Cognitive Biases and the Strength of Political Arguments*

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Abstract

Competition in political debate is not always sufficient to neutralize the effects of political rhetoric on public opinion (Chong and Druckman 2007). Yet still little is known about the factors that shape the persuasiveness of political arguments. In this paper, I consider whether cognitive biases influence the perceived strength of political arguments, making some arguments more persuasive than others. I develop a theoretical framework that draws on lessons from neurobiology and recent political psychology research on emotion, and test its implications using data collected from an experiment. The results suggest that individuals are more likely to be persuaded by political arguments that evoke cognitive biases even in the face of a counter argument. I conclude with some thoughts about the normative implications of these empirical findings and potential avenues for future research.

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The normative prescription underlying most empirical research on representation and democratic responsiveness places public opinion causally prior to the actions of political representatives. If anything, though, the past 60 years of research on the topic leaves much uncertainty around whether the causal arrow either does or can point from the public to elites. Americans tend to be uninformed about political issues and are generally uninterested in becoming more informed (e.g., Delli Carpini and Keeter 1996). Because many Americans only give cursory thought to current issues, they have at best weak preferences over policy means (Popkin 1991). As a result, policy opinions often can be easily swayed with arbitrary changes in the presentation of an issue (e.g., Nelson 2004; Nelson, Clawson, and Oxley 1997). To make matters worse, the malleability of public opinion raises the possibility that political elites are able to structure the agenda and employ crafted rhetoric to manipulate public opinion, reversing the causal arrow from elites to the public (Bartels 2003; Entman 1993; Jacobs and Shapiro 2000; Schattschneider 1960).

A compelling response to this concern contends that the structure of democratic competition neutralizes the effects of crafted political rhetoric. Although most evidence of communication effects come from studies that employ one-sided appeals, citizens in a democracy generally observe dueling rhetoric deployed by competing elite factions. By studying arguments in isolation from one another, scholars have focused on those situations in which political rhetoric is likely to have the largest effect (Brewer and Gross 2005; Sniderman and Theriault 2004). When there is elite competition, the effects of opposing political arguments may counteract, making it difficult for any elite faction to gain an advantage in shaping public opinion (Druckman 2004; Druckman and Nelson 2003; Zaller 1992).

Yet even so, as Dennis Chong (1996, 222) points out, “Certain frames of reference are

easier to promote than others because the public is already predisposed to give priority to some dimensions over others." If this is the case, it suggests that on some issue debates, there is no guarantee that balance in elite discourse neutralizes the effects of political rhetoric across all conditions and all individuals. Indeed, in their most recent study, Chong and Druckman (2007) demonstrate that stronger arguments do a better job moving opinion in the direction advocated by the message even in competitive situations. Consequently, if we wish to understand better the capacity of political rhetoric to shape public opinion, we must consider the conditions under which some people perceive arguments to be stronger than others *even in the face of a competing message*.

Understanding what makes some arguments stronger than others has bedeviled students of rhetoric for millennia, and despite the fact that argument strength occupies a central position in information processing theories of persuasion (e.g., Petty and Cacioppo 1986), scholars still understand little about the factors that shape argument strength (Areni 2003; Hosman, Heubner, and Siltanen 2002). Rather than taking on this weighty question in its entirety, I start by looking at a class of appeals that may be particularly effective. Psychologists working from different research traditions have identified a number of biases in cognitive processing where people privilege particular courses of action over others. Individuals tend to opt for the sure thing rather than taking a gamble, avoid losses rather than pursuing gains, and harbor a deep suspicion of outsiders while giving the benefit of the doubt to their compatriots. Because these cognitive biases manifest across disparate decision settings and cultures, there is reason to believe that they were acquired through the process of natural selection as adaptive responses to dilemmas faced by our ancestors, and thus, form a fundamental aspect of human nature (Haselton and Buss 2003).

Accordingly, it seems appropriate to consider the effects of cognitive biases on political decision making. Scholars have already paid considerable attention to their influence on the mass public's evaluation of policy proposals (e.g., Quattrone and Tversky 1988) and the judgments of policy elites (e.g., Jervis 1989; Tetlock and Lebow 2001). My concern here is whether cognitive biases affect the perceived strength of political arguments. To put the question simply, is a political argument more persuasive if it frames a problem and its proposed solution in a way that resonates with people's cognitive biases?

In answering this question, I use as a starting point two prominent cognitive biases – loss aversion and ingroup bias. Recent work in neurobiology shows that stimuli designed to induce cognitive biases only leads to biased processing in individuals who also experience increased neural activity in brain regions that are associated with feeling fear (e.g., Kuhnen and Knutson 2005). Considered in light of unconnected work in political psychology that shows fear to increase people's openness to persuasion (Marcus, Neuman, and MacKuen 2000), I contend that bias-congruent arguments only have an advantage over counter arguments when they evoke a fearful response that activates the underlying bias in cognition and leads individuals to see the bias-congruent argument as more relevant (and, thus, persuasive) than the counter argument. Experimental data support this thesis, suggesting that fear-appeals may enhance the persuasiveness of some classes of arguments vis-a-vis others. Moreover, the findings demonstrate that under certain conditions fear responses can lead to risk acceptance, which is contrary to the accepted wisdom (Huddy et al. 2005; Lerner et al. 2003; Meijinders, Midden, and Wilke 2001).

The Powerful Influence of Cognitive Biases on Human Decision Making:

The Cases of Loss Aversion and Ingroup Bias

Rather than making decisions by soberly weighing competing alternatives, people's choices often reflect contextually-dependent predispositions for particular solutions. Because individuals maintain these preferences even when rationality plainly points to a more optimal choice, many psychologists dub these proclivities cognitive biases (Shafir and LeBoeuf 2002). Psychologists have identified a long list of cognitive biases, and it is not possible to consider all of them here (cf. Kahneman and Tversky 2000). Consequently, I focus on two prominent ones: loss aversion and ingroup bias.[1] Both of these cognitive biases have received a great deal of attention across a wide range of social science literatures. Moreover, the implications of their effect on political communication have not gone without comment. Cobb and Kuklinski (1997) speculate that individuals are predisposed to accept the recommendations of political arguments when they emphasize avoiding losses rather than realizing gains (see also Jerit 2008). Likewise, playing up an outgroup threat is a potent rhetorical tool for political elites seeking to gain or maintain power, because "ingroup interests have greater legitimacy than appeals to personal self-interest" (Brewer 1999, 438). Green, Glasser, and Rich's (1998) supposition that organized displays of racial animosity, such as lynchings, are less likely to occur without political elites fanning the flames of racial intolerance implicitly makes the assumption that people are particularly susceptible to appeals that emphasize outgroup threat – so much so, these appeals are capable of moving people to undertake costly collective action.

While completing their seminal work on prospect theory, Tversky and Kahneman (1981)

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[1]Yet there is no reason to suspect that the theoretical framework developed here would not apply to other cognitive biases.

discovered that people are willing to take risky action if they believe it might avert taking a loss. In a now famous experiment, they presented nearly identical problems to two different groups of subjects. In both, subjects were confronted with the prospect of an "unusual Asian disease" outbreak killing 600 people and asked to choose between two alternatives devised to fight the disease. Here is where the decision problem diverged for the two experimental groups. One group was told that Program A would "save" 200 people with certainty, while Program B would save everyone with one-third probability or save no one with a two-thirds probability. For the other group, the choices were framed in terms of number of individuals who are expected to die: in Program A, 400 people would die and in Program B there is a chance that no one would die. This subtle difference in the presentation of alternatives caused subjects to make drastically different choices. Even though both choice sets are logically equivalent, subjects who thought about the problem in terms of relative gains (i.e., the "saved" condition) overwhelmingly picked the seemingly less-risky sure-thing in Program A, while subjects who thought of it terms of relative losses (i.e., the "die" condition) overwhelmingly chose to take a gamble on Program B.

People also have a predilection to form psychological attachments to social groups of which they are members and harbor suspicion of outgroup members (e.g. Brewer 1979). Although individuals are certainly capable of putting these suspicions aside to amicably engage with others outside their ingroup, people can quickly circle the wagons in the face of a real or perceived threat from an outgroup (e.g., Sherif 1966; Tajfel 1981). In the context of intergroup conflict, ingroup cohesion grows and resources are devoted to repelling the threat. People have a penchant to behave in this fashion even in experimental settings where groups are constructed randomly and on a trivial dimensions (cf. Tajfel 1978).

The Evolutionary Basis for Loss Aversion and Ingroup Bias

Why does loss aversion and ingroup bias exercise such a powerful influence on human decision making? Recent research in evolutionary psychology suggests that their power may derive from the fundamental position they occupy in human nature. Because some errors are more costly than others (e.g., it is less costly to mistake a non-poisonous snake for a poisonous one than the obverse), it is possible that many observed cognitive biases were selected during human evolution to reduce the overall cost of cognitive errors rather than the number (Haselton and Buss 2000, 2003). Considered in this light, these biases in cognition are actually adaptive solutions designed to address common challenges faced by our ancestors, such as warding off threats and finding food, shelter, and mates.

Compelling evidence advances the claim that both loss aversion and ingroup bias are adaptive cognitive biases, making them fundamental characteristics of human behavior. Since Tversky and Kahneman's discovery, a multitude of studies conducted across a wide range of situations find that humans loath losses more than they enjoy gains (Camerer 2003). A built-in preference against losses makes sense in the context of human evolution in which our distant ancestors lived in a subsistence economy where even small losses threatened their chances of survival (McDermott, Fowler, and Smirnov 2008). In such an environment, erring on the side of avoiding losses would be a more successful survival strategy than erring on the side of pursuing gains. Recent brain imaging studies find that the anticipation of losses activates a different region of the brain than the anticipation of gains, leading people to alter their tolerance for risk taking in ways that increase their chances of avoiding losses even at the expense of missing out on potential gains (e.g., Kuhnen and Knutson 2005). Because our neural architecture is largely the product of evolution, these findings bolster the view that loss aversion is an adaptive trait.

People's love of their ingroup and leeriness of outgroups is also likely a product of natural selection. Because humans lack physical characteristics, like thick fur or claws, that would allow us to successfully live in solitude, group living is an imperative for humans to survive and reproduce (Hibbing and Alford 2004; Brewer 1997; Caporael 1997). Consequently, humans must cooperate with others to obtain sustenance and ward off external threats. Yet as nearly 50 years of scholarship demonstrates, cooperation presents a dilemma not just a benefit, because it requires individuals to extend trust to others without full knowledge that the favor will be returned. It turns out that evolution selected a number of psychological mechanisms to solve this dilemma, and one of these mechanisms is social differentiation (Insko, Schopler, and Sedikides 1998; Navarrete, Fessler, and Eng 2007).[2] As Brewer (1999, 433) explains, "By limiting aid to mutually acknowledged ingroup members, total costs and risks of nonreciprocation can be contained." Accordingly, the human brain appears to be hardwired to automatically encode whether other individuals are members of socially defined ingroups and outgroups (Kurzban, Tooby, and Cosmides 2001).

Why Would Cognitive Biases Enhance the Persuasiveness of Certain Messages?

The argument advanced here is that appeals to loss aversion and outgroup threats bias the manner in which people process political messages. Yet individuals are not always motivated or capable of investing much cognitive energy into processing messages (i.e., "systematic processing" in Chaiken, Liberman, and Eagly 1989 or "central route" processing in Petty and Cacioppo 1986). Aside from situational factors (e.g., the presence of distraction during message processing) and personal characteristics (e.g., a preference for effortful thinking), recent research

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[2]Another mechanism that is beginning to receive more attention from political scientists is reciprocal altruism (Hibbing and Alford 2004). In short, people possess an innate willingness to cooperate but will bear the costs of punishing those who take advantage of their trust.

has shown that when individuals are confronted with two competing arguments, as they often are in political settings, it motivates them to consciously evaluate and reconcile the opposing considerations (Druckman 2004; Kuklinski et al. 2001).

Once individuals are motivated to scrutinize the arguments presented in a message, perceptions of argument strength are influenced by the availability, accessibility, and applicability of considerations raised by the competing arguments. To the extent that the considerations are both available and accessible in the memory and viewed as equally applicable to the problem at hand, the effects of the competing arguments will cancel out. Conversely, if one argument raises considerations that are deemed more applicable (by those evaluating the competing arguments) than the opposing argument, then individuals will tend to judge this argument to be more persuasive (Chong and Druckman 2007, 640). Because cognitive biases are deeply ingrained (and possibly hardwired), considerations that are consistent with them are likely to be both available and accessible. Moreover, there are two interrelated reasons to expect that individuals view bias-congruent arguments as more applicable than bias-incongruent arguments. First, individuals are not always motivated to evaluate arguments in an objective fashion (Petty and Cacioppo 1986). Second, individuals form attitudes to aid in the attainment of particular psychological and survival goals (Clary et al. 1995; Shavitt 1990). Consequently, people may be motivated to view arguments that recommend action in line with an underlying cognitive bias as more applicable than other arguments, because bias-congruent arguments advocate adopting an attitude that matches the functional basis for holding the attitude – e.g. avoiding losses or other threats to survival.

Evoking a Response: The Moderating Role of Emotion

However, the prevalence of loss aversion and ingroup bias and the evolutionary foundation underlying these cognitive biases only provide a necessary condition for the expectation that the persuasiveness of message is enhanced by invoking them. In order to fulfill the sufficient condition, the persuasive message must evoke a response from individuals, leading them to see (or, perhaps more accurately, feel) the connection between its content and the cognitive bias it is attempting to elicit. Because the human mind is "a crowded zoo of evolved, domain specific programs," emotions act as "superordinate programs" that coordinate the interplay of sometimes conflicting automatic and controlled cognitive processes (Cosmides and Tooby 2004, 91-92). Recent work in neurobiology shows that fear plays an important role activating cognitive biases (Williams et al. 2007). For instance, when anticipating a loss is associated with activity in brain regions that trigger anxiety, people are more likely to choose strategies designed to minimize their losses (Breiter et al. 2001; Kuhnen and Knutson 2005). In the absence of a fear response, people are not more likely to behave in a loss-averse fashion. Likewise, perceived threat from an outgroup evokes fear and motivates individuals to take protective measures (Cottrell and Neuberg 2005). Fear, then, may be the key that unlocks certain biases in cognition.

Placing this insight in the context of the affective intelligence model (Marcus, Neuman, and MacKuen 2000) provides a useful foundation on which to theorize about the way in which emotion moderates the influence of political messages. According to the affective intelligence model, emotions provide a feedback loop that helps direct and focus cognition on pressing concerns. When humans feel enthusiasm, the brain's emotional system is sending the signal that their behavior is helping obtain a desired goal (e.g., survival), and in doing so, reinforces a

preference for repeating the behavior. In contrast, fear sends the signal that a potential threat is present and needs to be dealt with. It interrupts habitual routines and activates cognition directed at finding alternative solutions. Accordingly, political messages that induce fear cause individuals to be more open to the messages' recommendations (Brader 2005, 2006; Marcus, Neuman, and MacKuen 2000; Marcus et al. 2005). When the fear response is associated with the activation of cognitive biases, for reasons discussed above, bias-congruent messages should be viewed as more persuasive.

The foregoing discussion, then, suggests that while bias-congruent messages may win the day even when they are confronted by counter-arguments that are equally available in the information environment, there is no guarantee that they will. The power of bias-congruent messages lies in their ability to activate the desired cognitive bias in the minds of recipients. Accordingly, individuals who react with fear to a message that includes a bias-congruent argument are more likely to adopt an issue position that is congruent with the bias-congruent argument's recommendation, which I call the *bias-matching thesis* for shorthand. I test the bias-matching thesis with a randomized experiment in which subjects read mock newspaper accounts of political issues that were designed to activate loss aversion or ingroup bias. Newspaper accounts framed the issue in ways that were consistent with the relevant cognitive bias, inconsistent with the cognitive bias, or it presented both arguments. A more in depth description of the experimental design and data are discussed in the next section.

Study Design

Participants

In the spring of 2006, I recruited 210 individuals to participate in a study on "preference formation," for which they were compensated $5.00. Most of the subjects were students at a

large urban university in the Northeast, but a handful (n = 10) were drawn from the broader community. The sample is by no means representative of the broader population, but it is quite diverse. The average age is 23 (sd = 5.2, min = 18, max = 61) with 18.3 percent of the subjects reporting their racial identity as black or African-American, 61.5 percent as white, 7.2 percent as Asian, and the rest as Latino/a or other as well as a wide range in family income.[3] Of the students in the sample, 19.4 percent are freshman, 20.9 percent are sophomores, 38.8 percent are juniors, 19.4 percent are seniors, and 1.5 percent are graduate students.[4] In terms of political attitudes, 33.7 percent identify as Democrats, 15.4 percent as leaning Democrat, 20.2 percent as Independents, 11.1 percent as leaning Republican, and 7.7 percent as Republicans (the remaining subjects identify with a third-party or say they "don't know"). A randomization check shows that these subject characteristics do not jointly predict treatment assignment ($\chi^2[84] = 75.41$, $p = 0.737$).[5]

Procedure

Subjects were asked to read a few newspaper articles and answer survey questions. The newspaper articles were about a political issue and were attributed to the *New York Times* online edition, but were actually developed by me. The newspaper articles were made to look exactly like an article printed from the *New York Times* website and the order in which they appeared

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[3] The breakdown of the family income item is as follows: under $15,000 (5.34 percent), $15,000-$25,000 (5.83 percent), $25,000-$35,000 (8.25 percent), $35,000-$50,000 (16.5 percent), $50,000-$65,000 (9.22 percent), $65,000-$80,000 (19.42 percent), $80,000-$100,000 (14.08 percent), and above $100,000 (21.36 percent).

[4]None of the graduate student subjects were studying political science or psychology.

[5]I checked the integrity of the randomization by regressing treatment assignment on the observable covariates using a multinomial logit estimator. The full results are available from the author upon request.

was randomized, following Druckman and Nelson's (2003) protocol. Subjects were assigned to one of four conditions. In the *bias-congruent* condition, subjects (n = 50) read articles framed in a way consistent with a particular cognitive bias (loss aversion or ingroup bias), and in the *counter-argument* condition, subjects (n=50) read articles framed in a way that was counter to the cognitive bias. Subjects read both arguments in the *competing arguments* condition (n = 60). In this condition, the arguments were randomly rotated so that in half of the cases, the bias-congruent argument was presented first and in the other half, the counter argument was presented first. The remaining subjects (n = 50) were assigned to the control group where they were only asked to complete the survey. See Reviewers' Appendix 1 for a detailed description of the experimental stimuli.

Drawing on the well-known Kahneman and Tversky (1981) Asian disease experiment, I primed loss aversion by presenting subjects with a news story about recent concern over the Asian bird flu spreading to humans and sparking a global flu pandemic. The article focuses on whether scientists should stockpile an existing flu vaccine that will innoculate some people with certainty or divert money into the more risky endeavor of developing a vaccine that may, if successful, innoculate everyone. Because the article presented the possibility of a bird flu pandemic as a relative loss (i.e., "... could cost the lives of millions of Americans") the more risky choice (diverting funds to develop a new vaccine) is the loss-averse response (cf. Kahneman and Tversky 1981). Subjects in the bias-congruent condition, read a one-sided argument in support of the risky choice, and to maximize its similarity to the original Asian disease experiment, the risk-averse stockpiling option was framed negatively (i.e., "... if the government puts money into stockpiling known vaccines many will still *die* in the event of a flu outbreak." In contrast, those in the counter-argument condition, read a one-sided argument in

support of the risk-averse choice and it was framed more positively ("...some lives will be *saved* ..."). Finally, subjects in the competing arguments condition were presented with both arguments and, thus, saw both frames ("...some lives will be saved and many will still die...").[6]

Outgroup threat was primed with a news story about government spending. The one-sided argument in the bias-congruent condition emphasized the need to spend more money on screening for bombs in shipping containers to defend against a terrorist threat, while the one in the counter-argument condition emphasized the need to freeze new government spending in order to avert an economic crises. The article in the two-sided argument condition presented both arguments. In order to avoid activating outgroup threat in the counter-argument condition, the one-sided article makes no mention of terrorism, offering an indirect rebuttal to the bias-congruent argument (cf. Jerit 2008). Given the consistent reference to the threat of terrorism in the rhetoric of Republican elites, deficit reduction was purposely chosen as a counter argument to reduce the degree to which terrorism merely elicits a partisan response in the competing arguments condition.

Measures

After reading each article, subjects answered a number of questions that form the basis of key measures. For the dependent variables, subjects responded to items about their opinion on the issue addressed by the article and the persuasiveness of the arguments presented in the article. The opinion item for the flu vaccine issue read, "To prepare for a possible flu pandemic, should the government spend money on stockpiling existing vaccines or on developing a better one?" Subjects answered this question on a 7-point scale with 1 = "stockpile existing vaccines"

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[6]Reyna and Brainerd (1991) replicated the Asian disease experiment after replacing the numerical information with words that give the gist of the quantities (e.g., "some" and "many").

and 7 = “develop better vaccine.” The opinion item for the government spending issue read, “Should the U.S. government spend more on screening cargo at U.S. ports even if it means increasing the budget deficit?” Answers were also placed on a 7-point scale for this item with 1 = “strongly disagree” and 7 = “strongly agree.” See Reviewers’ Appendix 2 for the question wording of all measures.

The persuasiveness items all began with the same wording, “How persuasive did you find the argument in this news article for____?” For the bias-congruent condition, the rest of the question read, “developing a new vaccine” after the bird flu article and, “increasing government spending on port security” after the government spending article. For the counter-argument condition, “stockpiling existing vaccines” completed the question after the bird flu article and “freezing spending to control the budget deficit” completed the question after the government spending article. Subjects in the competing arguments condition were asked both sets of questions, and subjects in the control group, since they did not read any articles, were not asked the persuasiveness questions. Like the opinion questions, the persuasiveness items were placed on a 7-point scale with 1 = “not at all persuasive” and 7 = “very persuasive.”

I also measured subjects emotional reactions to the articles by asking them to rate the degree to which they felt a list of emotions while reading the article. Although the primary interest here is the moderating effects of fear, subjects were asked to rate their feelings with respect to a number of emotional referents in order to mask the aim of the study (specifically: fear, anxiety, anger, happiness, and relaxed). Admittedly, self-reported measures of emotion are incomplete indicators. Because people feel before they think, it is possible for stimuli to evoke affective responses that are not consciously registered and, yet, have behavioral effects (Marcus, Neuman, and Mackuen 2000, 39-41).

Nevertheless, carefully constructed self-report items can provide a meaningful marker of emotions that do reach the level of consciousness. Accordingly, the measures were constructed in light of prevailing best practices (cf. Marcus, Neuman, and Mackuen 2000, 174). In particular, the items clearly identified the target and specific time frame for their emotional evaluations. Subjects in the treatment conditions were asked after each article to "indicate the degree to which you experienced" the listed emotions "while reading the article." Control groups subjects read the same question wording, but since they did not read the articles, they were asked to evaluate their emotions "at this time." In addition, clearly understood emotional terms were used, multiple markers were employed to tap the emotion of theoretical interest, and subjects were asked to record their evaluations on unipolar scales. Following the standard approach, the raw scores for the emotional items were divided into high and low categories by using the median as the relevant cut off.

Analysis

The first two columns of Table 1 report the direct effects of the three experimental conditions on attitudes toward developing a new flu vaccine (column 1) and government spending on cargo screening (column 2). The control group serves as the baseline for all the models reported in Table 1. The picture that emerges from both of these analysis, displayed in Figure 1, is consistent with pervious research on competitive framing (e.g., Druckman 2004; Sniderman and Theriault 2004). Subjects who only received the bias-congruent argument were more likely to express support for developing a new flu vaccine and increase spending on cargo screening relative to subjects in the control group ($t_{207} = 2.78$, $p = 0.003$ for Asian flu stimulus; $t_{206} = 1.85$, $p = 0.033$ for the government spending stimulus, one-tailed tests) and counter-argument group (Asian flu, $t_{207} = 3.43$, $p < 0.001$; government spending, $t_{206} = 2.85$, $p = 0.001$,

one-tailed tests). Yet when confronted with both arguments, subjects' attitudes toward the flu vaccine and government spending on cargo screening are no different from the control group (Asian flu, t_{207} = -0.03, p = N.S.; government spending, t_{206} = -0.87, p = N.S., one-tailed tests). Because control group subjects were not presented with either argument, their opinions reflect attitudinal responses uninfluenced by political debate. If bias-congruent arguments hold an advantage, subjects in the competing arguments group should be more likely than those in the control group to express opinions in line with the bias-congruent argument's recommendation. In essence, then, the direct effects show that the persuasiveness of political rhetoric can be neutralized in the face of equally matched competing arguments.

[Table 1 and Figure 1 about here]

However, once the conditional effect of fear is taken into account (see columns 3 and 4 in Table 1), the results support the bias-matching thesis. The interaction between fear and the competitive argument condition suggests, as expected, that the effectiveness of the bias-congruent argument depends on subjects' emotional reaction to the message (Asian flu, t_{207} = 1.85, p = 0.033; government spending, t_{206} = 1.97, p = 0.025, one-tailed tests).

[Figure 2 about here]

As shown in Figure 2, subjects who reported a low level of fear in response to the message in the competitive argument group were not significantly more likely express support for developing a new flu vaccine or increase spending on cargo screening relative to subjects in the control group (Asian flu, t_{207} = -1.09, p = N.S.; government spending, t_{206} = -2.01, p = N.S., one-tailed tests). In contrast, subjects who did react with a higher level of fear, tended to express more support for the position advocated by the bias-congruent argument. For the Asian flu stimulus, subjects who read both arguments and reacted with fear were more supportive of the

risky choice to develop a new vaccine by nearly a point on a seven point scale when compared to the control group ($t_{207} = 1.59$, $p = 0.057$, one-tailed test). Similarly, for the government spending stimulus, subjects in the competitive arguments condition who reacted with fear were more supportive of increasing government spending on port security by nearly two-thirds of a point relative to subjects in the control group ($t_{206} = 1.06$, $p = 0.145$, one-tailed test). Moreover, within the competing arguments group, high-fear subjects were more supportive of the position endorsed by the bias-congruent argument than low-fear subjects. Relative to subjects who expressed low levels of fear, high-fear subjects preferred developing a new vaccine by two-thirds of a point ($t_{207} = 1.62$, $p = 0.053$, one-tailed test) as well as increased spending on cargo screening by a little more than a point on the seven-point scale ($t_{206} = 2.61$ $p = 0.005$, one-tailed test).

The Persuasive Effects of Fear

Although these findings support the general thrust of the bias-matching thesis, the mechanism through which fear enhances the strength of bias-congruent messages remains untested. If fear moderates bias-congruent messages by redirecting cognition to identify and confront potential threats, as the affective intelligence model suggests, then those in a fearful state should be less likely to rely habitual routines when forming political opinions related to the message and, as a result, more open to persuasion (cf. Marcus, Neuman, and MacKuen 2000). Once individuals are open to persuasion, the bias matching thesis suggests that individuals in a fearful state should perceive the bias-congruent messages – and not the counter argument – as persuasive.

Because the government spending article dealt with attitudes toward government spending (a partisan issue), it provides a more clear test of the expectation that fear disrupts

political habits. Following the method developed by Marcus, Neuman, and MacKuen (2000), I roughly measured the degree to which the political messages and partisan habits were weighted in spending preferences among high and low fear subjects.[7] The results are displayed in Figure 3, and conform with the affective intelligence model. Relative to low-fear subjects, the weight accorded to partisan habits diminishes precipitously (by nearly 30 percentage points) among high-fear subjects, while the weight of the bias-congruent message and competitive message – in which the bias-congruent message was also included – increases considerably. Note that the weight attached to the counter argument diminishes among high fear subjects, suggesting that it is the bias-congruent message that is evoking fear in particular subjects and potentially leading them to break with political habits by choosing the bias-congruent option.

[Figure 3 about here]

A mediational analysis offers a more rigorous test of the expectation that fear influences issue attitudes by enhancing the persuasiveness of the bias-congruent message but not the counter argument. Because subjects in the competitive arguments condition received both messages, they were asked to rate the persuasiveness of about arguments, and provide an ideal setting in which to test this hypothesis.[8] The results are displayed in Figure 4 and corroborate the notion that fear affects issue opinions through the persuasiveness of the bias-congruent argument. Subjects who reacted with fear to the competing messages were substantially more likely to find the new vaccine argument persuasive ($t_{59} = 3.52$, $p < 0.001$, one-tailed test), which translates into more supportive attitude toward developing a new flu vaccine ($t_{59} = 2.88$, $p =$

[7]The relative weight for each effect is calculated by dividing each variable's slope coefficient by the sum of all the coefficients.

[8]Nevertheless, if the mediational analysis is conducted in both of the single-message conditions, substantively similar results are obtained.

0.003, one-tailed test). Furthermore, the effect of fear on the flu vaccine attitude is mostly mediated through its effect on message persuasiveness (83.38 percent of fear's effect mediated through persuasiveness, Sobel test $t_{59} = 2.23$, $p = 0.015$, one-tailed test). In contrast, fear has little effect on the perceived persuasiveness of the stockpiling argument ($t_{59} = -0.13$, $p =$ N.S., one-tailed test), and thus, its effect on the flu vaccine attitude is not mediated through the persuasiveness of the stockpiling argument (Sobel test $t_{59} = 0.13$, $p = 0.449$, one-tailed test).

[Figure 4 about here]

Likewise, fear enhances the persuasiveness of the argument to increase spending on cargo screening ($t_{60} = 2.16$, $p = 0.017$, one-tailed test), which translates into more support for increased funding ($t_{60} = 2.13$, $p = 0.019$, one-tailed test). In turn, the effects of fear on the cargo screening attitude is partially mediated through the persuasiveness of the bias-congruent message (22.27 percent of fear's effect mediated through persuasiveness, Sobel test $t_{60} = 1.52$, $p = 0.067$, one-tailed test). There is little evidence that fear either affects the persuasiveness of the counter argument ($t_{60} = 0.80$, $p = 0.213$, one-tailed test) or that its effect on the cargo screening attitude is mediated through the persuasiveness of the counter argument (Sobel test $t_{60} = -0.54$, $p =$ N.S., one-tailed test).

Robustness of Findings

Of course, it is possible that the self-reported fear measure is not tapping subjects' level of fear, per se, but merely capture people's general level of arousal caused by reading the news article. If this were the case, fear would not be the mechanism through which arguments affect persuasiveness. Rather, it may simply be the valence of their response to the message, with more negative arguments seeming more persuasive. The appraisal-tendency model of emotion, which undergirds the affective intelligence approach, rejects this line of reasoning. In this framework,

different appraisals give rise to different emotions, which in turn affect people's judgment and behavioral tendencies. According to the appraisal-tendency model fear leads to enhanced persuasibility, while anger dampening the persuasive effects of messages even though both emotions are characterized by negative valence (c.f. Lerner and Keltner 2000). Thus, if it is the affective response to the bias-congruent message that enhances its persuasiveness, then anger should have no conditional effect on the relationship between competing political arguments and issue opinions.

[Table 2 about here]

The results displayed in Table 2 are consistent with the appraisal-tendency model. By itself, anger does not moderate the effect of the competitive message (see columns 1 and 2), nor does it when fear is included (see columns 3 and 4). Moreover, the conditional effects of fear remain in the presence of anger and its interaction with the message conditions.

I also ensure that none of these results depend on the measure of fear, by replicating the analyses with the post-test item that asked subjects to rate their level of *anxiety*. Previous work focuses on the effects of anxiety (e.g., Marcus, Neuman, and MacKuen 2000), and its effects should be synonymous with fear. These results are displayed in Table 3 and are not substantively different from the models that use the fear measure.

[Table 3 about here]

Discussion

From an intuitive standpoint, it is undoubtedly the case that some arguments are more persuasive than others. Yet much remains unknown about the process by which arguments obtain their perceived strength (Chong and Druckman 2007). In this paper, I entertain one potential source by beginning with the supposition that ingrained cognitive biases may influence

the perception of strength. Over the course of human evolution, our ancestors found particular strategies more effective than others at attaining immediate goals, such as food, shelter, and a healthy mate. Those who adapted by adopting these strategies were more likely to survive and pass along their genes to future generations compared to those who did not. Consequently, the architecture of the modern human mind continues to bear the imprint of decisions made by our distant relatives, and leaves us with predispositions for solutions that are designed to solve particular adaptive problems (Haselton and Buss 2003). Our strong distaste for losses and our vigilance directed toward detecting and warding of threats from those outside our ingroup were likely successful responses to adaptive pressures faced by humans millennia ago.

Because humans have built-in preferences to avoid losses and to be wary of outgroup threats, arguments that attempt to make these aspects of a political problem salient have a better shot at persuading individuals that its recommended course of action is the appropriate course of action. However, such arguments are not guaranteed to win the day. The message must successfully activate biased information processing. Consistent with recent work in neurobiology and political psychology, the paper finds that emotional responses to arguments provide an indirect indicator of bias activation. In particular, when faced with losses or an outgroup threat, fear signals that these threats need to be dealt with, and our built-in cognitive biases point in the direction of the desired solution. In both conditions of the experiment reported here, fearful subjects saw the bias-congruent argument as more persuasive than then counter argument and, in turn, preferred its recommend solution to the counter argument's recommendation.

These findings underscore that political rhetoric has an affective dimension, which has been often overlooked by purely cognitive approaches to the study of opinion formation (Gross

and D'Ambrosio 2004). The evidence presented here is consonant with the affective intelligence model, as it demonstrates that fear enhances persuasibility (Brader 2005; Marcus, Neuman, and McKuen 2000). It is also consistent with the general conclusion reached by recent work in social psychology that fear leads people to adopt particular courses of action at the exclusion of others, but it is not consistent with the specific finding that fear necessarily leads to an increase in risk aversion (e.g., Huddy et al. 2005; Lerner et al. 2003; Meijinders, Midden, and Wilke 2001). Instead, I find that fear can also lead to an increase in risk acceptance. One way to reconcile these findings is reinterpret them in light of prospect theory. Fear alerts individuals to the prospect of losses. Whether individuals opt for taking a risk depends on the reference point. In the domain of relative losses, the risky choice is the loss-averse choice (e.g., the Asian disease experiment), while in the domain of relative gains the safe choice is the loss-averse choice (e.g., preferences for the status quo in the face of uncertain change – see Quattrone and Tversky 1988).

The normative implications of these empirical findings are not clear cut. Viewed from the perspective of the propaganda model (e.g., Ellul 1973), they could be interpreted as an operational model of demagoguery, confirming concerns that politicians can build support by playing to people's worst fears and prejudices. However, an alternative interpretation might note that political rhetoric does not become suspect just because it persuades individuals by appealing to their emotions (Garsten 2006). This argument is especially apropos in situations where politicians alert people to real immediate threats. Whether their recommended course of action to deal with the threat is normatively desirable depends on the particular situation and the moral framework in which it is judged.

Irrespective of these normative considerations, the findings do suggest that elite competition may not always neutralize the effects of political rhetoric. If one political faction is

able to activate cognitive biases when positioning their preferred alternative, it may gain an advantage in political discourse. Because political parties are somewhat constrained in the arguments that they can make and the issues that they can credibly address (Petrocik 1996), and because the news media can unintentionally privilege particular frames in its coverage of political events (Nelson, Oxley, and Clawson 1997, 236), the potential for asymmetries in political debate do exist. Future research should be dedicated to exploring other factors that influence the strength of political arguments as well as those that shape the effectiveness of counter arguments.

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Table 1: The Effects of Bias-congruent Arguments on Issue Opinions

	Additive Models		Interactive Models	
	Asian Flu	**Spending**	**Asian Flu**	**Spending**
Bias-congruent Argument	0.900	0.628	0.560	-0.002
	(0.324)	(0.340)	(0.374)	(0.397)
Counter Argument	-0.205	-0.335	-0.527	-0.285
	(0.325)	(0.343)	(0.397)	(0.388)
Competing Arguments	-0.008	-0.282	-0.403	-0.758
	(0.311)	(0.324)	(0.372)	(0.377)
Democrat		0.204		0.011
		(0.268)		(0.265)
Republican		0.566		0.364
		(0.340)		(0.335)
Fear			-0.579	-0.248
			(0.533)	(0.543)
Fear × Consistent Argument			1.297	1.796
			(0.735)	(0.729)
Fear × Counter Argument			1.027	-0.070
			(0.709)	(0.752)
Fear × Competing Arguments			1.267	1.379
			(0.687)	(0.699)
Constant	4.940	4.213	5.079	4.402
	(0.229)	(0.291)	(0.261)	(0.309)
N	208	207	208	207
Adjusted R-squared	0.05	0.04	0.06	0.09
F	4.686	2.579	2.982	3.385

Note: OLS coefficients in cells; standard errors in parentheses.

Table 2: The Moderating Effects of Anger and Fear on Competing Political Arguments

	(1)	(2)	(3)	(4)
	Asian Flu	**Spending**	**Asian Flu**	**Spending**
Bias-congruent Argument	1.135	0.102	0.898	-0.299
	(0.494)	(0.407)	(0.507)	(0.434)
Counter Argument	-0.158	-0.709	-0.334	-0.637
	(0.501)	(0.416)	(0.518)	(0.438)
Competing Arguments	-0.015	-0.578	-0.193	-0.923
	(0.489)	(0.395)	(0.497)	(0.421)
Democrat		0.052		-0.083
		(0.271)		(0.268)
Republican		0.408		0.290
		(0.345)		(0.339)
Anger	0.266	-0.428	0.389	-0.403
	(0.486)	(0.553)	(0.494)	(0.545)
Anger × Consistent Argument	-0.416	1.577	-0.698	1.201
	(0.676)	(0.750)	(0.689)	(0.750)
Anger × Counter Argument	0.032	1.110	-0.236	1.190
	(0.676)	(0.740)	(0.706)	(0.732)
Anger × Competing Arguments	0.133	0.871	-0.294	0.614
	(0.646)	(0.706)	(0.693)	(0.700)
Fear			-0.668	-0.189
			(0.548)	(0.545)
Fear × Consistent Argument			1.459	1.524
			(0.758)	(0.744)
Fear × Counter Argument			1.059	-0.297
			(0.747)	(0.759)
Fear × Competing Arguments			1.308	1.292
			(0.742)	(0.708)
Constant	4.765	4.417	4.843	4.542
	(0.395)	(0.319)	(0.398)	(0.330)
N	208	207	208	207
Adjusted R-squared	0.04	0.06	0.05	0.1
F	2.225	2.420	1.976	2.806

Note: OLS coefficients in cells; standard errors in parentheses.

Table 3: Models with Anxiety an Alternative Measure of Fear

	(1)	(2)	(3)	(4)
	Asian Flu	**Spending**	**Asian Flu**	**Spending**
Bias-congruent Argument	0.303	0.047	0.647	-0.219
	(0.413)	(0.420)	(0.533)	(0.443)
Counter Argument	-0.690	-0.202	-0.518	-0.566
	(0.418)	(0.428)	(0.535)	(0.455)
Competing Arguments	-0.552	-0.772	-0.404	-0.870
	(0.402)	(0.416)	(0.524)	(0.439)
Democrat		0.231		0.112
		(0.262)		(0.264)
Republican		0.575		0.494
		(0.332)		(0.337)
Anxiety	-0.766	-0.480	-0.798	-0.378
	(0.454)	(0.466)	(0.459)	(0.503)
Anxiety × Consistent Argument	1.583	1.911	1.758	1.578
	(0.680)	(0.715)	(0.705)	(0.750)
Anxiety × Counter Argument	1.148	-0.780	1.095	-1.221
	(0.674)	(0.698)	(0.738)	(0.736)
Anxiety × Competing Arguments	1.343	1.223	1.279	1.053
	(0.642)	(0.644)	(0.682)	(0.681)
Anger			0.348	-0.252
			(0.484)	(0.586)
Anger × Consistent Argument			-0.770	1.099
			(0.689)	(0.779)
Anger × Counter Argument			-0.188	1.367
			(0.724)	(0.769)
Anger × Competing Arguments			-0.139	0.503
			(0.672)	(0.736)
Constant	5.308	4.429	5.093	4.512
	(0.315)	(0.352)	(0.435)	(0.353)
N	208	207	208	207
Adjusted R-squared	0.07	0.09	0.06	0.11
F	3.140	3.371	2.114	3.018

Note: OLS coefficients in cells; standard errors in parentheses.

Figure 1: The Direct Effects of Competing Arguments

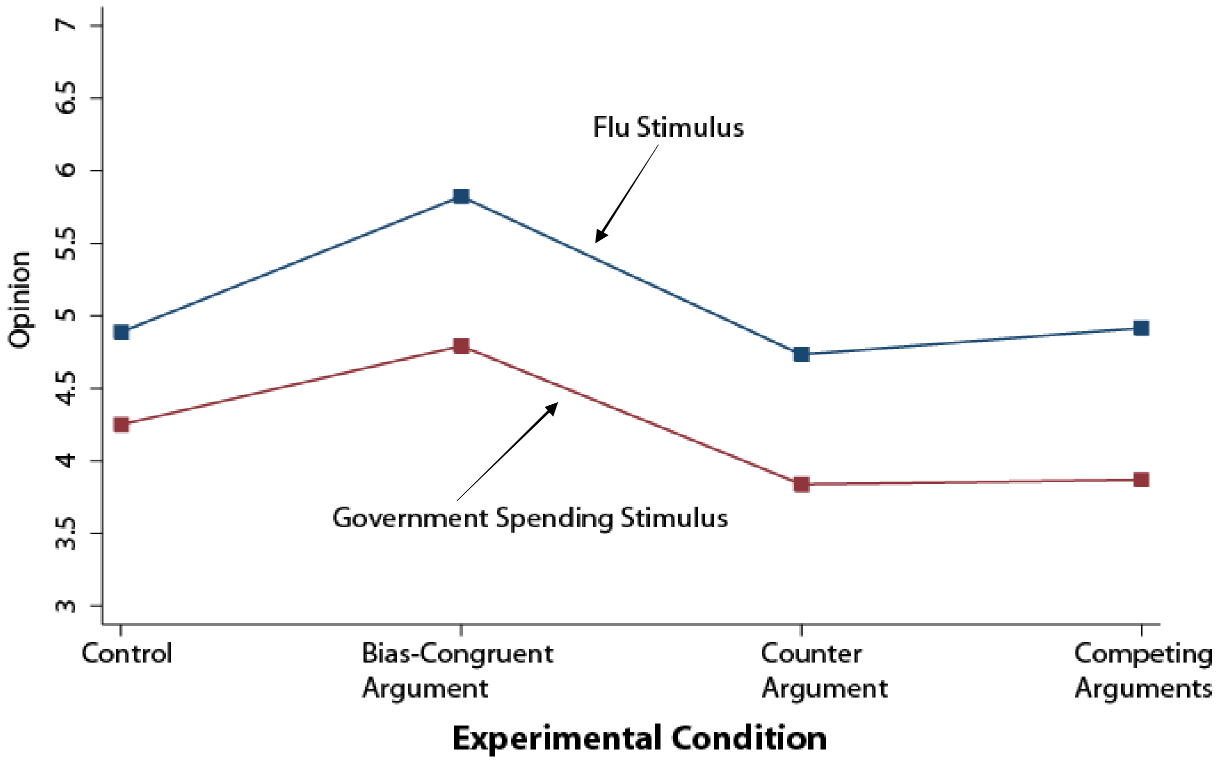


Figure 2: The Moderating Effect of Fear

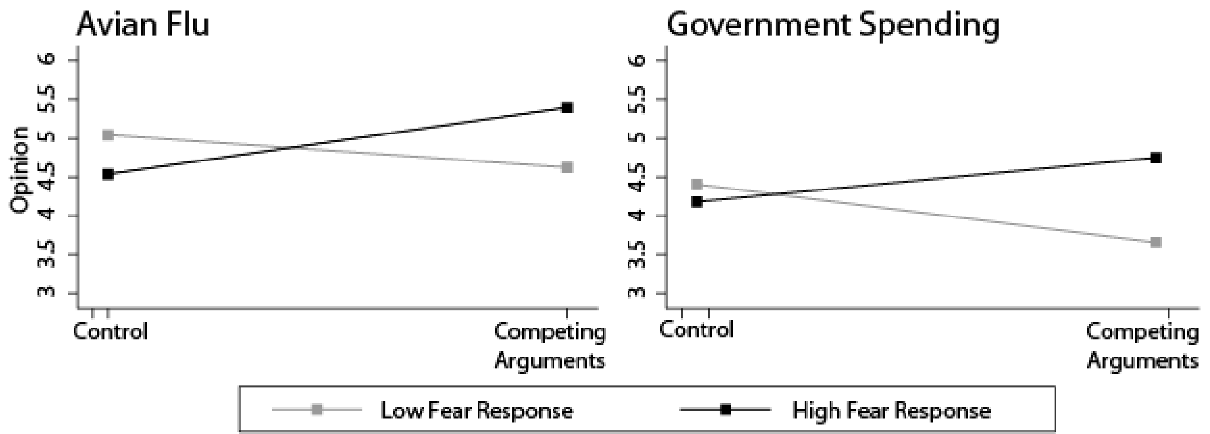


Figure 3: The Reduced Weight of Political Habits in High Fear Subjects Attitudes Toward Government Spending on Port Security

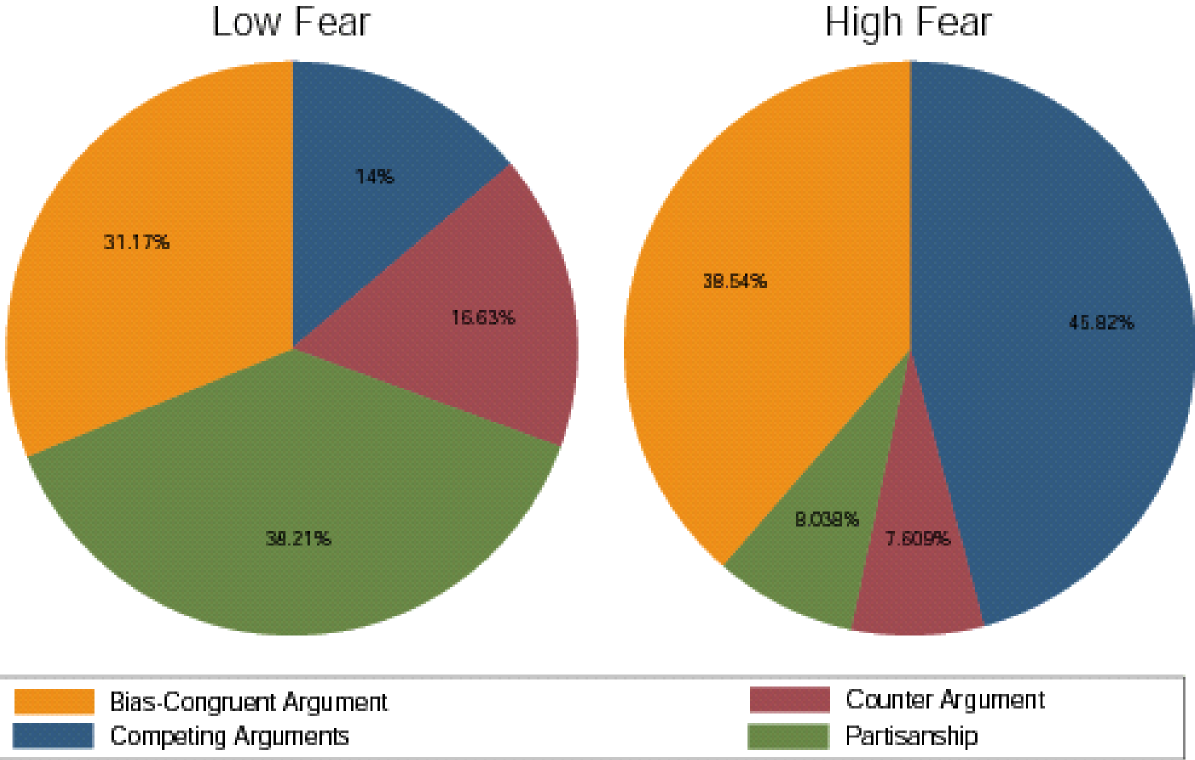
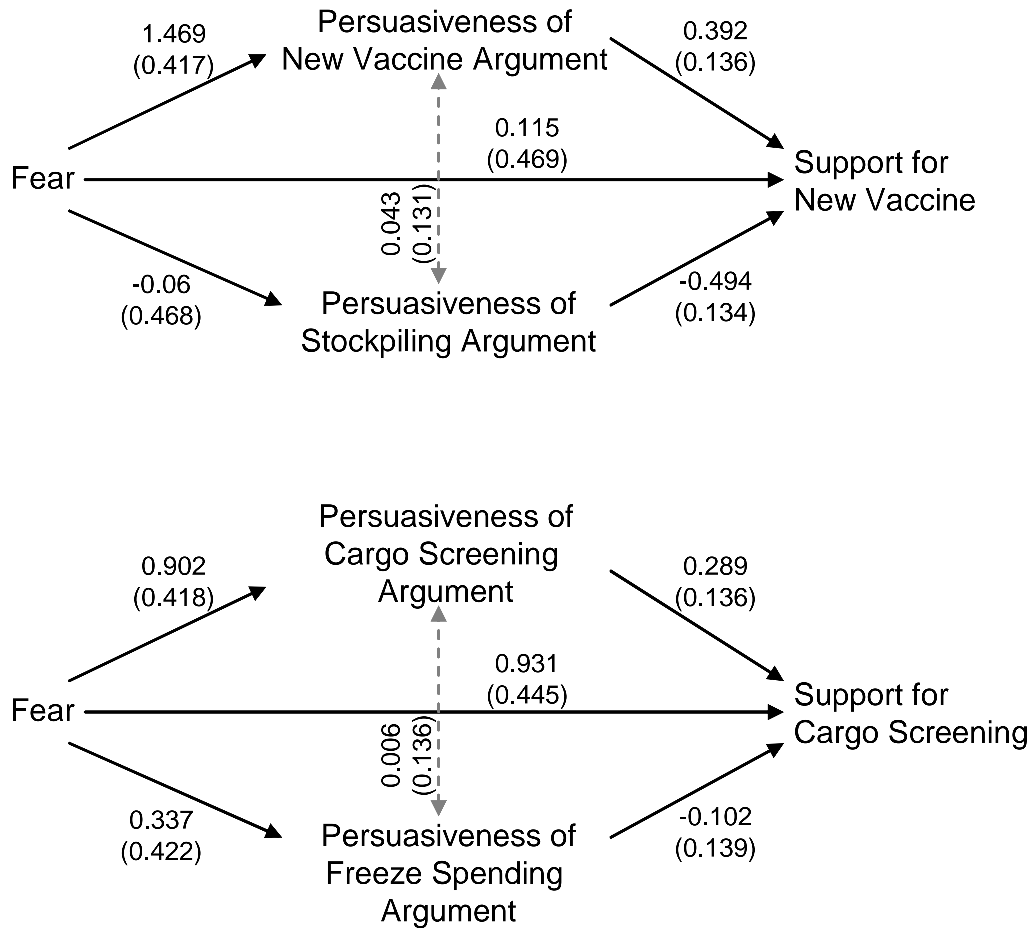


Figure 4: The Effects of Fear on Issue Opinions Mediated Through Message Persuasiveness



Reviewers' Appendix 1: Experimental Stimuli

All stories were attributed to the *New York Times* and printed on paper with the *New York Times* Online Edition logo to make it appear as if the story were downloaded from its website.

Asian Flu

<u>Bias-Congruent Condition</u>

Scientists Worry about Response to Possible Asian Flu Outbreak

By T. J. RHINE

WASHINGTON – Health officials are becoming increasingly concerned about the possibility of a flu pandemic that could infect cost the lives of millions of Americans if a highly lethal virus currently isolated in birds spreads among humans.

The flu virus has been rapidly spreading in birds through Europe, the Middle East, Africa and Asia, and will likely soon reach North America. Scientists believe it is only a matter of time before the virus mutates into a form easily transmissible between humans.

Lab tests have shown that existing flu vaccines will only work in humans some of the time. As a result, if the government puts money into stockpiling known vaccines many will still die in the event of a flu outbreak.

In anticipation of the worst case, many scientists are recommending that the government divert this money into developing a more effective vaccine.

"Some may say we are taking a risk with this approach," Dr. Ben Reigby said. "But it is our best chance of minimizing the catastrophic number of deaths that will occur if we don't develop a new vaccine."

<u>Counter-argument Condition</u>

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Lab tests have shown that existing flu vaccines will only work in humans some of the time. As a result, if the government puts money into stockpiling known vaccines only some lives will be saved in the event of a flu outbreak.

In anticipation of the worst case, many scientists are recommending that the government begin stockpiling flu vaccines as soon as possible rather than developing a new vaccine.

"It's better to stockpile vaccines that we know will save some lives," Dr. Mark Johnson said. "The alternative is to gamble that we can save everyone but end up saving only a few."

<u>Competitive Argument Condition</u>
(Bias-congruent argument and counter argument rotated)

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"Some may say we are taking a risk with this approach," Dr. Ben Reigby said. "But it is our best chance of minimizing the catastrophic number of deaths that will occur if we don't develop a new vaccine."

Not all experts agree. Many other scientists are recommending that the government begin stockpiling flu vaccines as soon as possible rather than developing a new vaccine.

"It's better to stockpile vaccines that we know will save some lives," Dr. Mark Johnson said. "The alternative is to gamble that we can save everyone but end up saving only a few."

Government Spending

<u>Bias-Congruent Condition</u>

Port Security Linked to Fight Against Terrorism

By LEE KLINE

WASHINGTON – According to a recent congressional report, the Homeland Security Department only has enough resources to screen a fraction of containers on foreign ships entering American ports, raising concerns that major U.S. costal cities, such as New York or Philadelphia, are vulnerable to a terrorist attack.

The report has been met with calls for the government to devote more money to inspecting the large shipping containers that arrive daily in American ports.

Because many overseas ports lack security measures, there is a real possibility that terrorists might try to smuggle weapons of mass destruction into the U.S. on foreign cargo ships. Proponents of increased spending on port security argue that adequate screening of shipping containers is necessary to prevent such a disaster.

"Right now it wouldn't take much for al Qaeda or other terrorists to bring a dirty nuclear bomb into the U.S. and kill thousands of innocent people," said Joel Wieker, a security expert. "This program is worth the expense."

Counter-argument Condition

Growing Budget Deficit May Derail Economy

By LEE KLINE

WASHINGTON – The federal budget deficit is expected to reach an all-time high at the end of 2006, totaling $423 billion according to a government report. Over the next 10 years, budget deficits are expected to grow and total $2.3 trillion, raising concerns that massive government borrowing could trigger a fiscal crisis.

The report has been met with calls for government to limit new spending to get the deficit under control.

Because there is a limited supply of money, as the government borrows more it causes interest rates to increase and dampens economic growth. Proponents of deficit control argue that the growing deficit is a recipe for a fiscal crisis that will undermine the strength of American currency and cause many Americans to lose their jobs.

"In a perfect world we would reduce spending in some areas to offset increases in others, but we have to face the reality that congress won't cut spending," said Todd Oliver, a policy expert. "In order to avoid an economic collapse, we need to freeze the budget where it is now."

Competitive Argument Condition
(Bias-congruent argument and counter argument rotated)

Port Security, Terrorism and the Growing Budget Deficit

By LEE KLINE

WASHINGTON – According to a recent congressional report, the Homeland Security Department only has enough resources to screen a fraction of containers on foreign ships entering American ports, raising concerns that major U.S. costal cities, such as New York or Philadelphia, are vulnerable to a terrorist attack.

The report has been met with calls for the government to devote more money to inspecting the large shipping containers that arrive daily in American ports.

Because many overseas ports that lack security measures, there is a real possibility that terrorists might try to smuggle weapons of mass destruction into the U.S. on foreign cargo ships. Proponents of increased spending on port security argue that adequate screening of shipping containers is necessary to prevent such a disaster.

"Right now it wouldn't take much for al Qaeda or other terrorists to bring a dirty nuclear bomb into the U.S. and kill thousands of innocent people," said Joel Wieker, a security expert. "This program is worth the expense."

However, not everyone agrees. The federal budget deficit is expected to reach an all-time high at the end of 2006, totaling $423 billion according to a government report. Over the next 10 years, budget deficits are expected to grow and total $2.3 trillion, raising concerns that massive government borrowing could trigger a fiscal crisis.

The report has been met with calls for government to limit new spending to get the deficit under control.

Because there is a limited supply of money, as the government borrows more it causes interest rates to increase and dampens economic growth. Proponents of deficit control argue that the growing deficit is a recipe for a fiscal crisis that will undermine the strength of American currency and cause many Americans to lose their jobs.

"In a perfect world we would reduce spending in some areas to offset increases in others, but we have to face the reality that congress won't cut spending," said Todd Oliver, a policy expert. "In order to avoid an economic collapse, we need to freeze the budget where it is now."

Reviewers' Appendix 2: Question Wording

Issue Opinions

To prepare for a possible flu pandemic, should the government spend money on stockpiling existing vaccines or on developing a better one?

1	2	3	4	5	6	7
Stockpile Existing Vaccines						Develop Better Vaccine

Should the U.S. government spend more on screening cargo at U.S. ports even if it means increasing the budget deficit?

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Argument Persuasiveness

How persuasive did you find the argument in this news article for [developing a new vaccine/stockpiling existing vaccines/increasing government spending on port security/freezing spending to control the budget deficit]?

1	2	3	4	5	6	7
Not at all Persuasive						Very Persuasive

Emotion

We are interested in the sorts of feelings you experienced when reading the articled you just completed. For each feeling below, please indicate the degree to which you experienced it while reading the article.

A. Fear
B. Anxiety
C. Anger

1	2	3	4	5	6	7
Did NOT Experience at all						DID Experience a great deal