (e.g., de Vreese 2004; Druckman and Nelson 2003;

[1]We recognize that some scholars prefer the term "priming" instead of "framing" when the effect applies to evaluations of politicians and other people. We follow Chong and Druckman who explain that "framing effects and what communication scholars have called priming effects share common processes, and the two terms can be used interchangeably" (2007c: 115; for further discussion, see Druckman, Kuklinski, and Sigelman 2009)

[2]We know of no other study that explicitly studies simultaneous exposure to frames and cues. Related work includes Druckman (2001a), Cohen (2003), Bullock (2007), Slothuus and de Vrees (2007), Chong and Druckman (2007b), Jerit (2008) and Druckman (2010)—each of these studies introduce mixes of information but none directly pit frames against cues (orthogonally, as we do).

O'Keefe 2002, 258; Tewksbury et al. 2000).[3] Yet, the results may conceal individual differences in opinion stability.

When forming their attitudes, individuals tend to do so in either more of an on-line fashion or more of a memory-based fashion (e.g., Hastie and Park 1986; Lodge, Steenbergen, and Brau 1995). In the online process, people immediately integrate the information or frames into an overall evaluative summary, store that summary, and may subsequently not remember the information or frames. When asked to express their attitudes, they simply recall the overall evaluative summary; thus, they are not dependent on their recollection of specific data. Memory-based processors tend to store specific information in their memory and draw on it only when needed, if they can recall the information: "When a judgment is required, individuals retrieve as much of this information from memory as they can, evaluate the individual pieces of information, and then synthesize these 'mini-assessments' into a global evaluation based on that retrieved information . . . . [they are] dependent on recalled information" (Bizer et al. 2006, 646).

Processing mode may play a substantial role in explaining opinion durability—something that has received little attention.[4] Since attitudes formed on-line exhibit greater strength (Bizer et al. 2006), these attitudes may last longer (Bizer et al. 2006, 647; Krosnick and Petty 1995; Tormala and Petty 2001). Briñol and Petty explain that "Because the attitudes of [on-line] individuals are spontaneously accessible, their attitudes would tend to be more stable across contexts, whereas [memory-based processors] are more likely to base their attitudes on whatever information is salient in the immediate environment rather than their prior evaluations" (2005, 583). In short, initial effects on opinions—due to frames and/or cues—are more likely to endure for online processors (also see Togeby 2007). In contrast, memory-based processors will likely draw on whatever comes to mind, which may or may not relate to the information received earlier.

[3]Other studies also suggest short-lived mass communication effects when it comes to trust in government (Mutz and Reeves 2005, 12) and candidate evaluations (Gerber et al. 2007, Mitchell and Mondak 2007). However, see Iyengar and Kinder (1987, 24–26).

[4]Others have explored static variations due to processing mode, but, as Mitchell and Mondak explain, "although on-line processing is dynamic, the core studies reported by Lodge and his colleagues are static . . ." (2007, 12).

Experimental Test

We test the relative impact of cues and frames, over time, in the context of a candidate debate. Prior to asking participants to watch the debate, we provided them with background information, which (for all except those in a control group) included a framing of the campaign and/or a cue (in this case, an endorsement). Participants then watched the debate, after which we assessed the extent to which the frame and/or the cue influenced their evaluations of the candidates. Since participants were randomly assigned to treatment conditions, we can isolate the effects of the frames and the cues on subsequent information processing.

Using a candidate debate enabled us to employ standard election frames emphasizing either issues or images (Druckman, Jacobs, and Ostermeier 2004). Benoit, McKinney, and Holbert explain that "political campaign discourse can address two factors: policy (issues) and character (image)" (2001, 262; also see Popkin 1994). Operationalizing the cue also is straightforward; we simply offer a bipartisan endorsement (Kuklinski and Quirk 2000; Lupia and McCubbins 1998). Another advantage is that we build on and contribute to a growing literature on debate effects, and particularly, the extent to which media coverage of a debate shapes interpretations of the debate (which, in theory, offer an opportunity for unmediated candidate influence; e.g., Fridkin et al. 2007; Hwang et al. 2007).

Participants, Procedure, and Design

We recruited participants from a large university (students and staff) and from the general public by inviting them to take part in a study on political learning at the university's political science laboratory in exchange for a cash payment. A total of 416 individuals participated in the study during the early winter of 2008. This voluntary response sample generally reflected the area population from which it was recruited.[5]

Upon arriving for the study, participants completed a short questionnaire that primarily probed their demographic and political backgrounds. We

[5]Reflecting the population from which it was recruited, the sample is relatively liberal and Democratic. Also, while there are a disproportionate number of student-aged participants (e.g., less than 25 years old), they do not constitute a majority of the sample. We checked and confirmed that student-aged and nonstudent-aged participants did not significantly differ from one another in terms of the experimental causal dynamics presented below.

next told participants that they would read articles and watch a 20-minute debate between two candidates running in the Republican primary for the open seat in the 5th congressional district in Massachusetts. Participants lacked prior knowledge of the campaign, as the study did not take place in Massachusetts; we used a real but unfamiliar campaign to minimize the possibility of pretreatment effects (Gaines, Kuklinski, and Quirk 2007). We provided participants with background information on the candidates and on the race, including pictures of the two candidates, Tom Tierney and Jim Ogonowski. Also, prior to watching the debate, participants read an article, purportedly from the *Boston Globe*, which contained our experimental manipulation.

We randomly assigned participants to receive one of nine versions of the article. Specifically, we varied the frame that participants received, embedding an issue frame, an image frame, or no frame. We also manipulated the cue contained in the article, offering a bipartisan endorsement for Ogonowski, for Tierney, or no endorsement (hence, it is a 3x3 design). The full list of conditions, along with the N for each condition, appears in Table 1.[6] We created the frames by altering the article's title (e.g., "Candidate Differ on the Issues," "Personal Differences Distinguish Candidates") and by including a paragraph at the end that accentuated issues or image (e.g., "Analysts expect the debate to be issue-focused as the candidates differ widely on several key issues, including . . ."). Similarly, we embedded the cues in the title (e.g., ". . . As Ogonowski Receives Endorsement") and a paragraph that stated the endorsement (e.g., ". . . Several other prominent Democrats, as well as the state Republican Party, have also endorsed Ogonowski"). The different versions of the article appear in the appendix.[7]

After reading the article, participants watched the debate in a relaxed setting and then filled out a questionnaire that contained our key dependent variable measure: intended vote choice. Specifically, respondents were asked, "Whom would you have voted for in this election?" with answers ranging from 1 = Ogonowski definitely to 7 = Tierney definitely.[8] Participants also rated their image perceptions (on 7-point scales) of each candidate's knowledge, strength, empathy, and honesty (see Funk 1999); we used these scales to create comparative assessment measures. We restandardized the scales to range from 1 to 7 with higher scores moving in the direction of Tierney. Additionally, respondents reported their own issues positions and their perceptions of the candidates' positions on the four issues covered in the debate: withdrawal from Iraq, preferred governance structure in Iraq (i.e., centralized or provincial), healthcare administration, and taxes. We used the measures to create comparative issue evaluations, on 7-point scales, where a score of 4 indicates equal distance from the two candidates, a score of 7 means a position identical to Tierney's view, and a score of 1 means a position identical to Ogonowski's view.

Once participants completed the postdebate questionnaire, we thanked and compensated them. We also reminded them that they had agreed to participate in a follow-up two weeks later, at which point we reasked them for their vote preference. Nearly 87% of the participants took part in the follow-up, enabling us to evaluate the impact of the frames and the cues over time.

Table 1 Experimental Conditions and Ns

	Ogonowski Cue	Tierney Cue	No Cue
Issue Frame	N = 47	N = 47	N = 41
Image Frame	N = 48	N = 45	N = 45
No Frame	N = 47	N = 48	N = 48

Results

A preliminary dynamic worth noting is that participants exhibited, on average, a relative preference for Tierney on issues and for Ogonowski on images.[9]

[6]We confirmed the success of random assignment across a host of political and demographic variables including (with the number in parenthesis being the probability of there being differences across conditions, as derived by a chi-square test; notice none approach statistical significance): party identification (Pr = .79), ideology (.87), gender (.91), ethnicity (.26), political knowledge (.40), political interest (.84), television news (.22), and participation (.26).

[7]We pretested various elements of the articles, with participants who did not take part in the main study. Pretest participants rated both the *Boston Globe* and the bipartisan candidate endorsement as credible. They also saw no informational or clarity differences between the articles that provided the cues and frames, but did see significant differences in terms of the image article emphasizing images and the issue article emphasizing issues.

[8]This correlates nearly perfectly with a comparative thermometer measure. We opt not to focus on a measure that asks "who won the debate" since our ultimate interest lies in determining vote choice and evaluation and not debate assessments per se.

[9]Across the four issues, we find an average score of 4.06 (standard deviation = .89, N = 413), slightly in favor of Tierney. Looking at the participants' evaluations of the candidates' strength, empathy, and honesty, we find an average score of 3.79 (.86, 414), slightly in favor of Ogonowski (comparing the issue and image averages gives $t_{413} = 5.80$; $p < .01$). We found the same preferences in a pretest with a different group of participants.

This suggests that, all else constant, Tierney relatively benefits from the issue frame (where respondents might place greater weight on issue evaluations) while Ogonowski fares relatively better with an image frame (with greater weight on image evaluations).

These leanings manifest when we directly test the relative effects of the frames and cues on vote preference. We conduct this direct test by regressing vote preference (recall this is on a 7-point scale with higher scores tending towards Tierney) on dummy variables indicating whether the participant received an issue frame, image frame, Ogonowski endorsement, and/or Tierney endorsement. (Of course, in some conditions, participants received both one of the frames and one of the endorsements and are coded as such in the data.[10] We will later, after isolating the direct effects of cues and frames, explore the joint impact of the different mixes of cues and frames offered in the experiment.)

The results, which appear in the first column of Table 2, are clear: the frames substantially shape candidate preferences while the endorsements do *not* have significant effects (although they operate in the expected directions). The issue frame leads to significantly more support for Tierney, while the image frame decreases Tierney's support. This is consistent with the aforementioned theory that frames are fundamental in the construction of opinions, having initial unconscious effects. It raises an intriguing, perhaps surprising, possibility that candidates may benefit more, in terms of direct effects, from frames than from cues.[11] (We will return to the other columns of Table 2 below.)

We further probe for framing effects by regressing, for each framing condition, vote preference on the issue and image evaluation measures. This enables us to evaluate whether the issue (image) frame raised the salience of issue (image) attitudes—which is a common expectation for frames (e.g., Druckman 2001a; Kinder and Sanders 1990). The results, presented in Table 3, provide further evidence of a framing effect. For those exposed to the issue frame (column 3), three of the four issue measures significantly explain vote preference, compared to just one image measure (honesty). In contrast, participants exposed to the image frame (column 4) display no reliance on the issues but significantly invoke all the image perceptions in coming to their vote preferences.[12]

While cues do not have a direct impact on vote preferences, they still matter in a secondary sense. In Figure 1, we present the specific average issue and image evaluations for respondents exposed to the Ogonowski cue (O Cue), no cue, or the Tierney cue (T Cue). The figure includes indications of statistical significance based on comparisons of each cue group with the no cue exposure group.[13] We find that, on issues, there are significant cue effects, in the expected directions, with respondents placing their own issue positions closer to those of the endorsed candidate on health care administration and the government in Iraq, but not on withdrawal from Iraq or tax cuts. On images, cues significantly shift perceptions of the endorsed candidate's leadership skills and knowledge, while perceptions of honesty and empathy are not affected.

Interestingly, the issues on which cues have effects can be construed as "hard issues" insofar as they involve means rather than ends (e.g., how to implement health care reform and how to stabilize Iraq), are relatively technical (e.g., involve specific administrative arrangements), and have not been particularly salient (Carmines and Stimson 1980). In contrast, the issues with no significant cue effects appear to be "easy" (e.g., they involve ends, are not particularly technical, and are fairly salient). We see an analogous dynamic on images, where cues matter on the

[10]The point of comparison in the analysis is the control group, in which participants did not receive a frame or a cue (see Chong and Druckman 2007a, 2007b). All results are robust (and in fact virtually identical) when we include control variables (e.g., party identification, ideology, minority status, sex). All results also are robust if we use an ordered probit model instead of OLS.

[11]This also can be seen by looking at the average scores. The average vote choice score for those exposed to no frame (3.92; 1.84, 143) is significantly different from both the average score for those exposed to the image frame (3.41; 2.03, 138) and the average score for those exposed to the issue frame, 4.39 (2.00, 134) (respectively, $t_{281} = 2.21$; $p < .05$; and $t_{275} = 2.04$; $p < .05$). In contrast, the average score for those exposed to no cue (3.90; 1.87, 134) does not significantly differ from those exposed to the Tierney cue (4.19; 2.13, 140) or the Ogonowski cue (3.62; 1.90, 141) (respectively, $t_{272} = 1.20$; $p < .25$; and $t_{273} = 1.23$; $p < .25$).

[12]To assess the significance of these results, we added interactions between frame exposure and the given issue (image) attitude variable. We find significant differences between the coefficients for Iraq withdrawl, taxes, medicare, leadership, and knowledge.

[13]For presentational clarity, we do not include standard deviations and Ns in the figure. Reading across the graph, the standard deviations and Ns for each mean are: 4.1 (1.6, 142), 4.0 (1.2, 134), 4.3 (1.2, 140), 4.4 (1.6, 142), 4.1 (1.6, 134), 4.3 (1.6, 140), 3.4 (1.6, 142), 3.9 (1.6, 134), 4.6 (1.7, 140), 3.5 (1.3, 142), 3.8 (1.2, 134), 4.4 (1.4, 140), 3.9 (1.0, 142), 3.9 (1.0, 133), 4.0 (1.0, 140), 3.6 (1.0, 141), 3.6 (1.0, 134), 3.7 (1.0, 140), 3.3 (1.3, 141), 3.8 (1.0, 134), 4.4 (1.4, 140), 4.0 (1.3, 141), 4.5 (1.0, 133), 4.9 (1.2, 140).

TABLE 2 Frame and Cue Effects on Voting Preference

Independent Variable	Session 1 All	Session 2 All	Session 2 Memory-based	Session 2 On-line
Dependent Variable: Likelihood of Voting for Tierney (1 to 7)				
Tierney Cue	.28	.96**	1.56**	.39
	(.24)	(.24)	(.30)	(.35)
Ogon. Cue	−.28	−.71**	−1.22**	.06
	(.24)	(.24)	(.29)	(.38)
Issue Frame	.42*	.35	.10	.69**
	(.23)	(.23)	(.29)	(.36)
Image Frame	−.44*	−.39*	−.23	−.72**
	(.23)	(.24)	(.29)	(.37)
Constant	3.91**	3.77**	3.82**	3.71**
	(.21)	(.22)	(.27)	(.33)
R^2	.05	.15	.35	.09
N	415	359	183	172

Note: Entries are unstandardized regression coefficients with standard errors in parentheses.
**$p < .05$; *$p < .10$ two-tail.

performance-based traits of competence and strength that often require more information about the candidates' backgrounds, but not on the interpersonal characteristics of empathy and trust that can be formed on simple visual cues (Druckman 2003; Druckman, Jacobs, and Ostermeier 2004; Graber 2001). These results suggest that cues become important on more complex issues and on image dimensions that are harder to judge (see Cobb and Kuklinski 1997, 94; Lau and Redlawsk 2006, 243).[14]

The direct frame effects on vote preference coupled with the cue effects on particular issue and image evaluations suggest that a candidate benefits most when the frame *and* cue favors him. We explore this in Table 4 by regressing vote preference on dummy variables for each particular experimental condition.[15] The results show the direct frame effect on vote choice stems from two conditions—the issue frame combined with the Tierney cue and the image frame combined the Ogonowski cue. It appears that candidates benefit most when the frame structures attitudes on favorable dimensions (e.g., issues for Tierney) and then the cues help enhance the evaluations on those particular dimension (e.g., the Tierney cue increase

TABLE 3 Issue and Image Effects on Voting Preference

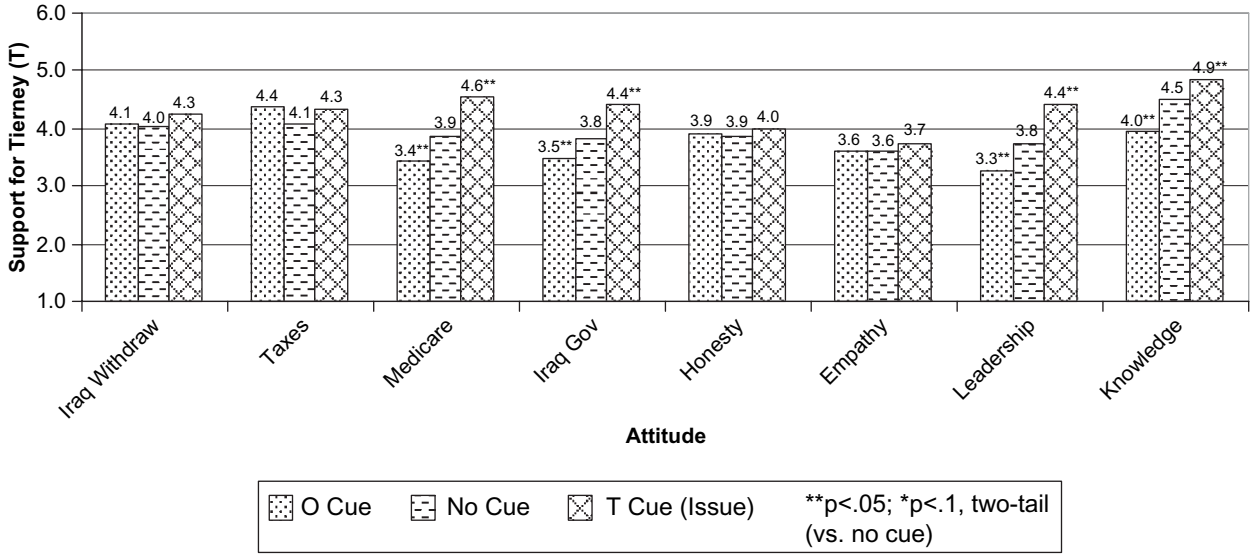
Independent Variable	All	No Frame	Issue Frame	Image Frame
Dependent Variable: Likelihood of Voting for Tierney (1 to 7)				
Iraq	.24**	.25**	.32**	.07
Withdrawal	(.06)	(.10)	(.13)	(.09)
Taxes	.14**	.24**	.20**	−.06
	(.05)	(.07)	(.09)	(.07)
Medicare	.11**	.07	.34**	−.04
	(.05)	(.08)	(.08)	(.07)
Iraq	−.03	−.01	−.12	−.06
Government	(.06)	(.09)	(.09)	(.09)
Honesty	.45**	.41**	.60**	.44**
	(.09)	(.15)	(.20)	(.12)
Empathy	.53**	.60**	.31	.44**
	(.09)	(.14)	(.21)	(.11)
Leadership	.17**	.20**	.01	.36**
	(.07)	(.10)	(.13)	(.10)
Knowledge	.26**	.23**	.06	.42**
	(.07)	(.11)	(.15)	(.10)
Constant	−3.45**	−4.01**	−2.47**	−2.71**
	(.41)	(.76)	(.84)	(.53)
Adjust R^2	.49	.50	.41	.68
N	413	142	134	137

Note: Entries are unstandardized regression coefficients with standard errors in parentheses. **$p < .05$; *$p < .10$ two-tail.

[14]In results available from the authors, we find that political knowledge had no moderating effects.

[15]An alternative analysis would be to add a full set of interactions to the regression reported in the first column of Table 2. If we were to do this, then a participant assigned to the Tierney Cue and Image Frame condition, for example, would be coded as a "1" for the No Frame & Tierney Cue variable, the Image Frame & No Cue variable, and a Image Frame X Tierney Cue interaction variable; in contrast, in Table 4, this participant is coded as "1" only for the Image Frame & Tierney Cue experimental condition variable. The results from a regression that utilizes the interaction approach yields virtually identical results to those reported in Table 4.

FIGURE 1 **Attitude Averages**



issue evaluations which then affect vote choice when coupled with the issue frame).[16] This suggests that while frames directly matter, cues also matter when the relevant evaluative dimensions is established (e.g., by a frame).

Over Time Results

We next explore what happened to participants' opinions over time. Recall participants completed a survey two weeks after the initial session, where they answered the same main dependent variable question regarding the relative likelihood of voting for either candidate. We expect that the effects found at the first session will sustain for online processors but not for memory-based processors. To distinguish online processors from memory-based processors, we use the well-established "need to evaluate" individual difference measure (e.g., Bizer et al. 2004, 2006; Briñol and Petty 2005, 582–83; Federico and Schneider 2007; Jarvis and Petty 1996; Tormala and Petty 2001).[17] Following others, we labeled those who scored below the median as "memory-based" processors (N = 172), and those above the median as "online processors" (N = 183; e.g., Druckman and Nelson 2003; also see Krosnick and Brannon 1993; McGraw and Dolan 2007, 311–12; Miller and Krosnick 2000, 305).[18]

We test for over time effects by regressions the session two vote preference measures on dummy variables indicating whether the participant received the Tierney cue, the Ogonowski cue, the issue frame, and/or the image frame (at session one). The results appear in the last three columns of Table 2. The second column, with all respondents, shows that the

[16]This is suggestive of a mediational process whereby the cues have an indirect effect on vote choice via the issue and image specific evaluations. Further analyses available from the author are consistent with this possibility; however, it is not possible to offer definitive evidence along these lines given our experimental design (see Bullock, Green, and Ha 2007; also see Rosenbaum 1984).

[17]We recognize that the need-to-evaluate measure is an indirect proxy for processing mode. There is, however, evidence that it strongly correlates with processing mode (McGraw and Dolan 2007, 312; Tormala and Petty 2001; also see, e.g., Federico and Schneider 2007, 226; Holbrook 2006, 344). The measure also reflects a "stable dispositional characteristic of individuals" across contexts and time and is "distinct from various frequently studied personality traits" and political characteristics such as ideology and knowledge (Bizer et al. 2004, 999). That said, we encourage future work to employ alternative and perhaps more direct operationalizations of processing mode (see, e.g., Hastie and Park 1986; McGraw and Dolan 2007). Our specific measure consists of three items that ask individuals whether they tend to have opinions about most things, whether they tend to have more opinions than other people, and whether they tend to have definite opinions or remain neutral (alpha = .75; a selection of these items have appeared on the American National Election Studies survey since 1998) (see Bizer et al. 2004 for wording).

[18]The Ns only include participants who took part in the follow-up.

TABLE 4 Experimental Condition Effects on Voting Preference

Independent Variable	
Dependent Variable: Likelihood of Voting for Tierney (1 to 7)	
Issue Frame & Tierney Cue	.98**
	(.40)
Issue Frame & Ogonowski Cue	.43
	(.40)
Issue Frame & No Cue	.05
	(.41)
Image Frame & Tierney Cue	−.03
	(.40)
Image Frame & Ogonowski Cue	−1.15**
	(.39)
Image Frame & No Cue	.14
	(.40)
No Frame & Tierney Cue	.13
	(.39)
No Frame & Ogonowski Cue	.12
	(.28)
Constant	3.83**
	(.28)
R^2	.05
N	415

Note: Entries are unstandardized regression coefficients with standard errors in parentheses. $^{**}p < .05$; $^{*}p < .10$ two-tail.

frames become less or completely insignificant while both cues become highly significant. These results suggest some fading of the frame impact (consistent with the aforementioned studies on fading) and a somewhat surprising lagged cue effect.

The next two models differentiate memory-based and online processors, respectively. The results are striking. The frames have no effect on memory-based processors, yet to a large extent, these individuals base their session two opinions on the cue that they had previously received. This is the first evidence of a direct cue effect. In contrast, the last model shows that online processors continue to be influenced by the frames they received while the cues still have no effect.[19]

These results suggest that the initially significant framing effects sustain for online processors but not for memory-based processors. They also suggest an intriguing dynamic for memory-based processors. Presumably, these individuals experience attitude decay (Priester et al. 1999, 28), and when asked for an evaluation at a later time, they construct largely novel opinions. For the second evaluation, they base their opinions on the cues that they received, a process that is substantially more feasible and expedient than creating an evaluation based on recalled information about issues, images, or both.[20]

We present the substantive impact of the cues and frames over time in Figures 2 and 3. In Figure 2, we focus on the average percentage increase in the likelihood of voting for Tierney for those exposed to the Tierney cue compared to those exposed to the Ogonowski cue (i.e., on the 1–7 scale, we report the percentage difference in opinion between the two cue groups).[21] In short, the percentages can be seen as a measure of the substantive impact of receiving one (Tierney) cue instead of the other (Ogonowski). The figure reports these percentages for all respondents, memory-based processors, and online processors, at the first session and the second session.

The figure accentuates the dramatic differences at the two points in time. At the first session, respondents (both online and memory-based processors) exhibit a roughly 10% difference in opinions due to the cue received. However, at second session, the memory-based processors exhibit a staggering difference of 46% while the online processors show only a 5% change. Figure 3 presents analogous figures based on frame exposure (focusing on the percentage difference in opinion between the issue and image frame groups). We see initial effects of roughly 15% across groups, and then a dispersion at second session such that the framing effects sustain for on-line processors (and increase to 21%), while nearly disappearing for memory-based processors (to 5%).

Conclusion

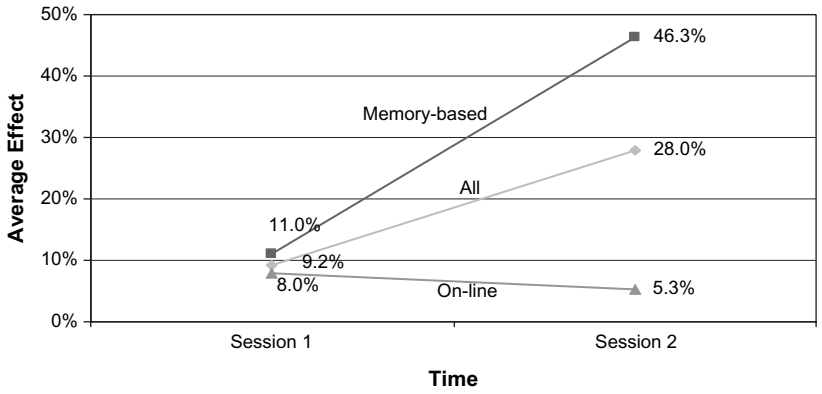
The last quarter-century of research on public opinion formation demonstrates that mass communications can

[19]To test whether the differential cue and framing effects reported between memory-based and online processors are significant, we ran the model with all respondents and added interactions between processing mode and each cue and frame. All differences are significant when the interactions are added one at a time, and all except the image frame variable, are significant when all interactions are added to a single model (which leads to a high level of multicollinearity).

[20]This appears to be a type of sleeper effect (e.g., Kumkale and Albarracin 2004); however, instead of the conventional sleeper effect where the content of a message plays a larger role later in time, we see the (credible) cue exerting the later effect.

[21]For example, for all respondents, those exposed to the Tierney cue at the first session report an average score of 4.18. Those exposed to the Ogonowski cue at the first session report an average score of 3.63, which is 9.17% lower than 4.18 (on the 7-point scale). Note that the figures thus report differences between cue (or frame) conditions, which contrasts with prior analyses that use the control group as the point of comparison.

FIGURE 2 Cue Effects Over Time

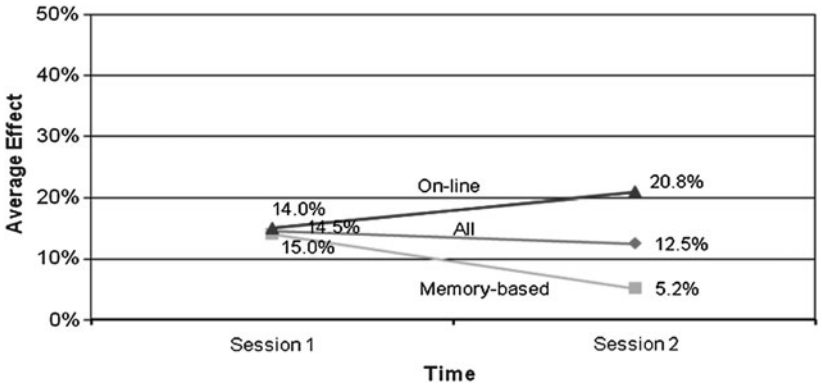


shape opinions, particularly via frames or cues. Given the inherently competitive nature of politics, we find it surprising that virtually no extant research addresses the issue of how citizens respond to competing frames and cues over time. Our study provides a blue-print of how to explore these dynamics. It does so by (1) pointing to alternative theories of cues and frames, (2) offering an approach to studying over time opinion formation, and (3) presenting (and implementing) an experimental design to explore cues and frames.

We find that, initially, only frames have direct effects, with cues exhibiting secondary influences on particular evaluations (i.e., on evaluative dimensions that are challenging). Over time, online processors exhibit opinion stability, indicating that the frames that initially shaped their opinions continue to do so later on. In contrast, memory-based processors reconstruct their opinions at the later time, relying on the easily recalled cues. These findings suggest that processing mode is a promising avenue for those interested in understanding over time opinion formation.

The results accentuate the importance of incorporating competition between different types of communications in public opinion research, while also looking at how cues and frames matter over time. The typical study of communication effects offers individuals a single frame or a single cue at one point in time (although see Chong and Druckman 2007b; Jerit 2008; Sniderman and Theriault 2004). That such stimuli tend to immediately affect opinions may provide limited insight into the actual dynamics of opinion formation. For example, an effective endorsement in one experiment (e.g., one where hard issues are highlighted) may not matter in another context if an effective frame reduces the impact of certain dimensions in favor of others. Alternatively, a frame that appears strong initially may fade for certain individuals while cues that appear weak at first may

FIGURE 3 Frame Effects Over Time



reemerge later. In short, ignoring competition and time can cause analysts to miss the complete story when they study the effects of different types of communication.

The finding that frames initially have a larger effect is intriguing given the common emphasis on providing cues and information to voters; it is possible that, under some conditions, voters are affected more by the dimensions of evaluations that are introduced. Our study also has implications for those interested in debate effects: while scholars have recognized the potential impact of predebate commentary on shaping debate expectations and evaluations, the near-exclusive focus of this work concerns endorsements or assessments of candidates' debating abilities. Our research suggests that how news coverage frames the critical elements of the debate are of considerable importance.

Perhaps most important is our framework for exploring competing communications over time. Hopefully, others will build upon our approach, relaxing aspects of our study that may condition our results. For example, we focused on a debate with unfamiliar candidates; future work can use different samples of participants and explore alternative scenarios, such as better known candidates or issue opinions instead of candidate evaluations. It may be that our frames were simply stronger (e.g., more compelling) than our cues. Issue and image frames offer fairly distinct representations, and other types of frames (see de Vreese, Peter, and Semetko 2001, 108–09) may not have as notable of an effect, in the presence of competing cues. It also remains to be seen whether frames would maintain their direct impact in the presence of partisan cues (i.e., instead of a bi-partisan endorsement, the cues could be from one party or the other), or other types of cues (e.g., visual features, stereotypes). More generally, it would be interesting to investigate the impact of clearly noneffective cues or frames in combination with effective ones (see Chong and Druckman 2007a, 2007b, 2007c), and/or opinion formation in settings where individuals could choose from among alternative information sources (e.g., were not so captive). Future work needs to move towards the identification of the conditions under which one type of communication (e.g., cues) has an effect when it competes over time with alternative types of communications (e.g., frames)—it is this type of environment that defines many political situations.

Finally, our findings also have implications for theorists concerned with the use of cues as a substitute for learning about candidates in detail, since we have found that over time, endorsements can override both issue and image considerations for memory-based processors. Their reliance on cues at session two may indicate that memory-based processors are choosing a different candidate than they would choose with more information, an outcome that some would term voting "incorrectly" (e.g., Lau and Redlawsk 2006; Lupia 1994). At the same time, online processors appear to retain their original preferences, with most of them choosing the candidate they had selected when they were exposed to the information contained in the article and debate. Greater knowledge of how competing communications influence both types of processors over time will enhance our understanding of the normative implications of political communication for democracy.

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Appendix

Experimental Stimulus[22]

Candidates to Debate Tonight [As [Ogonowski/Tierney] Receives Endorsement]

OR

Candidates Differ on the Issues [As [Ogonowski/Tierney] Receives Endorsement]

OR

Personal Differences Distinguish Candidates [As [Ogonowski/Tierney] Receives Endorsement]

By April Simpson, Globe Staff | August 30, 2007

The Boston Globe Boston, Mass.-Even though Democratic lawmakers have held the 5th Congressional District seat for more than three decades, two Republican hopefuls in the race are confident that this could be their party's year.

A Democrat has represented the district since Paul Tsongas won the seat in 1975. Outgoing Congressman Marty Meehan has held the seat for the past 14 years. While Meehan has left the office to become the chancellor of the University of Massachusetts at Lowell, a slew of candidates are eyeing the Oct. 16

[22]This version contains all variations of the article. The titles by condition are hopefully evident, and the variations in text, across conditions, are noted.

general election to fill his post. So far, two of the front-runners are Republicans: Tom Tierney of Framingham and Jim Ogonowski of Dracut. The two will face one another in a Sept. 4 primary.

Jim Ogonowski is a hay farmer and a retired Air Force officer who took over the family farm after his brother was killed on 9/11 when he was the pilot of American Airlines Flight 11. His challenger, Tom Tierney, is a 64-year-old actuary who, other then his time in Marine Corps, has spent his entire life in Massachusetts.

Ogonowski and Tierney will square off one more time before the primary in a NECN-TV debate tonight on NewsNight with Jim Braude at 7 p.m. The campaign has recently attracted substantial attention . . .

No Cue Conditions: . . . and candidates continue to vie for endorsements from key political players.

OR

Cue Conditions: . . . because, somewhat surprisingly, Meehan, the departing representative, came out in support of [Ogonowski/Tierney], even over the candidates from his own Democratic party. Several other prominent Democrats, as well as the state Republican Party, have also endorsed [Ogonowski/Tierney].

No Frame Conditions: Analysts expect the debate to be an exciting exchange. Indeed, longtime Massachusetts political observer, Michael Carlson explained, ''This will be an important debate that will reveal a lot about the candidates.''

OR

Issue Frame Conditions: Analysts expect the debate to be issue-focused as the candidates differ widely on several key issues, including the war in Iraq and healthcare reform. Indeed, longtime Massachusetts political observer, Michael Carlson explained, ''This election is about the issues such as the war and healthcare—the voters need to determine who will put their preferences into action.''

OR

Image Frame Conditions: Analysts expect the debate to accentuate the personal differences between the candidates. Indeed, longtime Massachusetts political observer, Michael Carlson explained, ''The candidates share similar outlooks on the issues, but they substantially differ in terms of their backgrounds and capabilities. This election is about the candidates' personal strengths and weaknesses.''

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