We report the results of three experimental tests of the “hot cognition” hypothesis, which posits that all sociopolitical concepts that have been evaluated in the past are affectively charged and that this affective charge is automatically activated within milliseconds on mere exposure to the concept, appreciably faster than conscious appraisal of the object. We find support for the automaticity of affect toward political leaders, groups, and issues; specifically:

- Most Ss show significantly faster reaction times to affectively congruent political concepts and significantly slower response times to affectively incongruent concepts;
- These facilitation and inhibition effects, which hold for a cross-section of political leaders, groups, and issues, are strongest for those with the strongest prior attitudes, with sophisticates showing the strongest effect on “harder” political issues.
- Even semantically unrelated affective concepts (e.g., “sunshine,” “cancer”) have a strong effect on the evaluation of political leaders, groups, and issues.

We conclude with a discussion of the “so what?” question—the conceptual, substantive, and normative implications of hot cognition for political judgments, evaluations, and choice. One clear expectation, given that affect appears to be activated automatically on mere exposure to sociopolitical concepts, is that most citizens, but especially those sophisticates with strong political attitudes, will be biased information processors.

**KEY WORDS:** hot cognition, implicit attitudes, motivated reasoning, automaticity, affect
In this paper we report the results of three experimental studies testing a central postulate of our dual-process model of motivated political reasoning (Lodge & Taber, 2000; Taber & Lodge, 2001; Taber, Lodge, & Glather, 2001). This theory of motivated reasoning starts with the hot cognition hypothesis (Abelson, 1963), the claim that all sociopolitical concepts are affect laden (Bargh, 1994, 1997; Fazio & Williams, 1986; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Fiske, 1982; Lodge & Stroh, 1993; Lodge, McGraw, & Stroh, 1993; McGraw, Lodge, & Stroh, 1990; Morris, Squires, Taber, & Lodge, 2003). All political leaders, groups, issues, symbols, and ideas thought about and evaluated in the past become affectively charged—positively or negatively—and this affect is linked directly to the concept in long-term memory. This evaluative tally, moreover, comes automatically and inescapably to mind upon presentation of the associated object, thereby signaling its affective coloration (what Clore & Isbell [2001] call the “how-do-I-feel heuristic?” and what Sniderman, Brody, & Tetlock [1991] call the “likability heuristic”). At the moment one realizes that the letters B-U-S-H in a news headline refer to the President and not to a plant, one’s affect toward “W” Bush comes to mind along with his strongest cognitive associations.

Our theory of motivated reasoning couples together affect and cognition in long-term memory and brings them automatically to mind in the judgment process. Feelings become information. Affect imbues the judgment process from start to finish—from the encoding of information, its retrieval and comprehension, to its expression as a preference or choice. Should this theory of the automaticity of affect prove to be a reasonable approximation of how people routinely think about political objects, it would have important substantive and normative implications. One clear expectation—given that affect permeates all thinking and reasoning—is that most citizens most of the time will be biased reasoners, finding it difficult to evaluate new, attitude-relevant information in an evenhanded way (Redlawsk, 2002). This is what we have found in a series of experiments designed to explore the impact of motivated reasoning on political information processing (McGraw, Lodge, & Jones, 2002; McGraw, Fischle, Stenner, & Lodge, 1996; Taber & Lodge, 2001). People appear unable to break free of their prior sentiments when evaluating arguments on political issues, even when they are motivated to be impartial. They are apt to see congruent arguments as inherently stronger than those which are attitudinally incongruent; they spend time and cognitive resources counterarguing the points that challenge their priors; they seek to insulate themselves from challenging information by actively searching out congruent information. As a consequence of this motivated search and reasoning, their attitudes are prone to polarize in the face of a balanced set of pro and con information (Harton & Latané, 1997; Lord, Ross, & Lepper, 1979; Taber & Lodge, 2001), with all of these effects strongest for sophisticated citizens with the strongest political attitudes.

While there is strong experimental support for the automaticity of a wide range of social attitudes, at least toward people and groups (Bargh, 1997;
Greenwald et al., 2002; Wegner & Bargh, 1998), there have been no convincing
tests of the hot cognition hypothesis in the political domain, and none at all for
issues. Moreover, some scholars suggest that the evaluations of groups, and even
more so issues, may not be processed in the same way as those for people (see
store and rely on more and different types of considerations when evaluating
groups (Hamilton & Sherman, 1996) or issues (Zaller & Feldman, 1992). When
evaluating issues, citizens are said to see two or more sides to policy disputes,
and their awareness of the pros and cons may prevent them from forming a
summary judgment. If so, when called on to report an evaluation of the group or
issue, they cannot depend on a simple affective linkage in memory, but will
sample a fuller set of considerations that have been stored in memory about the
object and then and there construct an evaluation from an integration of these con-

The studies reported here directly test the hot cognition question: are attitudes
toward political leaders, groups, and issues evoked automatically or do they
require a more effortful—and time-consuming—process of evaluative integra-
tion? We leave for the Conclusion the “so what?” question: when and for what
citizens will the primacy of affect influence judgment, evaluation, and choice?

The Underlying Model of Hot Cognition

Before turning to our experimental tests, let us briefly review the cognitive
architecture underlying our dual-process theory of political information process-
ing (Lodge & Stroh, 1993; Lodge & Taber, 2000; Taber, 2003). A cornerstone of
any model of political reasoning is the citizen’s preexisting knowledge and
predilections. These long-term factors, functionally speaking, require a vast long-
term memory (LTM) for storing facts, beliefs, and predispositions, and a mecha-
nism for “moving” one’s knowledge about leaders, parties, and issues from LTM
into working memory (WM) where it can be attended to (Barsalou, 1992;
Rumelhart & Ortony, 1977; Sanford, 1986; Simon, 1957). Attention is very
limited, perhaps to the magic number 7 ± 2 bits or chunks of information, hence
the need for heuristics, habits, and other simplifying mechanisms for thinking and
reasoning (Baumeister, Muraven, & Tice, 2000; Cialdini, 2001).

LTM is organized associatively, and it is useful to think of knowledge struc-
tures metaphorically in LTM as configurations of nodes linked to one another in
a network of associations (Anderson, 1983) or if you prefer as neurons “bundled”
together by weighted connections (Read & Miller, 1998; Smith, 1998). Were we
able to tap a citizen’s complete political knowledge structure, there might be tens
of thousands of conceptual nodes (among them one for George W. Bush) with a
complex network of associations (perhaps his demographics, stands on issues,
perceived traits, and maybe an inferential abstraction or two—e.g., that he is con-
servative). Links represent beliefs, the strength of which will vary. Moreover,
memory objects vary in *accessibility*—the ease with which a stored concept lying dormant in LTM can be retrieved into WM.

Figure 1 depicts a simple example of the architecture of one woman’s political knowledge (for a somewhat similar framework, see Greenwald et al., 2002). Note first that the self is the strongest node in the network and that identity (here, female, black) and self-esteem are the strongest links in the network. Positive and negative affect and basic identity nodes are distinguished in this representation because of their centrality in human information processing. As with more standard semantic network models, beliefs are represented as links among basic memory objects (e.g., “I am a Democrat,” “President Bush has ties to big business”). Attitudes appear as links between basic memory objects and positive
and/or negative affect. Ambivalence can be represented by allowing links to both positivity and negativity, as with “American” in Figure 1. The impact of context or priming on evaluations may also be depicted: see, for example, that if “jobs” is primed, “business” will be seen in a positive light, while in the context of “greed” “business” is evaluated negatively. This model, taking its lead from Fazio and his colleagues (Fazio, 1995; Fazio & Williams, 1986), brings affect center stage (Fiske, 1981; Marcus, Newman, & McKuen, 2001; Sears, 2001; Sears, Huddy, & Schaffer, 1986). All objects in LTM representing sociopolitical concepts are affect laden, with affect varying along three dimensions: positivity, negativity, and strength.

But how is information moved from LTM into WM? *Spreading activation* provides the mechanism. A node in LTM switches from being dormant to a state of readiness with the potential to be moved into WM when it is activated, either as a direct object of thought or because it is closely linked to an object of thought. The top panel of Figure 2 (adapted from Barsalou, 1992) depicts the activation process, with the Y-axis representing the level of activation of a given node in LTM and the X-axis representing time in milliseconds. The rise time from dormant-state to activation threshold is almost instantaneous (100–200 milliseconds). Though not depicted in Figure 2, activation also decays quite rapidly so that a given node will drop back to baseline in about a second if there is no further source of activation. Imagine a person reading about President Bush in a news-
paper headline. Without perceptible effort, the concept BUSH becomes activated and activation spreads along the network of links to related concepts, thereby priming strong semantic associations of BUSH (he is a REPUBLICAN) as well as beliefs (he is pro-business). For a few hundred milliseconds, these associated concepts remain in a heightened state of arousal, with any additional activation likely to push them over threshold and into WM.

It may be useful to think of priming through spreading activation as producing preconscious expectations. The bottom panel of Figure 2 shows the activation of associations under different priming conditions. Consider again the activation of the concept BUSH from a newspaper headline. Concepts associated with BUSH in LTM also receive activation, thereby raising their potential so that any subsequent processing which passes activation to these energized concepts will likely drive them over threshold. If a primed association (perhaps Bush’s Republican label or his stand on gun control) is “expected,” it takes substantially less processing to activate and has a better chance of getting into WM, of being processed faster, and thereby of “framing” the perception, recognition, and interpretation of subsequent information.

Conversely, spreading activation can inhibit the processing of unexpected categories (the bottom course in Panel b of Figure 2). When a concept is encountered unexpectedly, more bottom-up processing is necessary before it may pass threshold and enter WM. If the word “walnut” were processed initially, this would inhibit the recognition of semantically unrelated concepts (such as REPUBLICAN), which would thereby require more time and effort to process. Finally, the middle course in Panel b is a control or “baseline” condition in which no “expectations” are created by a prime. The nonword BBB, for example, which conveys no semantic expectations, would neither facilitate nor inhibit the recognition and categorization of subsequent concepts.

Simple though it be—essentially an affect-enabled ACT\sub{star} model (Anderson, 1983)—such node-link models with affective links can account for important characteristics of human information processing (Boynton & Lodge, 1994). Moving in step with contemporary thinking (Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, 1995; Petty & Krosnick, 1995), we see attitudes as associations in memory between an object and an evaluation, with the term “object” being defined very broadly to include the representation in memory of people, places, ideas, symbols, things, and events. In the case of univalent attitudes, the summary evaluation is uni-dimensional, a single link from object to affect (or perhaps reciprocal links to positivity and negativity as with BUSH in Figure 1), representing a distillation of judgments made online as stimulus information is processed. The associative strength between an object (e.g., politician) and its evaluation (bad) is conceived as varying along a continuum from nil, an object with little or no affective association (from this perspective a “nonattitude”; Converse, 1970; Fazio & Williams, 1986) to objects with strong associative strength. Whereas nonattitudes require piecemeal, bottom-up construction, and weak attitudes require effortful
retrieval, the stronger the association between an object in memory and its affective evaluation the less time and effort needed to bring the attitude to mind, with objects carrying strong affective links being activated automatically on exposure (see Bargh et al., 1992; Bassilli & Roy, 1998; Fazio, 1992).

**An Experimental Test of the Hot Cognition Postulate**

To turn the notion of hot cognition from premise to hypothesis, let us set forth the experimental paradigm for empirically testing the postulate that affect is directly linked to its conceptual node and “travels” with it into WM spontaneously on mere exposure of the concept. The attitude priming paradigm, developed by Fazio and his colleagues (1986), is a spin off of the classic lexical decision paradigm (Collins & Loftus, 1975; Collins & Quillian, 1969) where, for example, an experimental subject (S) sees a “prime” word (e.g., “FLOWERS”) flashed on a computer screen for 200 milliseconds, followed 100 milliseconds later—when as shown in Figure 2 *the concept’s activation is at peak*—by a second string of letters (say “Clinton” or “rose” or “rospar”) which remains onscreen until the S makes a response, typically by pressing one button “as fast as possible without making too many errors” if the target is a legal English word, the other button if it is not. This is a nonreactive task; the subject is *not* asked directly whether the target is associated with the prime, whether a rose is a flower (indeed, though this is not usually a subliminal task, the prime is onscreen so briefly that the S may be only dimly aware of it), but rather whether the letters r-o-s-e form a word in English. An inference as to whether the target and prime are linked in the observer’s LTM is made on the basis of their reaction times in performing the (word/not-a-word) task. These and similar cognitive priming paradigms produce robust effects: facilitation (faster response times) to cognitively associated concepts; inhibition to unrelated concepts. What is more, these effects are *automatic*—they cannot be easily suppressed or overridden (Greenwald & Banaji, 1995; Neely, 1977).

But what about affect? Is one’s affect also activated when the concept it is linked to is primed? That is the hot cognition question. As depicted in Figure 3

![Figure 3. Affective Priming Paradigm.](image-url)
we expose Ss to a prime word and then present a target word, but in this variant of the paradigm the Ss’ task is to press a button labeled “+” or “−” to indicate “as fast as possible without making too many errors” whether the target word has a positive or negative connotation. Here again, on each trial the name of an attitude object (e.g., POLITICIAN) is presented for 200ms on the computer screen, followed by a 100ms blank-screen interval. Then a target word—chosen for its unambiguous positive or negative connotation—is presented. The subject’s task is to indicate by a button press whether the target word is “good” or “bad” in meaning. The latency time from onset of target word to the S’s response is recorded. If the valence associated with the prime (e.g., DEMOCRATS) is the same as the valence associated with the target (e.g., CANCER), then response times to classify the target should be faster relative to a neutral baseline (facilitation); if prime and target valences are incongruent, however, response times should be slower (inhibition).

The elapsed time from the onset of the prime to the onset of the target is called the stimulus onset asynchrony (SOA) and is often—as in our experiment—varied to test for the automaticity of responses (note this is a manipulated factor not to be confused with a subject’s reaction time). Since conscious expectancies take at least 500ms to develop (Neely, 1977; Posner & Snyder, 1975), any influence of the prime on response times to the target for SOAs significantly shorter than 500ms must be “attributed to an automatic, unintended activation of the corresponding attitude” (Bargh et al., 1992, p. 894). At longer SOA—we use 1,000ms for the long SOA condition in our experiments—these automatic activation effects will decay unless they are consciously maintained, which will happen only when subjects anticipate that such expectancies will be useful for subsequent information processing (Neely, 1977). Since conscious expectancies are not diagnostic of target valence in the attitude priming paradigm (good and bad targets are equally likely after each prime), we would not expect conscious expectancies to be formed, and it follows that we should not observe facilitation or inhibition effects under long SOA (Fazio, 1990, 1995).

By way of example, in Figure 3b, if COCKROACH were the prime and the target word was “disgusting” we would expect facilitation—a fast response time (here, on the order of 500ms) to say “disgusting” is a negative word—because the prime and target are affectively congruent. Conversely, for all but entomologists, if the target word was “delightful,” we would expect inhibition—a slower RT (on average about 800ms) to say “delightful” is a positive word—because the association is affectively incongruent. In terms of our architectural model (Figure 1), when a previously evaluated concept (say REPUBLICAN) is primed it passes activation to its linked evaluative node(s). Then, when an affectively congruent target appears (say “rainbow”), the “shared” evaluative node is already in a heightened state of arousal so the evaluative response is potentiated and thereby made more easily and faster; whereas, the response to an affectively incongruent target (e.g., “cancer”) would be unexpected and relatively inhibited. Note again that this is a nonreactive measure: the S’s task is to say whether the target word is
positive or negative, not whether the word is or is not associated with the prime. This attitude-priming paradigm proves to be a strong test for discerning whether affect is activated automatically along with the concept itself.

The logic that we have just described for the attitude priming paradigm would appear to depend on an explicitly evaluative task—that is, experimental subjects are asked whether the target word is positive or negative—and this may limit the generality of the findings to cases where one is intentionally processing affective information. The studies we report are subject to this limitation, but it may be useful to note that others have established the automaticity of social attitudes in the absence of an explicitly evaluative task (De Houwer, Hermans, & Spruyt, 2001; Hermans, De Houwer, & Eelen, 1994), for example using a word pronunciation task to collect responses to the target (Bargh, Chaiken, & Raymond, 1996). Duckworth, Bargh, and Garcia (2002) have even found automatic affective priming for completely novel primes, which are found to evoke an affective response despite the absence of any prior attitude (e.g., unfamiliar abstract art). Despite this potential limitation, however, it is important to emphasize that the procedure we follow provides a genuinely nonreactive measure: Subjects neither intentionally nor consciously process the affective value of the prime word, and it is evaluative affect toward the prime rather than the target that interests us.

General Experimental Procedures

Following a pilot study (Lodge & Taber, 2000), three experiments were conducted to test the hot cognition hypothesis in the political domain using the affective priming paradigm. Since these studies are similar in design, differing in the political primes, targets, and treatment of SOA, we will discuss them together.

Procedures. Undergraduate students in introductory political science courses at Stony Brook University received extra credit for their participation: Study 1, N = 80; Study 2, N = 162; Study 3, N = 95. All studies were conducted in our Laboratory for Political Research on Windows-based personal computers using the experimentation software package EPrime. Subjects completed the task singly in separate experimental rooms.

The experiments proceeded in stages: First, subjects received instruction and practice using a button response on a computer keyboard to indicate “as quickly as possible without making too many errors” whether the second of two words that appeared on the computer screen was “positive/good” or “negative/bad.” The first word (the PRIME) always appeared in upper case and remained in the center of the screen for a brief interval of 200 ms, followed either by a 100 ms blank screen, for a short SOA of 300 ms, or by an 800 ms interstimulus interval, for a long SOA of 1,000 ms. The second word (the target) then appeared center-screen in lower case and remained until the S’s button press. Trials were separated by a two-second pause from the response key press to the onset of the next prime. Primes and targets are listed in Table 1.
Table 1. Primes and Targets

### Primes

#### Study 1

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<tr>
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<th>Str</th>
<th>Groups</th>
<th>Val</th>
<th>Amb</th>
<th>Str</th>
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**Note.** Valence, Ambivalence, and Strength are all coded on the interval (−1, 1), with 0 neutral.

### Targets

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</tr>
<tr>
<td>awful</td>
<td>marvelous</td>
<td>comedy</td>
</tr>
<tr>
<td>beautiful</td>
<td>miserable</td>
<td>funeral</td>
</tr>
<tr>
<td>delightful</td>
<td>painful</td>
<td>mutilate</td>
</tr>
<tr>
<td>horrible</td>
<td>repulsive</td>
<td>rainbow</td>
</tr>
</tbody>
</table>
As noted earlier, manipulation of the stimulus onset asynchrony (SOA) allows us to assess the automaticity of response within the attitude-priming paradigm (Fazio, 1990, 2001). What is important to note is that automatic facilitation and inhibition effects are predicted only for the reaction time responses to targets under the short SOA condition, when subjects do not have time to consciously establish expectancies. Referring back to Figure 2 depicting the activation cycle, recall that the 300 ms prime-to-target interval delivers the target word at or near peak activation, when automatic inhibition or facilitation effects should be strongest. After a long SOA of 1,000 ms, by contrast, we would expect little or no priming effect—any conscious expectancies that could be triggered by the prime after 500 ms would not be diagnostic of target valence in our studies.

Following the attitude-priming tasks, a computer-based survey was administered to collect explicitly: each S’s dichotomous (good-bad) ratings of the target words; each S’s rating of the positivity of the prime words in a Likert format and separately their negativity ratings of the prime words to allow us to measure ambivalence as well as valence of the primes (see Cacioppo, Gardner, & Berntson, 1997); each S’s ratings of their strength of attitude toward the prime words; basic demographics; and an open-ended political knowledge test in which, in addition to civics-type questions, we asked for the current or most recent office held by each of the political figures among the primes.

**Measures and Data Manipulations.** The valence of the prime was measured as the difference between the positive and negative evaluations of each prime for the given subject, dichotomized so that any difference greater than zero is coded 1 (net positive), any difference less than zero is coded 0 (net negative), and any difference equal to zero is set to missing. The 9 pt. prime strength measure was dichotomized around the scale midpoint (coded so that 0 denotes weak and 1 strong). Prime ambivalence was computed using the Griffin formula, which averages the positive and negative ratings and subtracts the absolute value of the difference between positive and negative ratings (Levine, 2001; Meffert, Guge, & Lodge, forthcoming; Thompson, Zanna, & Griffin, 1995), and then split at the scale midpoint (0 denoting low ambivalence, 1 high). Sophistication was measured as the number of correct responses on the political knowledge test (17 possible), subjected to a median split, with 0 coded for unsophisticates, 1 for sophisticates.

By their nature, reaction time data are highly positively skewed, and this skewness can affect group means in the analysis of variance. To correct for positive skewness in our data (Study 1, skewness = 3.59; Study 2 = 3.74; Study 3 = 2.83), we subjected the raw reaction time data to a natural log transformation (Bargh & Chartrand, 2000; Fazio, 1990, 1993). All statistical results reported below are computed on these natural log transformed reaction time data; it is worth noting, however, that the overall pattern of results emerges with or without this transformation. In addition, we eliminated trials involving targets that had been incorrectly rated in the survey (e.g., someone might say that “miserable” was
a good thing, in which case we excluded the trials for that subject in which miserable was the target; .04% of trials across the three studies), and we eliminated trials in which there was an incorrect response to the target on the RT (error rate of 5% across the three studies).

Primes and Targets. In choosing primes for our studies we wanted (a) a sample of concepts that included political objects (persons, groups, and issues), (b) an approximately even split for our subjects between positive and negative primes, and (c) variance in the ambivalence measure. The primes varied across studies (see Table 1). For target words (selected from Bradley & Lang, 1999), the most important criterion was that they had clear and widely accepted evaluative implications, half of them positive and half negative.

Hypotheses and Design. Studies 1 and 2 were two (SOA, long vs. short) × 2 (prime valence, positive vs. negative) × 2 (target valence, positive vs. negative) mixed model designs with repeated measures on prime and target valence; Study 3 differed in that SOA was manipulated within subjects.

In each of the studies, we hypothesize that reaction times will be faster for affectively congruent prime-target concepts (pos/pos and neg/neg) than for incongruent pairs (neg/pos and pos/neg). This is the basic hot cognition hypothesis. Critical to the hot cognition postulate is that one’s feelings are triggered automatically on the mere presentation of the concept; accordingly, the predicted facilitation and inhibition effects should only show up in the short SOA condition when priming activation is at peak. Operationally, our most basic hypothesis is represented by the three-way interaction, SOA × prime valence × target valence. Note that we have no expectations about differential effects for negative or positive primes or targets, but only about the affective congruence of prime-target pairs.

These projected analyses will be broken down by sophistication (a between subjects correlate) and attitude strength (within subjects). In general, we predict that political sophisticates and those with strong attitudes would be most likely to have formed online affective links for all of the political objects we use as primes and so we expect stronger results for sophisticates than for unsophisticates and for primes that evoke strong attitudes.

Finally, the basic reason given for the expectation that groups and issues are less likely to be linked to evaluative affect is that attitudes toward these objects are thought to consciously evoke pro and con considerations and consequently be more ambivalent than are attitudes toward persons. Therefore, in addition to comparing hot cognition for the three prime types, we will directly test the underlying contention that implicit attitudes should be weaker for ambivalent primes.

Results

To examine whether evaluatively congruent prime-target pairs elicit faster reaction times than incongruently paired concepts in the short SOA condition but not the long SOA condition, we performed a 2 (SOA) × 2 (prime valence) × 2
mixed effects analysis of variance with repeated measures on the second and third factors for each experiment (in Experiment 3, SOA was also manipulated within subjects). We are also interested in the degree to which this basic interaction is conditioned on prime type (person, group, or issue), on the sophistication of the respondent, on strength of attitude toward the prime, and on ambivalence toward the prime, all of which entail higher order interaction analyses.

Following a presentation format that we use throughout this paper, results are depicted as bar graphs in sets of four bars, each representing an average raw RT for one of the basic groups defined by the prime by target valence interaction: from left to right, negative primes/negative targets, positive primes/positive targets, positive primes/negative targets, and negative primes/positive targets. (To facilitate interpretation, these bar charts depict raw reaction times, but because of positive skewness, statistical analyses are computed on log normal transformed RTs.) We expect the RTs to the attitudinally congruent concepts to be faster (facilitation) than RTs to attitudinally incongruent pairs (inhibition). The appropriate comparison is between the first and third bars (for negative targets) and between the second and fourth bars (for positive targets).

The Hot Cognition Hypothesis. Looking first at the basic prediction for Study 1 for all political primes, we find strong support for the hypothesized three way interaction of SOA, prime, and target, $F(1, 78) = 14.29, p < .001$, with no significant main effects. This result is captured in Figure 4a, which contrasts the basic expected pattern of facilitation and inhibition effects at short SOA, with no facilitation/inhibition effects at long SOA. Follow up contrasts confirm the apparent pattern in Figure 4a: under short SOA, responses to negative targets are significantly faster when preceded by negative primes, $t(45) = 2.02, p = .025$ (one-tailed), while positive primes elicit faster response times when paired with positive targets, $t(44) = 2.26, p = .02$. As predicted, similar contrasts for long SOA failed to reach significance. (To reduce redundancy, we will limit the remaining figures to the short SOA condition, though we will continue to report the full interactions in text.)

Experiment 1 provides strong support for the hot cognition hypothesis: affect it seems is triggered automatically on mere presentation of a political attitude object. Unfortunately, it is possible (though we think implausible) that the priming effect we demonstrate in Study 1 represents a semantic rather than evaluative association in memory for our subjects. That is, the trait adjectives used in Study 1—e.g., appealing, delightful, repulsive—may be semantically linked with some of the political primes, in which case this semantic association could generate the priming effect we observe. We know that people are prone to make trait inferences spontaneously (Park, 1989; Rahn, Aldridge, & Borgida, 1994; Rapport, Metcalf, & Hartman, 1989; Uleman & Bargh, 1989), based on little direct evidence, so perhaps their affective responses are cognitively mediated, that something the Democrats did led our Ss to infer that that they are “horrible” or
“marvelous.” This is in fact the implication of the classic semantic network model—people store their trait inferences with the concept node in LTM. Accordingly, the prime “Giuliani” activates the network of associations linked to him and spreading activation energizes a connection to something he did that had been interpreted as “magnificent” and consequently the target word is now responded to quickly. While it is something of a stretch to see how the trait concepts would be semantically linked to such issues as “peace” and “taxes,” it is conceivable that groups and policies are metonymically “personalized” with trait attributes (Lakoff, 1991, 2001).

We believe that an alternative, primacy of affect (Murphy & Zajonc, 1993; Zajonc, 1980) interpretation of these results is more plausible. Perhaps cognitive and affective systems follow separate though likely interdependent pathways in the brain, with feelings following a quick and dirty route (Le Doux, 1996) that “prepares” a behavioral response before one’s cognitive associations reach con-

Figure 4. RTs for Political Primes.
scious awareness. A strong test of this hypothesis within the attitude-priming paradigm would break any reasonable cognitive connection between the attitudinal prime and the target concepts. This is what we do in Experiments 2 and 3—the attitudinal primes are again political persons, groups, and issues, but the affective target words are now nouns selected from Bradley and Lang’s (1999) *Affective Norms for English Words*, chosen to be affectively unambiguous and semantically unrelated to the leaders, groups, or issues (e.g., comedy, miracle, rainbow, toothache; see Table 1). If we find facilitation effects for semantically unrelated but affectively congruent primes and targets (and inhibition for semantically unrelated but affectively incongruent associations), we will have an even more convincing demonstration of the automaticity of affect for political objects.

In addition, Study 3 introduces a within subjects manipulation on SOA (the same subjects do half their trials at long and half at short SOA) and a much expanded set of primes (see Table 1). The within subjects design on SOA increases statistical power for Study 3.

Figure 4b presents the results at short SOA for Studies 2 and 3. As predicted, the three-way interaction for SOA, prime valence, and target valence was highly significant in both studies (computed on log transformed data): Study 2: $F(1, 160) = 20.26, p < .001$; Study 3: $F(1, 94) = 20.40, p < .001$ (with all main effects insignificant). Planned follow-up contrasts confirm the pattern of Figure 4b: under a short SOA, when responses could only be automatic, positive and negative congruent pairs were significantly faster than incongruent pairs (Study 2: for positive targets, $t(82) = 5.19, p < .001$ [all one-tailed tests]; negative targets, $t(81) = 4.08, p < .001$; Study 3: positive primes, $t(100) = 2.43, p < .01$; negative primes, $t(100) = 4.21, p < .001$). Again, no contrasts were significant at long SOA.

Taken together, support for hot cognition across these three studies is striking. Averaged responses across a wide range of political primes show clear evidence of an automatic link in memory between a broad array of political concepts and positive or negative affect. Moreover, Studies 2 and 3 eliminate any purely semantic interpretation of these facilitation and inhibition effects. But what about our contingent hypotheses predicting the automaticity of affect for political persons, groups, and issues? And will sophisticates be found to be more prone to the effects of automatic affect on political attitudes than unsophisticates?

**Prime Types.** Because of the relatively small sample size in Study 1, let us focus on Studies 2 and 3. Figures 5a and 5b break our basic interactions down into the three prime types—persons (e.g., Colin Powell, George W. Bush, Giuliani, Hillary), groups (e.g., Democrats, Republicans, African Americans, terrorists), and issues (e.g., Affirmative Action, Death Penalty, Pro-Life, Gun Control; see Table 1 for the full sets).

The hot cognition hypothesis is supported for all the political prime types. Table 2 reports the ANOVA results for the SOA x prime x target interactions for studies 2 and 3, broken down by prime type, with all expected three-way interactions significant (issues marginally so for Study 3). Follow up contrasts, also
reported in Table 2, test the expected pattern of results: at short SOA for both positive and negative targets, congruent primes elicited significantly faster response times than did incongruent primes; whereas at long SOA, there was no significant difference between congruent and incongruent pairs. In short, we find experimental support for the automatic activation of an evaluative tally for a wide range of political persons, groups, and issues.

**Sophistication Effects.** The hot cognition hypothesis predicts these facilitation and inhibition effects to be contingent on the political sophistication of the respondent. Political sophisticates, we reason, have thought about and repeatedly evaluated most of the political primes in the past, while subjects whose political knowledge falls below the sample median are less likely to have formed affective links in memory, and therefore should not display the pattern of facilitation and inhibition that indicates automatic affect. In short, we would expect a significant four-way interaction among SOA, prime valence, target valence, and sophistication. Studies 2 and 3 provide enough statistical power to test for this four-way interaction among SOA, prime valence, target valence, and sophistication.
interaction (study 2 because of a large sample size and study 3 because SOA is manipulated within subjects).

The pattern of sophistication effects depicted in Figure 6, as well as the ANOVA and follow up contrasts reported in Table 3, shows an intriguing difference across studies. Study 2 found facilitation and inhibition effects, indicating hot cognition, regardless of level of sophistication. This counterfinding for the sophistication interaction held for all primes taken together and for person and groups; interestingly, sophistication was an important moderator of hot cognition for issue primes. In Study 3, by contrast, low-knowledge subjects were as predicted less likely than sophisticates to display automatic affect toward the full set of primes and for each prime type taken separately.

### Table 2. ANOVA Results by Prime Type, Studies 2 and 3

<table>
<thead>
<tr>
<th>Prime Types</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons</td>
<td>$F(1,154) = 8.28$</td>
<td>$F(1,91) = 17.47$</td>
</tr>
<tr>
<td></td>
<td>$p = .005$</td>
<td>$p = .000$</td>
</tr>
<tr>
<td>Groups</td>
<td>$F(1,78) = 3.95$</td>
<td>$F(1,77) = 11.77$</td>
</tr>
<tr>
<td></td>
<td>$p = .051$</td>
<td>$p = .001$</td>
</tr>
<tr>
<td>Issues</td>
<td>$F(1,135) = 11.23$</td>
<td>$F(1,70) = 2.26$</td>
</tr>
<tr>
<td></td>
<td>$p = .001$</td>
<td>$p = .137$</td>
</tr>
</tbody>
</table>

Follow Up Contrasts for Congruent vs. Incongruent Prime-Target Pairs at Short SOA

<table>
<thead>
<tr>
<th>Prime Types</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons</td>
<td>$t(80) = 2.02, p = .023$</td>
<td>$t(80) = 2.20, p = .016$</td>
</tr>
<tr>
<td>Groups</td>
<td>$t(43) = 2.39, p = .011$</td>
<td>$t(43) = 1.29, p = .102$</td>
</tr>
<tr>
<td>Issues</td>
<td>$t(73) = 2.54, p = .006$</td>
<td>$t(73) = 4.59, p = .000$</td>
</tr>
</tbody>
</table>

**Note.** These analyses contrast RTs for congruent pairs (e.g., positive-positive) with those for incongruent pairs (e.g., negative-positive) to test the hypothesis that congruent pairs are faster than incongruent pairs.

### Table 3. ANOVA Results by Sophistication, Studies 2 and 3

<table>
<thead>
<tr>
<th>Prime Types</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Primes</td>
<td>$F(1,158) = 1.52$</td>
<td>$F(1,93) = 21.14$</td>
</tr>
<tr>
<td></td>
<td>$p = ns$</td>
<td>$p = .000$</td>
</tr>
<tr>
<td>Persons</td>
<td>$F(1,152) = 0.26$</td>
<td>$F(1,90) = 4.17$</td>
</tr>
<tr>
<td></td>
<td>$p = ns$</td>
<td>$p = .044$</td>
</tr>
<tr>
<td>Groups</td>
<td>$F(1,76) = 0.13$</td>
<td>$F(1,76) = 8.82$</td>
</tr>
<tr>
<td></td>
<td>$p = ns$</td>
<td>$p = .004$</td>
</tr>
<tr>
<td>Issues</td>
<td>$F(1,133) = 3.19$</td>
<td>$F(1,69) = 5.70$</td>
</tr>
<tr>
<td></td>
<td>$p = .076$</td>
<td>$p = .020$</td>
</tr>
</tbody>
</table>

Follow Up Contrasts for Congruent vs. Incongruent Prime-Target Pairs at Short SOA, All Primes

<table>
<thead>
<tr>
<th>Sophistication</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophisticates</td>
<td>$t(46) = 4.81, p = .000$</td>
<td>$t(46) = 3.75, p = .000$</td>
</tr>
<tr>
<td></td>
<td>$t(46) = 3.75, p = .000$</td>
<td>$t(46) = 3.94, p = .000$</td>
</tr>
<tr>
<td></td>
<td>$t(47) = 5.35, p = .000$</td>
<td>$t(52) = 0.89, ns$</td>
</tr>
<tr>
<td></td>
<td>$t(52) = 1.05, ns$</td>
<td>$t(52) = 1.05, ns$</td>
</tr>
</tbody>
</table>
This overall pattern lends credence to the theoretical expectations underlying the formation of OL tallies in suggesting that sophisticates, because of their interest in politics, have formed crystallized attitudes to a fuller set of political issues. Note that the person and group primes used in Study 2 are “easier,” more mainstream, and more likely to have been thought about and evaluated in the past by our subjects than are many of the primes in Study 3 (Cobb & Kuklinski, 1997). Virtually all New Yorkers in the aftermath of the 2000 election, regardless of level of sophistication, would have given some thought to George Bush, Al Gore, Hillary Clinton, and Rudy Giuliani. Similarly, most everyone would have formed an attitude about such mainstream groups as Democrats, Republicans, and politicians. Consider now the broader and more difficult sample of primes used in Study 3. In addition to the mainstream political persons, groups, and issues, we purposely included the somewhat obscure (even locally!) New York mayoral candidates, the NAACP and NRA, and a range of issues such as “counterterrorism,” the “death penalty,” and “pro-life” that we (knowing the quality of our undergraduates) can easily imagine many subjects not having thought much about or evaluated in the past. These “harder” primes—and especially the issue primes—seem on their face to have required more thought than unsophisticates were likely to have invested. Moreover, the issues may be more likely to induce ambivalence when they are evaluated, a point to which we now turn (on the other hand, Table 1 shows that averaging across all subjects ambivalence and attitude strength did not line up neatly by prime type).

Ambivalence and Attitude Strength. One of the more interesting theoretical arguments made about the automaticity of affect is the contention that ambivalent attitudes may require a different processing mechanism and a different pattern of linkages in LTM than simpler univalent attitudes (Bassili & Roy, 1998; Levine, 2001; McGraw & Steenbergen, 1995). We agree. Recall in Figure 1 we repre-
sented an ambivalent attitude toward Americans as links to both positive and negative affect. Priming an ambivalent attitude object should pass activation to both positivity and negativity. Predictably, this dual activation should generate neither strong facilitation nor strong inhibition effects.

Both Studies 2 and 3 confirm the importance of well-formed, accessible, or “crystallized” attitudes. As shown in Figure 7, neither ambivalent nor weak primes elicit significant facilitation/inhibition effects at short SOA that would indicate automatic hot cognition, but we do find automatic affect for both unambivalent and strong primes. These descriptive results are confirmed in the ANOVA analyses and contrasts reported in Table 4. In both studies, the four-way interactions among SOA, prime valence, target valence, and ambivalence were significant as were the four-way interactions among SOA, prime valence, target valence, and attitude strength. Planned follow-up contrasts showed that unambivalent and strong primes led to the expected pattern of facilitation for affectively consistent targets and inhibition for affectively inconsistent targets, while ambivalent and

Figure 7. RTs by Prime Ambivalence and Strength at Short SOA.
In all three experiments we have documented the automaticity of affect across a broad range of political concepts. We find consistent support for the hot cognition hypothesis for political leaders, groups, and issues (especially among those with the strongest attitudes, and for nonambivalent primes, and for sophisticates in the evaluation of “hard” political issues). But why is this important? Of what possible significance can this first split second of information processing be? There are two fundamental implications of this research for political science. First, we believe that the hot cognition postulate promises a partial answer to a puzzle of long concern to political scientists—the problem of rational action by citizens in a democracy (Kinder, 1998; Page & Shapiro, 1992; Sniderman, 1993; Taber, 2003). Second, the primacy and automaticity of affect kick-start the processes that spark motivated biases when citizens encounter attitudinally contrary information (Ditto & Lopez, 1992; Huang & Price, 2001; Lord, Ross, & Lepper, 1979; McGraw et al., 1996; Munro et al., 2002; Sigelman & Sigelman, 1984; Taber & Lodge, 2001).

Our field has not been kind to the democratic citizen. Normative democratic theory imposes heroic expectations about the capacity and motivation of *homo politicus*, while modern empirical research finds many citizens to be *homo-not-so-sapiens*. Surveys consistently find respondents to be distressingly ignorant of and uninterested in things political. How, one might ask, can democracy survive weak primes did not show evidence of automatic affect (indeed the pattern was generally reversed, with longer RTs for congruent than incongruent pairs).

### Table 4. ANOVA Results by Ambivalence and Attitude Strength, Studies 2 and 3

<table>
<thead>
<tr>
<th>Interaction</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOA × Prime × Target Ambivalence</td>
<td>$F(1,99) = 6.01, p = .016$</td>
<td>$F(1,53) = 7.85, p = .007$</td>
</tr>
<tr>
<td>SOA × Prime × Target Strength</td>
<td>$F(1,64) = 5.78, p = .019$</td>
<td>$F(1,33) = 11.32, p = .002$</td>
</tr>
</tbody>
</table>

Follow Up Contrasts for Congruent vs. Incongruent Prime-Target Pairs at Short SOA

<table>
<thead>
<tr>
<th>Primes</th>
<th>Positive Targets</th>
<th>Negative Targets</th>
<th>Positive Targets</th>
<th>Negative Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambivalent</td>
<td>$t(57) = -1.80, p = .039$</td>
<td>$t(57) = -1.24, p = .110$</td>
<td>$t(89) = -1.12, ns$</td>
<td>$t(89) = -0.96, ns$</td>
</tr>
<tr>
<td>Unambivalent</td>
<td>$t(81) = 4.90, p = .000$</td>
<td>$t(81) = 4.86, p = .000$</td>
<td>$t(98) = 9.00, p = .000$</td>
<td>$t(98) = 5.94, p = .000$</td>
</tr>
<tr>
<td>Weak</td>
<td>$t(52) = -2.44, p = .009$</td>
<td>$t(51) = -0.74, ns$</td>
<td>$t(91) = -1.89, p = .030$</td>
<td>$t(88) = -0.15, ns$</td>
</tr>
<tr>
<td>Strong</td>
<td>$t(60) = 3.56, p = .001$</td>
<td>$t(60) = 4.80, p = .000$</td>
<td>$t(96) = 4.32, p = .000$</td>
<td>$t(74) = 3.52, p = .001$</td>
</tr>
</tbody>
</table>

Note that positive t-values indicate the expected facilitation and inhibition effects, while negative t-values indicate a reverse pattern: faster RTs for inconsistent than for consistent pairs.
if large majorities lack the basic wherewithal to behave as rational citizens? Perhaps the most serious theoretical challenge to the ability of citizens to behave as fully rational creatures concerns their limited capacity to process information (Simon, 1981). At minimum, it seems, citizens must be able to form attitudes, impressions, and evaluations and choose among political leaders, groups, and ideas.

Unfortunately, the level of ignorance and apathy found regularly in public opinion surveys (and among our participants on the knowledge test!) calls into question even this basic requirement of rational action. In our view, one of the most exciting—and paradoxical—implications of the hot cognition hypothesis is the notion that people internalize simple summary evaluations, formed spontaneously as part of an online evaluation process, as they encounter political information. Once formed, such running tallies (or more accurately, links) provide a ready-made liking heuristic to guide future behavior (Cialdini, 2001; Marcus, Neuman, & MacKuen, 2001; Sears, 2001; Slovic, Finucane, Peters, & MacGregor, 2002; Sniderman, Brody, & Tetlock, 1991). To the extent that such affective links spontaneously provide an evaluative distillation of the stream of information to which the citizen has been exposed, they would seem to offer a fast and relatively simple way around the rationality dilemma (Lodge, Steenbergen, & Brau, 1995). Moreover, unlike most work on heuristic information processing, which offers the promise of low-information rationality, hot cognition, and the online model may provide high information rationality in the sense that evaluative tallies appear to reflect a summing up of one’s prior evaluations, a distillation of the evaluative implications of most if not all relevant information one has been exposed to (Betsch, Plessner, Schwieren, & Gutig, 2001; Taber, 2003).

Because affect comes to mind automatically at the earliest stages of information processing, we would expect affect to have an immediate “primacy effect” on subsequent processing, such that one’s prior attitudes will powerfully constrain the interpretation, depth of processing, and evaluation of new information, as well as one’s ultimate course of action. While it seems highly unlikely that the evaluative tallies deposited in memory through time will be an unbiased reflection of experience, the critical questions become where and when will citizens be motivated reasoners (Kunda, 1990)? In a series of complementary experiments we repeatedly find (Taber & Lodge, 2001)—as do others in nonpolitical domains (Ditto & Lopez, 1992; Edwards & Smith, 1996; Lord, Ross, & Lepper, 1979; Munro et al., 2002)—that one’s prior attitudes are quite resistant to change. Even when motivated to be even-handed, “to leave their feelings aside,” people find it near impossible to view political policy arguments dispassionately (on gun control, affirmative action, federal support for the arts, etc.). Those holding strong attitudes actively counterargue contrary facts, figures, and interpretations while uncritically accepting attitudinally congruent information—a disconfirmation bias—and they actively seek out supporting information so as to bolster and protect their priors—a confirmation bias. Moreover, both selective biases lead to
attitude polarization, especially among the sophisticated and those with strong priors.

To what degree do our findings on the longer-term consequences of automatic affect undermine rationality? To the extent that motivated biases like those described above overwhelm the objective quality of information, the “hot cognition heuristic” may not be much of a solution to the rationality puzzle. But such “biases” may be innocuous, even useful, when they stop at healthy skepticism, allowing new information to have an independent impact on the evaluation process. When does automatic affect lead to rational skepticism and when does it drive irrational bias? This is a prime question on our agenda for future research.

The experiments reported here find robust facilitation and inhibition effects for political leaders, groups, and issues, complementing research in psychology on the automaticity of nonpolitical attitudes (Bargh et al., 1992; Fazio, 1992; Greenwald & Banaji, 1995). The results of our Experiments 2 and 3 in which we find that the predicted prime valence x target valence interactions even hold (in fact appear stronger) when the targets are semantically unrelated to the primes cannot be readily explained by purely cognitive models. There is no discernable semantic link between, say, Gore or Bush, and “rainbow,” “toothache,” or “mutilate,” yet the responses are speeded up significantly when the prime and target concepts are affectively congruent and slowed down when attitudinally incongruent. Certainly these results offer strong support for the prevalence of hot cognition in political information processing (Marcus, Newman, & MacKuen, 2001). But what are the implications of these findings for the underlying theoretical architecture of political attitudes?

One possibility, following Zajonc’s (1980, 1984) account of the primacy of affect, is that the cognitive and affective systems are separable and somewhat independent (though perhaps architecturally interrelated as depicted in our Figure 1). There is some neurological evidence (e.g., LeDoux, 1996) that the affect system is easily and swiftly sparked and once activated generates a “quick and dirty” approach-avoidance reaction to the situation (JUMP, before you know if it is a stick or a snake), with conscious, deliberative appraisal following moments later. From this perspective the automatic affective response is primary and may or may not (depending on individual and situational factors) be overturned by a later conscious, cognitive assessment (Devine, 1989; Murphy & Zajonc, 1993).

A related perspective—complementary to Zajonc’s independent systems—sees response competition as a plausible explanation for the attitudinal priming effect (DeHouwer, 2001). By this account, attitudes are inexorably linked to behavior. Attitudinal objects automatically potentiate a bivalent behavioral response. Mere exposure to an attitudinal object “readies” an immediate approach-avoidance behavioral response. When the prime and target are affectively congruent the behavioral response to the target is speeded up, but when the pairing is affectively incongruent the prepared response must first be inhibited, then redirected, and is consequently slowed down. In this light, a negative attitudinal object
readies an “avoidance” response, which, were it followed by a contrary signal (a “false alarm”), the “to-be-emitted” action must first be stopped and an alternative forward-looking “go” response initiated.

Both Zajonc’s independent-systems perspective and the response competition explanation accomplish a long-sought desideratum of social science—they directly link attitudes to behavior. What is critical from our perspective is that political beliefs, feelings, intentions, and actions will, if repeatedly associated, become interconnected in a network of interdependencies that becomes “automatized” in everyday thinking, feeling, and acting, only becoming disassociated in pathological cases (Gazzaniga, 1992, 1998). From this perspective Damasio (1994, 2002) is right in claiming, “the brain is a feeling machine for thinking” and William James (1890) was right in believing that “thinking is for doing.”

ACKNOWLEDGMENTS

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REFERENCES


The perception of threat and the experience of anxiety are distinct but related public reactions to terrorism. Anxiety increases risk aversion, potentially undercutting support for dangerous military action, consistent with terrorists' typical aims. Conversely, perceived threat increases a desire for retaliation and promotes animosity toward a threatening enemy, in line with the usual goals of affected governments. Findings from a national telephone survey confirm the differing political effects of anxiety and perceived threat. The minority of Americans who experienced high levels of anxiety in response to the September 11 attacks were less supportive of aggressive military action against terrorists, less approving of President Bush, and favored increased American isolationism. In contrast, the majority of Americans who perceived a high threat of future terrorism in the United States (but were not overly anxious) supported the Bush administration's antiterrorism policies domestically and internationally.

Psychological reactions to terrorism play a pivotal role in understanding public support for government antiterrorist policies. As Crenshaw argues: “The political effectiveness of terrorism is importantly determined by the psychological effects of violence on audiences” (1986, 400). In an area of research characterized by disagreement over the definition and objectives of terrorism, there is pervasive agreement that the effects of terrorism extend well beyond its immediate victims and physical destruction to include a much broader target population (Crenshaw 1986; Long 1990; Wardlaw 1982).

There are differing psychological reactions to external threat, however, and these reactions shape support of government policies designed to combat terrorism. Based on a review of the literature below, we draw a critical distinction between perceived threat and the anxiety it can elicit. The political importance of this distinction between perceived threat and anxiety rests on their typical psychological effects: anxiety leads to an overestimation of risk and risk-averse behavior (Lerner and Keltner 2000, 2001; Raghunathan and Pham 1999) whereas external and perceived threat increase support for outwardly focused retaliatory action (Herrmann, Tetlock, and Visser 1999; Jentleson 1992; Jentleson and Britton 1998).

The distinction between perceived threat and anxiety is intimately tied to the major objectives of terrorists and governments in countries targeted by terrorism. A major function of terrorist violence is to instill anxiety in a target population; this anxiety then places pressure on political elites to negotiate and make concessions with terrorists in order to mollify their frightened citizens (Friedland and Merari 1985; Long 1990). Long argues that terrorists often “use the unreasonable fear and the resulting political disaffection it has generated among the public to intimidate governments into making political concessions in line with its political goals” (1990, 5). In this sense, terrorists may have a good grasp of psychological reality. The intended effects of terrorism are consistent with the psychological link between anxiety and risk aversion.

These motives contrast starkly, however, with the need of governments in vulnerable countries to take forceful action against terrorists. As Berry puts it: “A target that is incapable of responding to terrorism will lose public support and lessen its capabilities and confidence to...
threat not only promotes intolerance but also leads to support for punitive action against threatening groups. In past research on foreign policy attitudes, Americans have supported overseas military action in direct proportion to the threat posed by a foreign aggressor to U.S. interests (Herrmann, Tetlock, and Visser 1999; Jentleson 1992; Jentleson and Britton 1998). Terrorist threat is also associated with support for aggressive military action among Israelis (Friedland and Merari 1985). Arian (1989), for example, found a direct link between the perceived likelihood of war and a preference for an increase in military power over peace negotiations among Israelis in the 1980s. The degree of external threat posed by various out-groups also predicts how negatively Israelis feel towards group members, confirming the general link between terrorist threat and heightened prejudice (Bar-Tal and Labin 2001).

These findings point to the surprisingly consistent effects of external and perceived threat across a broad range of studies. Both types of threat lead to the vilification of the source of threat, limit support for government actions that might assist members of the threatening group, promote support for belligerent solutions directed at threatening individuals or groups, and heighten in-group solidarity. The effects of threat are especially impressive given its varied definition and measurement. Even more impressive, when threat is manipulated experimentally we find it to be not just a correlate but a clear cause of ethnocentrism, intolerance, and a desire for retaliation (Grant and Brown 1995; Herrmann, Tetlock, and Visser 1999; Marcus et al. 1995).

Before concluding that external and perceived threat always promotes support for belligerent action against an aggressor, however, we should examine the concept of threat more closely. Most research, with the exception of some in Israel, has not examined powerful physical threats, such as terrorism, that are likely to arouse high levels of anxiety. We now review some specific psychological effects of anxiety, including heightened risk perception and risk aversion (Lerner et al. 2003; Lerner and Keltner 2000, 2001; Raghunathan and Pham 1999), which may help to explain why an external threat sometimes fosters support for belligerent and risky policies (Gordon and Arian 2001; Kahneman and Tversky 1979) and at other times leads to conciliatory or risk-averse behavior (Arian 1989; Niemi, Mueller, and Smith 1989).

The Distinctive Effects of Anxiety

Recent research in psychology points to three specific effects of anxiety that differ from the general response to perceived threat (Lerner and Keltner 2000, 2001;
SUPPORT OF ANTITERRORISM POLICIES

Mathews and Macleod 1986). First, anxiety worsens cognitive functioning because it diverts attention to threatening stimuli and increases cognitive preoccupation with threatening sources, shifting attention and resources away from nonthreatening stimuli (Eysenck 1992; MacLeod and Mathews 1988; Mathews and MacLeod 1986; Mogg et al. 1990; Yiend and Mathews 2001). Anxiety has especially detrimental effects on tasks that involve working memory such as reading comprehension and specific word recall (Eysenck 1992). Anxiety can improve some limited cognitive functions—anxious individuals may more readily detect additional environmental threat, for example (Byrne and Eysenck 1995)—but, overall, cognitive functioning is impaired by high anxiety.

Second, anxious individuals tend to perceive higher levels of risk than those who are not anxious (Butler and Mathews 1983; Eysenck 1992; Lerner and Keltn 2000, 2001). Anxiety is especially likely to increase the perceived risks associated with personally relevant negative events (Butler and Mathews 1983, 1987). According to Lerner and Keltn (2000, 2001) anxiety produces a sense of uncertainty and lack of control that elevates future judgments of risk. Anxiety may also increase perceived risk because it heightens the salience of self-relevant negative thoughts (MacLeod, Williams, and Bekerian 1991). In general, anxiety increases the perceived risk of negative self-relevant events, but not necessarily events that lack personal relevance.

Third, anxiety increases risk aversion because anxious individuals are motivated to reduce their anxiety, leading to a preference for less risky options (Lerner and Keltn 2001; Raghunathan and Pham 1999).

The differing psychological effects of anxiety and perceived threat shed light on reactions to government antiterrorism policies. Perceived threat is likely to increase the desire for government retaliation against an enemy, whereas anxiety will undercut this support to the extent that the proposed retaliatory action is seen as personally dangerous and risky. The divergent political consequences of anxiety and perceived threat should be most pronounced on government military action that could be seen to incite future terrorist retaliation. There should be no such conflict between anxiety and perceived threat, however, when it comes to support for domestic actions such as heightened internal surveillance which Americans view as aimed at guilty others, not at them (Huddy, Khatib, and Capelos 2002). Anxious individuals are thus unlikely to feel personally threatened by domestic antiterrorism policies and may actually be more supportive of them than the nonanxious.

Factors Linked to Heightened Threat Perceptions

Perceived threat and anxiety have distinct psychological and political effects. They also have somewhat different antecedents. Direct personal experience with terrorism has an especially powerful effect on the development of anxiety and related psychological symptoms (Gordon and Arian 2001; Galea et al. 2002; Piotrkowski and Brannen 2002; Schuster et al. 2001; Silver et al. 2002). The link between personal experience and anxiety may arise because individuals who are physically closest to a terrorist incident experience the event as more vivid, leading to heightened emotional arousal (Lowenstein et al. 2001). Such experiences may also arouse a sense of personal vulnerability, leading to the development of anxious thoughts about one’s physical well-being. Personal experience can elevate threat perceptions as observed by Fischhoff and colleagues (2003), but we expect the link between personal experience and anxiety to be greater than that between personal experience and perceived threat.

Perceived threat and anxiety are distinct reactions, but they are also related for obvious reasons. Someone who disputes the existence of any future terrorist threat is unlikely to feel anxious about terrorism. Of course, not everyone who perceives a threat will necessarily feel anxious. There are several factors that influence the development of both reactions. Gender is the most powerful of these. Women express higher levels of anxiety and perceive greater risks associated with war and terrorism (Arian and Gordon 1993; Fischhoff et al. 2003; Lerner et al. 2003; Skitka, Bauman, and Mullen 2004). Lower levels of education have also been found to increase anxiety and the perceived risk of terrorism (Friedland and Merari 1985; Skitka, Bauman, and Mullen 2004). There are two differing explanations for this link: highly educated individuals have greater facility with probabilistic information and can better reason about the future likelihood of a terrorist attack and personal victimization (Edwards 1983), and lower levels of education are associated with greater life stressors which reduce a sense of control and heighten responses to threatening events (Fischhoff et al. 2003; Perilla, Norris, and Lavizzo 2002; Vaughan 1993).

Hypotheses

We study Americans’ reactions to the threat of terrorism to better understand the political effects of perceived

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1 We regard anxiety as an umbrella term for fear, anxiety, worry, and related states in keeping with the broad definition of anxiety in neuroscience, clinical, cognitive, and other branches of psychology (Costa and McRae 1985; LeDoux 1996; Öhman 2000; Panskepp 1998).
threat and anxiety on support for government antiterrorist policies. Data are drawn from the Threat and National Security Survey (TNSS), a national telephone survey that assessed reactions to the events of September 11. We test the following hypotheses: (1) Perceived threat is distinct from anxiety and has differing determinants, although the two are related. (2) Anxiety is linked to other psychological symptoms of distress but perceived threat is not. (3) Anxiety lowers knowledge about the event and its aftermath because of its tendency to impair cognitive functioning. (4) Anxiety and perceived threat lead to differences in support for antiterrorism policies: Perceived threat increases negative views of Arabs and leads to support for policies that strike out at the enemy. In contrast, anxiety reduces support for any retaliatory policies that could jeopardize American security. (5) Perceived threat increases support for homeland security policies designed to minimize future risk, even when such policies violate support for civil liberties; anxiety may also foster support for homeland security policies because such policies are designed to minimize the future risk of terrorism.

Results

Sample

The survey was conducted via telephone with 1,549 adults aged 18 or older between early October 2001 and early March 2002. The sample was drawn as a random-digit-dial (RDD) weekly rolling cross-section with roughly 100 individuals interviewed each week throughout the time period. The first month of data was collected by Shulman, Ronca, and Bukuvalis and the remainder by the Stony Brook University Center for Survey Research. The cooperation rate for the survey was 52%.2

Distinct Reactions to External Threat

Americans exhibited a range of responses to September 11, as seen in Table 1. The survey included two questions that tapped the perceived threat of future terrorism to the nation: “How concerned are you that there will be another terrorist attack on the United States in the near future?” and “How concerned are you that terrorists will attack the United States with biological or chemical weapons?” Levels of perceived national threat were quite high: 86% reported that they were very or somewhat concerned about another attack, and 84% were very or somewhat concerned about the threat of biological or chemical attacks. Perceived personal threat was assessed with one question: “How concerned are you personally about you yourself, a friend, or a relative being the victim of a future terrorist attack in the United States?” A surprisingly high 68% of respondents reported being very or somewhat concerned about being personally affected by a terrorist attack; 31% were very concerned.

Americans perceived a high level of terrorist threat to themselves and the nation, but varied in the degree to which they felt anxious. Respondents were asked “How much, if any, have the terrorist attacks shaken your own sense of personal safety and security?” A small minority (almost 18%) of the sample said that the attacks had shaken their sense of personal safety and security a great deal, although an additional 34% said that it had shaken them some. That left 47% who said the attacks had little or no effect on their sense of safety and security. Respondents were also asked how often they had felt four anxiety-related emotions: anxious, scared, frightened, or worried. Almost half reported feeling anxious or worried at least sometimes, and a small minority reported feeling these emotions very often. In addition, just under a third reported feeling scared or frightened sometimes or very often. But that left a majority who did not feel frightened or scared, or felt that way only occasionally. On average, the perceived threat of terrorism was more widespread than feelings of anxiety in the aftermath of 9/11.

To verify empirically the distinction between anxiety and perceived threat, several confirmatory factor analyses (and all subsequent analyses) were estimated using Mplus which has more robust estimators for categorical and ordinal variables (such as 4-point measures of anxiety and perceived threat) than other covariance structure model programs (Muthen and Muthen 2001). Mplus estimates the link between discrete observed indicators and an underlying continuous latent variable as probit or ordered probit functions, using estimated latent thresholds instead of interval scores for the discrete indicators. This method is used to arrive at factor loadings for all anxiety and threat variables. All models were estimated via weighted least squares, which is more appropriate than maximum likelihood for models with discrete variables (see Muthen and Muthen 2001). We also report robust standard error estimates.

The four anxiety items and feeling shaken by the 9/11 attacks were expected to load on one anxiety factor and the three perceived threat items to load on another, to yield two distinct but related dimensions. An initial factor

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2Respondents were of similar income level to the national population but were slightly more middle-aged, somewhat better educated, slightly less black, and somewhat more female, in line with other national telephone surveys (Brehm 1993). Post-stratification weights based on 2002 CPS figures for education, gender, and geographic region did not alter frequencies for key variables by more than 1 percentage point. The data remain unweighted in all reported analyses.
Table 1  Levels of Perceived Threat and Anxiety

<table>
<thead>
<tr>
<th></th>
<th>Very Concerned</th>
<th>Somewhat Concerned</th>
<th>Not Very Concerned</th>
<th>Not at All Concerned</th>
<th>DK/NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>How concerned are you that there will be another terrorist attack on U.S. soil in the near future?</td>
<td>49.8%</td>
<td>36.5</td>
<td>9.7</td>
<td>3.5</td>
<td>0.4</td>
</tr>
<tr>
<td>How concerned are you that terrorists will attack the United States with biological or chemical weapons?</td>
<td>47.3%</td>
<td>37.4</td>
<td>10.2</td>
<td>3.8</td>
<td>1.3</td>
</tr>
<tr>
<td>How concerned are you personally about yourself, a friend, or a relative being the victim of a future terrorist attack in the United States?</td>
<td>30.8%</td>
<td>37.1</td>
<td>19.8</td>
<td>11.2</td>
<td>1.2</td>
</tr>
<tr>
<td>How much, if any, have the terrorist attacks shaken your own sense of personal safety and security?</td>
<td>17.8%</td>
<td>34.2</td>
<td>23.4</td>
<td>23.8</td>
<td>0.9</td>
</tr>
</tbody>
</table>

As you think about the terrorist attacks and the U.S. response, how often have you felt . . .
- Anxious? 11.4% 35.7 27.9 23.6 1.4
- Scared? 7.9% 23.3 28.7 38.3 0.8
- Worried? 13.0% 36.9 25.9 22.9 1.2
- Frightened? 5.6% 24.5 27.4 41.3 1.2

Note: All entries are percentages.

analysis confirmed that the four emotion items tap a single anxiety dimension. We then tested the null hypothesis that anxiety is indistinguishable from perceived threat. In this model, a single latent factor was assumed to account for the covariance among all eight of the reactions to 9/11 listed in Table 1. This one-factor model was a very poor fit to the data. The ratio of the chi-squared value to the degrees of freedom was over 69, a very large value. The RMSEA was .215, well above the acceptable .10 value, and the residuals were substantial.3

A two-factor model in which anxiety and perceived threat formed distinct factors proved a much better fit to the data. The normed fit indices for this model were close to 1.0, but other indicators of fit were less satisfactory. The chi-squared value to the degrees of freedom ratio was quite large (30), the RMSEA was .14, and there were some large residuals. Model diagnostics suggested that a concern about the personal risk of terrorism may load on the anxiety factor, providing further empirical acknowledgement of the link between anxiety and personal risk. And a shaken sense of personal safety and security appeared to load on the perceived threat factor, suggesting that feeling shaken indicates a mixture of anxiety and perceived threat. Adding these two parameters produced the two-factor model shown in Table 2, which is a slight modification of our original expectations. The chi-squared/degrees of freedom ratio decreased to 5.6, and the RMSEA dropped to .056, indicating a very good fit.4

Perceived threat and anxiety form two distinct factors in this revised and improved model. Perceived threat is most clearly defined by the two questions on concerns about future terrorist attacks on the United States. Concerns about the likelihood of personal (family and friends) consequences of terrorism is a somewhat weaker indicator of threat; feeling that the attacks had shaken one's

3The RMSEA (root mean squared error of approximation) provides a measure of model discrepancy per degree of freedom and thus adds a penalty for adding parameters. Values of RMSEA less than .10 indicate a good fit of the model to the data and values less than .05 indicate a very good fit (Browne and Cudek 1993).

4In addition, the normed fit indices are virtually at their maximum: CFI = .997, TLI = .995.
Table 2  Factor Structure of Threat Items

<table>
<thead>
<tr>
<th></th>
<th>Factor 1: Perceived Threat</th>
<th>Factor 2: Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>Factor Loading</td>
<td>Coefficient</td>
</tr>
<tr>
<td>How concerned are you that there will be another terrorist attack on U.S. soil in the near future?</td>
<td>1.00</td>
<td>.87</td>
</tr>
<tr>
<td>How concerned are you that terrorists will attack the United States with biological or chemical weapons?</td>
<td>.96 (.03)</td>
<td>.84</td>
</tr>
<tr>
<td>How concerned are you personally about you yourself, a friend, or a relative being the victim of a future terrorist attack in the United States?</td>
<td>.56 (.03)</td>
<td>.49</td>
</tr>
<tr>
<td>How much, if any, have the terrorist attacks shaken your own sense of personal safety and security?</td>
<td>.37 (.03)</td>
<td>.33</td>
</tr>
<tr>
<td>As you think about the terrorist attacks and the U.S. response, how often have you felt...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxious?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scared?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worried?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Coefficients are weighted least squares estimates for a two-factor latent variable model with categorical observed variables. Robust standard errors are in parentheses.

sense of personal safety and security is an even weaker indicator, although still statistically significant. Anxiety is most strongly defined by the four emotion items, with somewhat stronger factor loadings for scared and frightened than worried and anxious. A sense of shaken personal safety and security loads on the anxiety factor, but not as strongly. Finally, personal threat is a significant but relatively weak indicator of anxiety. Although two of the eight questions have significant coefficients on both factors, the two factors are quite distinct with an estimated correlation of .57. The correlation between the perceived threat and anxiety factors is not a function of their two shared indicators. When the model is reestimated with neither of the shared indicators included, the estimated correlation between the factors is .58.

To ensure the robustness of the factor model shown in Table 2, it was estimated separately for the period up to the end of December 2001 and from January 1 till mid-March and then again for respondents who had up to a high school degree and those with at least some college. The estimated parameters were virtually identical in these subsamples and the two-factor solution was a much better fit than a one-factor model in each case. The two latent factors of anxiety and perceived threat are used in all subsequent analyses.

Determinants of Perceived Threat and Anxiety

Confirmatory factor analyses verify that anxiety and perceived threat are distinct reactions to the threat of terrorism. We now turn to their determinants to assess whether anxiety and perceived threat can also be distinguished on the basis of their differing origins. The estimates shown in Table 3 are based on regression equations in which latent factors measuring perceived threat and anxiety are regressed onto the other factors in the table. The $R^2$ value is estimated in this and all subsequent analyses because
the dependent variables are categorical or latent factors. Latent factors for perceived threat and anxiety have no intrinsic scales and are standardized so that a unit on each represents a change of one standard deviation. The regression coefficients in Table 3 thus indicate the change in a standard deviation unit of each latent variable as the predictor increases by one unit (all analytic variables are coded 0 to 1 except for age, education, religious attendance, and weeks after 9/11).

Physical and emotional proximity to the attacks was expected to arouse anxiety but have less impact on perceived threat. There is some support for this prediction. Knowing someone who was killed or hurt in the attacks increased both anxiety and perceived threat, but had greater impact on anxiety as expected. Living near the terrorist attacks had significant effects on both anxiety and perceived threat (see also Skitka, Bauman, and Mullen 2004), although close physical proximity had greatest impact on anxiety. Perceptions of threat were higher in the northeast than in the rest of the nation with no additional impact of living in the New York area. Anxiety, on the other hand, was significantly higher among those living in the New York metropolitan area but not in the Northeast more generally. This latter finding is consistent with other studies that find heightened psychological reactions to 9/11 among those who lived closest to the attacks.

Several other factors differentially influenced the development of anxiety and threat, helping to confirm their distinctiveness. Younger people felt more anxious than older people, although there were no significant age-related differences in perceived threat. Republicans experienced somewhat less anxiety than Democrats, feeling reassured perhaps by the presence of George W. Bush as president. Women perceived somewhat higher levels of threat but felt much more anxious than men. In addition, several factors influenced threat but not anxiety. Blacks were somewhat more likely than whites to assess a higher risk of terrorism, although they did not experience higher levels of anxiety. And authoritarianism lead to higher levels of perceived threat but only slightly higher levels of anxiety, consistent with evidence that authoritarianism is linked to greater sensitivity to threat (Lavine et al. 2002).

Finally, there was a slight decline in perceived threat and anxiety over time, but the effect is nonlinear. Perceived threat and anxiety declined more rapidly after 9/11 but showed little further decline after the New Year, consistent with the findings of other national studies (see Davis and Silver 2003). Moreover, there is no change over time in support for government national security policy or the dynamics of policy support. Anxiety and threat have the same impact on national security policy throughout the study period (as indicated by nonsignificant interactions between anxiety and time and perceived threat and time in all policy analyses). As a consequence, we omit time as a variable from subsequent analyses.

**Anxiety and Depression**

To further validate the distinction between perceived threat and anxiety, we consider its link to depression, which shares common negative affect with anxiety but should not be especially related to perceived threat (Clark and Watson 1991). The survey included three indicators of depression: feeling depressed, having trouble concentrating, and having trouble sleeping. Table 4 contains the results of an equation predicting depression—a latent variable with a unit fixed at one standard deviation.

Finally, there was a slight decline in perceived threat and anxiety over time, but the effect is nonlinear. Perceived threat and anxiety declined more rapidly after 9/11 but showed little further decline after the New Year, consistent with the findings of other national studies (see Davis and Silver 2003). Moreover, there is no change over time in support for government national security policy or the dynamics of policy support. Anxiety and threat have the same impact on national security policy throughout the study period (as indicated by nonsignificant interactions between anxiety and time and perceived threat and time in all policy analyses). As a consequence, we omit time as a variable from subsequent analyses.

**Table 3 Determinants of Perceived Threat and Anxiety**

<table>
<thead>
<tr>
<th></th>
<th>Perceived Threat</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>s.e.</td>
</tr>
<tr>
<td>Age (10 years)</td>
<td>.029</td>
<td>.019</td>
</tr>
<tr>
<td>Education</td>
<td>-.039</td>
<td>.013</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>.29</td>
<td>.06</td>
</tr>
<tr>
<td>Income &lt;$25,000</td>
<td>.27</td>
<td>.08</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.36</td>
<td>.11</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.23</td>
<td>.12</td>
</tr>
<tr>
<td>Other</td>
<td>.24</td>
<td>.15</td>
</tr>
<tr>
<td>Authoritarianism</td>
<td>.48</td>
<td>.10</td>
</tr>
<tr>
<td>Party ID (Republican)</td>
<td>-.10</td>
<td>.09</td>
</tr>
<tr>
<td>Ideology (Conservative)</td>
<td>.13</td>
<td>.10</td>
</tr>
<tr>
<td>Attend religious services</td>
<td>.002</td>
<td>.012</td>
</tr>
<tr>
<td>Know missing</td>
<td>.16</td>
<td>.07</td>
</tr>
<tr>
<td>Northeast</td>
<td>.27</td>
<td>.12</td>
</tr>
<tr>
<td>NY Metro area</td>
<td>.10</td>
<td>.17</td>
</tr>
<tr>
<td>Weeks after 9/11</td>
<td>-.093</td>
<td>.032</td>
</tr>
<tr>
<td>Weeks²</td>
<td>.003</td>
<td>.001</td>
</tr>
<tr>
<td>Estimated R²</td>
<td>.13</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Coefficients are weighted least squares estimates for the latent dependent variables defined by the factors shown in Table 2. The latent dependent variables have units of one standard deviation. Coefficients in bold have z-scores greater than 2. The equations also contained a dummy variable for those who would not report their income. The coefficient for this variable was small in both equations.*

5 Authoritarianism was measured as a preference for obedience, respect, and good manners among children over more expressive and creative values (Feldman and Stenner 1997).
deviation in anxiety leads to a .69 standard deviation increase in depression symptoms. Levels of depression are higher among women, the less affluent, and nonwhites, especially Hispanics, and lower among the better educated (see also Schlenger et al. 2002). Proximity to the attacks—living in the New York metro area and knowing someone hurt or killed in the attacks—also leads to higher reported levels of depression. Authoritarians report higher levels of depression than nonauthoritarians, and Republicans are significantly less likely to report symptoms of depression than are Democrats.

### Anxiety and Knowledge

Anxiety typically worsens cognitive functioning and may impair learning about the attacks and subsequent events because it clogs working memory with anxious thoughts that limit the comprehension and retention of new information (Eysenck 1992). This hypothesis is tested with responses to four items concerning knowledge of Afghanistan, Islam, and Osama Bin Laden, which were combined to yield a 5-point knowledge measure. The knowledge equation is estimated as an ordered probit with a five-level categorical dependent variable (see Table 4). Since probit coefficients have no straightforward interpretation, we also present the expected change in the probability of correctly answering at least three of the four knowledge questions as each predictor varies across its range. Estimated thresholds were calculated for all probit analyses reported and can be obtained from the authors. As predicted, anxiety is linked to less accurate knowledge, but perceived threat is not. This cannot be explained by lower levels of news attention among anxious

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### Table 4 Determinants of Depression and Knowledge

<table>
<thead>
<tr>
<th></th>
<th>Depression Coefficient</th>
<th>Knowledge Coefficient</th>
<th>Change in Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Threat</td>
<td>.03 (.03)</td>
<td>−.05 (.05)</td>
<td>−.05</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.69 (.03)</td>
<td>−.18 (.06)</td>
<td>−.17</td>
</tr>
<tr>
<td>Age (10 years)</td>
<td>.009 (.018)</td>
<td>.084 (.018)</td>
<td>.20</td>
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<tr>
<td>Education</td>
<td>−.082 (.014)</td>
<td>.162 (.013)</td>
<td>.49</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>.33 (.06)</td>
<td>−.60 (.06)</td>
<td>−.23</td>
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<tr>
<td>Race/Ethnicity</td>
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<td></td>
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<tr>
<td>Black</td>
<td>.30 (.11)</td>
<td>−.22 (.12)</td>
<td>−.08</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.50 (.12)</td>
<td>−.20 (.12)</td>
<td>−.08</td>
</tr>
<tr>
<td>Other</td>
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<td>−.11 (.13)</td>
<td>−.04</td>
</tr>
<tr>
<td>Authoritarianism</td>
<td>.24 (.08)</td>
<td>−.62 (.08)</td>
<td>−.24</td>
</tr>
<tr>
<td>Party ID (Republican)</td>
<td>−.24 (.09)</td>
<td>.28 (.09)</td>
<td>.11</td>
</tr>
<tr>
<td>Ideology (Conservative)</td>
<td>.19 (.10)</td>
<td>−.20 (.10)</td>
<td>−.07</td>
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<td>Religious services</td>
<td>.007 (.011)</td>
<td>.002 (.012)</td>
<td>.01</td>
</tr>
<tr>
<td>Know missing</td>
<td>.30 (.07)</td>
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<tr>
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<td>−.14 (.12)</td>
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<td>City 400,000+</td>
<td>.06 (.08)</td>
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<tr>
<td>Northeast</td>
<td>.28 (.09)</td>
<td></td>
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</tr>
<tr>
<td>Weeks after 9/11</td>
<td>−.036 (.006)</td>
<td></td>
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</tr>
<tr>
<td>Estimated R²</td>
<td>.69</td>
<td>.30</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Coefficients for depression symptoms are weighted least-squares estimates for the latent variable described in the text. The latent variable has a unit of one standard deviation. Coefficients for knowledge are weighted least-squares probit estimates. Robust standard errors are in parentheses. Coefficients in bold have z-scores greater than 2. Changes in probability for knowledge are differences in the probability of correctly answering at least three out of four questions as each predictor variable ranges from low to high as described in footnote 6.*

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6 The specific range for each variable is: age, 20 years to 80 years old; education, 11 years to 20 (postgraduate degree) years; gender, male to female; race/ethnicity, white to black/Hispanic/other; authoritarianism, lowest to highest score; party identification, strong Democrat to strong Republican; ideological identification, very liberal to very conservative; attendance at religious services, zero to eight times per month. Perceived threat and anxiety varied from the 5th to 95th percentile. Changes in probability were computed holding all other variables constant at their mean for an independent and ideologically moderate white male.
individuals, since anxious individuals actually watched somewhat more TV news than those who were not anxious \( (r = .10, p < .05) \). This finding is consistent with evidence from Marcus, Neuman, and Mackuen (2000) that anxiety increases information-seeking behavior. The remaining predictors of political knowledge are consistent with the usual determinants of political knowledge: increasing education, age, gender (male), and lower levels of authoritarianism (Delli Carpini and Keeter 1996).

Taken together, evidence on the measurement, determinants and correlates of anxiety and perceived threat demonstrate that they constitute distinct reactions to the external threat of terrorism. We turn next to consider their political effects.

**Support for Military Intervention and Presidential Approval**

Perceived threat and anxiety were expected to have opposing effects on support for military initiatives and overseas engagement in line with evidence that threat increases the desire for retaliation whereas anxiety leads to heightened estimates of risk, especially self-relevant risks such as retaliatory attacks against Americans on U.S. soil. We also expected perceived threat to enhance, and anxiety to diminish, support for President Bush’s handling of the terrorist crisis, because of his ready endorsement of a strong military response to the 9/11 attacks. Consistent with other national polls taken at this time, 90% of respondents approved of the way Bush was handling his job, 72% supported increasing military action even if it meant significant U.S. casualties, 84% believed it would be best if the United States took an active part in world affairs, and 63% felt the United States should take the leading role in solving international problems (Gaines 2002; Huddy, Khatib, and Capelos 2002).

Table 5 displays probit estimates that confirm the differing policy implications of perceived threat and anxiety. Higher levels of perceived threat are associated with greater support for U.S. military intervention, U.S. overseas involvement, and approval of Bush, in line with evidence that threat promotes retaliation. In contrast, anxiety has the opposite effect, decreasing approval of President Bush’s handling of the situation and increasing opposition to military action and overseas involvement,

| Table 5 | Determinants of Bush Approval, Military Intervention, and World Involvement |
|------------------|-----------------|-----------------|-----------------|-----------------|
| Bush Approval | Military Action, Afghanistan | Active in World Affairs | Take Leading Role |
| | Change in Probability | Coefficient | Change in Probability | Coefficient | Change in Probability | Coefficient | Change in Probability | Coefficient |
| **Perceived Threat** | .30 (.09) | .28 (.05) | .16 (.07) | .23 (.06) |
| Anxiety | -.27 (.11) | -.25 (.06) | -.18 (.08) | -.17 (.08) |
| Age (10 years) | .044 (.035) | .049 (.020) | .074 (.025) | .014 (.023) |
| Education | .027 (.025) | -.009 (.014) | .042 (.020) | -.003 (.016) |
| Gender (female) | -.07 (.11) | -.38 (.06) | -.02 (.09) | -.10 (.07) |
| Race/Ethnicity | Black | -.59 (.16) | -.41 (.11) | -.37 (.15) | -.34 (.14) |
| Hispanic | -.20 (.19) | -.40 (.14) | -.12 (.17) | -.05 (.15) |
| Other | -.35 (.21) | -.27 (.15) | -.01 (.21) | .30 (.18) |
| Authoritarianism | .38 (.15) | .26 (.09) | -.38 (.12) | -.05 (.10) |
| Party ID | (Republican) | .96 (.21) | .66 (.11) | .50 (.13) |
| Ideology | (Conservative) | .34 (.19) | .24 (.11) | .18 |
| Estimated R² | .27 | .20 | .11 | .07 |

*Note: Coefficients are weighted least-squares probit estimates. Robust standard errors are in parentheses. Coefficients in bold have z-scores greater than 2. Changes in probability are differences in the probability of approving of Bush’s performance or supporting interventionist policies as each predictor variable ranges from low to high as described in footnote 6.*
consistent with psychological evidence that it promotes risk aversion.\(^7\)

The effects of perceived threat and anxiety are substantial, as can be seen from the estimated changes in probability in Table 5, and are especially striking given the relatively high overall levels of support for Bush and overseas military action. For the three policy variables, the estimated effect of perceived threat (as reflected by the change in probability) is larger than any other predictor; the effects of anxiety are also comparatively large. It is important to note that marginal changes in probability are always small when predicted probabilities approach 1 (or 0) due to the functional form of the probit model. This helps to explain the limited effects of partisanship, perceived threat, and anxiety on Bush approval. For white males who are at the mean on all other independent variables apart from partisanship, the predicted difference in approval in support for strong Republicans and strong Democrats is only .12; among such respondents 86% of Democrats approve of Bush compared to 98% of Republicans. The predicted change in Bush approval is only slightly smaller for threat and anxiety: there is an increased probability of .10 as perceived threat goes from low to high, and a decrease in probability of .08 for a comparable change in anxiety (for a white, male independent when all other variables are held at their mean value).

At somewhat lower levels of Bush approval the marginal effects of perceived threat are considerably larger. For example, a white, strong Democrat male who perceives no threat is .19 less supportive of Bush than a similar individual who perceives high threat, when all other variables are held at their mean. For the same type of individual, Bush support drops by −.14 as anxiety moves from its lowest to highest value. The corresponding changes for a black male who is a strong Democrat are .30 (threat) and −.22 (anxiety). For this black male Democrat (with mean values on all other variables) the predicted support for Bush is .79 when anxiety is low and .57 when it is high.

In addition to the effects of threat and anxiety, there are several other factors that influence Bush approval and increase support for overseas military involvement. Republicans were significantly more likely than Democrats to support military action; conservatives were stronger supporters than liberals of military action and were more supportive of the United States taking a leading role in world affairs. Black respondents were consistently more opposed to U.S. military and overseas involvement than were whites.

### Threat and Reactions to Arabs

Americans who perceived a high future threat of terrorism not only supported aggressive action against the enemy, they were also more likely to negatively stereotype Arabs and support restrictive immigration and intensified surveillance policies directed at Arabs and Arab-Americans, in line with the expected effect of threat on out-group vilification. There was overwhelming support (85%) for toughening restrictions on visas for foreign students and other visitors to the United States. Just under half of all respondents (48%) believed that Arabs who apply for entry to the U.S. should undergo more intensive security checks than people from other countries. And 29% felt the government should put Arabs and Arab-Americans in the United States under special surveillance.

In addition to these three policy questions, respondents were asked how well the following characteristics describe most Arabs: trustworthy, violent, honest, and extremist. Table 6 contains the results of probit estimates examining the origins of support for the three policy variables and regression estimates of the determinants of stereotyping. The dependent variable in the stereotyping equation is a latent variable inferred from the four indicators with units equal to one standard deviation.

The effects of perceived threat are consistent across the four equations. Perceived threat heightened support for policies that would restrict the number of foreign visitors to the United States and single out Arabs for special attention after entry and when applying for visas. Moving from low to high levels of perceived threat produces the largest increase in the probability of support for all three policies of any of the independent variables in Table 6, with only one exception (the positive effects of age on support for visa restrictions). Threat also intensifies negative stereotypes of Arabs.

In contrast, anxiety has no substantial impact on policies directed at Arabs or the endorsement of Arab stereotypes. Two coefficients for anxiety approach conventional levels of statistical significance—greater security checks and stereotyping—but in neither case does anxiety have a sizeable impact on policy views. Anxiety was not expected to decrease support for policies such as increased Arab surveillance because such policies do not pose a personal risk to the majority of Americans. We had suggested

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7 The political effects of anxiety which are based on feelings toward the “terrorist attacks and the U.S. response” are not simply caused by individuals who report negative feelings because they opposed U.S. policy. When the same respondents were asked to report their feelings almost a year later (in October 2002) in reference to “anti-U.S. terrorists” but not the U.S. response, there was a strong link between anxiety measured at both time points (τ = .54). Moreover, anxiety about terrorists, assessed in October 2002, was significantly linked to opposition to the Iraq war assessed at the same time in regression analyses with appropriate controls.
that anxiety might increase support for greater restrictions on those most closely linked to the 9/11 attacks, but we find no evidence for that prospect. Overall, these findings suggest that anxiety leads to an avoidance of risky action but does not promote support for retaliation or proactive policies to reduce risk.

Several other consistent effects in Table 6 deserve mention. Across all three policy variables, younger people are less supportive of restrictions on foreign visitors’ access to the United States and on Arab access in particular; they are also less willing than older people to support special surveillance of Arabs and Arab-Americans in the United States. Authoritarians and conservatives are consistently supportive of restrictive immigration policies and hold more negative stereotypes of Arabs than nonauthoritarians and liberals, respectively.

### Threat and Civil Liberties

Perhaps the most controversial policy discussions immediately after 9/11 centered on the government’s desire to increase domestic surveillance and limit certain freedoms in order to deal with the possibility of domestic terrorism. Survey respondents were asked their views on two policies that were widely discussed after 9/11. A slight majority (56%) supported a government-mandated national identification card. Substantially fewer people (31%), however, were in favor of allowing the government to monitor the personal telephone calls and emails of ordinary Americans. Both trends are consistent with findings from national polls conducted after 9/11 (Huddy, Khatib, and Capelos 2002). We also asked respondents whether they were more concerned that the government would fail to enact strong antiterrorism laws or that new laws would excessively restrict civil liberties. The public was split on this trade-off with 45% concerned that new antiterrorism laws than such laws would place undue restrictions on civil liberties. The impact of threat and anxiety on support for these policies is presented in Table 7.

Perceived threat consistently increased support for domestic antiterrorism policies. Support for a national identification card and government monitoring of telephones and email rose significantly as the perceived threat of future terrorism increased. Similarly, threat was linked to a greater concern about the failure to enact strong antiterrorism measures than such laws would place undue restrictions on civil liberties. In all three equations, an increase in the threat of future terrorism produced the largest shift in the probability that someone would support civil liberties restrictions of any of the independent variables in Table 7.
Unlike military policies, anxiety was not expected to decrease support for policies that restricted civil liberties. There is a clear link between anxiety and opposition to military action. But civil liberties policies are unlikely to result in retaliatory terrorist action and should not arouse personal concerns among most Americans. We had, in fact, suggested that anxiety could increase support for such policies because they might reduce the risk of terrorism. But as we found for policies concerning immigrants, anxiety was not associated with increased support for domestic antiterrorism policies. The coefficients for anxiety are all positive in Table 7, but none are statistically significant at conventional levels, and none of the effects are substantively large. Perceived threat increases support for heightened surveillance policies but anxiety does not. This provides further confirmation that anxious individuals are risk averse but do not actively support precautionary policies, a point to which we return in the discussion.

### Discussion and Conclusions

The effects of terrorism depend heavily on how a targeted public responds, and, as demonstrated in this study, not everyone responds to the threat of external terrorism in the same way. Most Americans perceived a high level of future terrorist threat to the nation (Smith and Rasinski 2002), but only a minority expressed considerable anxiety in response to the 9/11 attacks. And these related but differing psychological reactions to the external threat of terrorism—perceived threat versus anxiety—had very different effects on public support for antiterrorism policies. As perceived threat increased, there was heightened support for a wide range of domestic and international government actions to combat the threat of terrorism, including overseas military action, a curtailment of civil liberties, and increased surveillance and tighter immigration restrictions for Arabs. In contrast, those who experienced high levels of anxiety were less supportive of aggressive military action against terrorists, generally favored increased American isolationism, and disapproved more of President Bush’s performance.

These findings raise important questions about the basis of public support for government antiterrorism measures. Our analysis suggests that a perception of high terrorist threat will likely promote public support for aggressive national security policy. The Bush administration seemed aware of this link and issued terrorist alerts into the early months of 2002, perhaps helping to explain why the perceived risk of terrorism remained relatively high throughout the study period. At the same time, this strategy holds clear risks for government officials who wish to take aggressive action against terrorists. To the
extent that terrorist warnings elevate Americans’ levels of anxiety, they could also undercut support for overseas military action. In order to garner public support for military action, the government must make people aware of the risk of terrorism without unduly scaring them.

Government officials involved in antiterrorism policy face an easier challenge in gaining support for domestic policies, however. Anxiety and threat do not act as countervailing forces on support for civil liberties policies as they do for aggressive international policies. As perceptions of threat increase, people become significantly more supportive of measures that restrict the rights of groups broadly associated with terrorism, and policies that limit civil liberties for all citizens more generally (for similar findings see Davis and Silver 2003, 2004). Over the long term, perceived threat provides the government with greater leeway to increase domestic surveillance and restrict civil freedoms in its fight against terrorism.

That anxiety did not heighten support for domestic antiterrorism policies is at odds with our initial expectations that it would both undermine support for risky action and actively foster support for domestic security policies. Anxiety leads to an avoidance of dangerous and risky situations in this research, consistent with the role of avoidance as a defining characteristic of many anxiety disorders such as phobias (LeDoux 1996; Ohman 2000). But it does not increase support for precautionary surveillance policies. This highlights an asymmetry between anxiety and avoidance and anxiety and protective actions that is observed in the literature on risk assessment more generally (Lowenstein et al. 2001). Anxiety can promote protective action in some situations in which the risks are clear and known (Lowenstein et al. 2001). But in other situations, anxiety can undermine action (Janis and Feshbach 1953; Knight and Effenheim 1996), especially when such precautions elicit further anxious thoughts.

It should be noted that even the minority of Americans who thought there was very little future risk of terrorism supported U.S. overseas military action and tighter restrictions on student visas, helping to explain high levels of support for many antiterrorist policies. This probably reflects an immediate response to the attacks of September 11 in the absence of any concern about future terrorist incidents. But Americans who do not perceive a significant threat of future terrorism may be less inclined to support continued military action and restrictions on civil liberties over the long term. We could not detect any such decline in policy support over the time span of this study (which ended in early March, 2002) but a reduction of perceived threat remains a potential source of opposition to sustained government action within the United States and overseas.

The findings from this study lend further insight into the future trajectory of support for antiterrorism measures in the United States when we consider the potential effects of anxiety. Security threats in this and other studies increase support for military action (Jentleson 1992; Jentleson and Britton 1998; Herrmann, Tetlock, and Visser 1999). But anxious respondents were less supportive of belligerent military action against terrorists, suggesting an important source of opposition to military intervention. In the aftermath of 9/11, several factors were consistently related to heightened levels of anxiety and related psychological reactions, including living close to the attack sites (Galea et al. 2002; Piotrkowski and Brannen 2002; Silver et al. 2002), and knowing someone who was hurt or killed in the attacks (in this study). It is difficult to say what might happen if the United States were attacked again in the near future. Based on our results, it is plausible that a future threat or actual attack directed at a different geographic region would broaden the number of individuals directly affected by terrorism and concomitantly raise levels of anxiety. This could, in turn, lower support for overseas military action. In contrast, in the absence of any additional attacks levels of anxiety are likely to decline slowly over time (we observed a slow decline in this study), weakening opposition to future overseas military action.

Since our conclusions are based on analysis of reactions to a single event in a country that has rarely felt the effects of foreign terrorism, we should consider whether they can be generalized to reactions to other terrorist incidents or to reactions under conditions of sustained terrorist action. Our answer is a tentative yes, although there is no conclusive evidence on this point as yet. Some of our findings corroborate evidence from Israel, a country that has prolonged experience with terrorism. For example, Israeli researchers find that perceived risk leads to increased vilification of a threatening group and support for belligerent action (Arian 1989; Bar-Tal and Labin 2001). There is also evidence that Israelis experienced fear during the Gulf War, especially in Tel Aviv where scud missiles were aimed (Arian and Gordon 1993). What is missing, however, is any evidence that anxiety tends to undercut support for belligerent antiterrorism measures under conditions of sustained threat. For the most part, Israeli research has not examined the distinct political effects of anxiety.

In conclusion, the findings from this study provide significant new evidence on the political effects of terrorism and psychological reactions to external threat more generally. Many terrorism researchers have speculated
that acts of terrorist violence can arouse fear and anxiety in a targeted population, which lead to alienation and social and political dislocation.\(^8\) We have clear evidence that the September 11 attacks did induce anxiety in a sizeable minority of Americans. And these emotions were strongly associated with symptoms of depression, appeared to inhibit learning about world events, and weakened support for overseas military action. This contrasted, however, with Americans’ dominant reaction, which was a heightened concern about future terrorist attacks in the United States that galvanized support for government antiterrorist policy. In this sense, the 9/11 terrorists failed to arouse sufficient levels of anxiety to counteract Americans’ basic desire to strike back in order to increase future national security, even if such action increased the short-term risk of terrorism at home. Possible future acts of terrorism, or a different enemy, however, could change the fine balance between a public attuned to future risks and one dominated by anxiety.

References


\(^8\)We find direct evidence that increasing anxiety after the 9/11 attacks was related to greater pessimism about the economy, less trust in other Americans, and concerns that Arab-Americans support terrorism (Huddy et al. 2003).


Emotion and the Framing of Risky Choice

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Abstract One of the most noted phenomena in social and political decision-making is the occurrence of a framing effect. For example, on problems involving risky choices, individuals tend to act risk-averse when the problem is framed in terms of gains (e.g., saving lives, making money) and risk-seeking when the same problem is instead framed in terms of losses (e.g., deaths, losing money). Scholars have begun to identify the processes underlying framing effects as well as the conditions under which framing effects occur. Yet, extant work focuses nearly exclusively on cognitive processes, despite growing recognition of the importance of emotion in general decision-making tasks. In this paper, we explore the impact of emotional states on risk attitudes and framing. We find that emotions significantly influence both individuals’ tendencies to take risks and the impact of a frame on risky choices (e.g., emotions amplify or depress a frame’s impact). The precise role of emotions depends on the problem domain (e.g., a life-death or a financial decision), and the specific type of emotion under study. Moreover, in contrast to much work in political science, we show that emotions need to be distinguished beyond their positive or negative valence, as different negative emotions exert opposite effects. Our results accentuate the importance of integrating emotions into research areas traditionally dominated by more cognitive perspectives.

Keywords Framing · Emotion · Decision-making · Risk · Experiment · Public opinion

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Citizens’ political preferences form the foundation of democratic governance. It is thus not surprising that scholars devote a considerable amount of attention to studying the processes by which individuals form their political attitudes. The portrait that emerges from these studies makes clear that, in forming their opinions, citizens do not satisfy the requisites of the “ideal rational decision-maker.” As Berelson (1954, pp. 309–311) and his colleagues explained over fifty years ago: “The democratic citizen is expected…to have arrived at his principles by reason and to have considered rationally the implications and alleged consequences of the alternative proposals…[Yet] it appears that a sense of fitness is a more striking feature of political preference than reason and calculation” (emphasis added).

Two notable ways in which citizens deviate from this bygone ideal is by invoking emotion in their decisions, as opposed to pure reason, and by exhibiting susceptibility to framing effects. Some types of framing effects occur when individuals’ preferences shift due to arbitrary variations in information rather than reflecting calculations across all conceivable dimensions of a decision. Political behavior research on each of these topics—emotion and framing—has proven quite progressive over the last decade (e.g., Marcus 2003; Druckman 2004; Chong and Druckman 2007). Yet, surprisingly, few political behavior scholars have explored the relationship between emotion and framing, with the latter being construed almost always in purely cognitive terms.

In what follows, we explore the relative impact of emotions as opposed to frames as well as the moderating effects of emotions on how people process frames. We focus on the impact of emotion on the framing of risky choice problems, which is a variant of valence or equivalency framing. Equivalency framing effects occur when “logically equivalent phrases cause individuals to alter their preferences (Tversky and Kahneman 1981, 1987)...typically involve[ing] casting the same information in either a positive or a negative light…” (Druckman 2004, p. 671). An example of an equivalency framing effect is when people reject a policy program when told that it will result in 5% unemployment but prefer it when told that it will result in 95% employment.1 Numerous authors highlight the relevance of these types of framing effects for studies of voting and public opinion, campaigns, policy-making, foreign-policy decision-making, coalition bargaining, judicial decision-making, and a variety of other topics (e.g., Quattrone and Tversky 1988; McDermott 1998; Bartels 2003; Levy 2003; Druckman 2004).

In the next section, we discuss extant work on risky choice, particularly emphasizing the role of framing in shaping such choices. We then turn to a

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1 Druckman (2004, p. 672) explains that these types of equivalency framing effects “differ from value or issue framing effects, as studied in the political communication literature... Issue framing effects refer to situations where, by emphasizing a subset of potentially relevant considerations, a speaker leads individuals to focus on these considerations when constructing their opinions. For example, describing a hate group in terms of free speech as opposed to public safety causes people to base their rally opinions on free speech instead of public safety considerations.” For studies on issue framing and emotion—with particular focus on how different frames lead to alternative emotional reactions—see Brewer (2001), Gross and D’Ambrosio (2004), Marcus et al. (2005), Gross (2006), Gross and Brewer (2006). Also see Lerner and Keltner (2001), who explore emotions and equivalency framing effects. Some of their results are similar to ours although we look across domains, at preference confidence, and at different specific emotions.
discussion of how emotion not only affects risk preferences but also how it might interact with frames in shaping risky decisions. We also briefly discuss how emotions might influence the confidence individuals maintain in their expressed preferences. From these discussions, we derive predictions about the competing and interactive effects of frames and emotions, and about the impact of emotions on preference confidence. We test our expectations with two experiments. After presenting the results, we conclude with a brief discussion of implications. Our findings reveal the importance of incorporating emotions into studies of cognitive framing (both in terms of competing and interactive effects), how emotions need to be distinguished beyond their positive and negative valences, how the specific role of emotions and frames vary across problem domains, and how emotions influence the confidence one has in his or her preferences.

Risky Choice and Framing

Politicians regularly face risky choices in decisions that range from whether to go to war to deciding which policies will maximize their odds of being reelected. Citizens make risky decisions every time they vote for one candidate instead of another. The framing of risky choices plays a major role in any such decision-making pursuit. As is well known from the work on prospect theory conducted by Kahneman and Tversky (1979, 1984), frames strongly influence risk propensity, such that people appear quite risk-averse when approaching gains, and remain much more risk-seeking when confronting losses.

One of the most persistent criticisms of prospect theory is that it lacks a theory of framing. Payne, Bettman, and Johnson (1993, p. 66) succinctly captured this sentiment when they stated, “clearly, the development of a theory of framing is badly needed” (e.g., Riker 1995; Wittman 1995; Druckman 2001a,b). In the fifteen years since Payne et al.’s statement, there has been progress. Scholars have begun to identify mediational processes and moderating variables. For example, Jou et al. (1996) present a theory that posits cognitive accessibility processing as underlying framing effects. Others show that framing effects are less likely to occur when the respondent is a male (Fagley and Miller 1997), has high cognitive ability (Stanovich and West 1998), or briefly thinks through his or her decision (Takemura 1994). Moreover, framing effects tend to disappear when a decision-maker provides a compelling rationale for his or her decision (Sieck and Yates 1997). Additionally, Kanner (2004) shows that framing can be manipulated by secondary actors by either changing the actor’s confidence about future outcomes, or discounting the utility of a given choice.

Notably absent from this list, however, is significant study into emotional factors that might compete and/or interact with framing effects. De Martino et al. (2006, p. 684) explain that framing studies “emphasize the operation of analytic processes in guiding choice behavior. However, more intuitive or emotional responses can play a key role…” The authors go on to show, using fMRI technology, that framing effects

\(^2\) For contextual limitations, see Bless et al. (1998), Druckman (2004).
are associated with amygdala activity in the brain, “suggesting a key role for an emotional system” (also see Lerner and Keltner 2001; Chang 2007). Similarly, Loewenstein et al. (2001, p. 274) explain, “feelings play a much more prominent role in risk decision-making than they are given credit for by the cognitive-consequentialist tradition of judgment and decision-making research.” They continue by arguing that (p. 280), “the decision-theoretic approach to decision-making under risk has largely ignored the role played by emotions…very little attention has been given to the impact of emotions…” (also see Shiv et al. 2005, p. 438).

As mentioned, we explore two ways in which emotions influence the framing of risky choices. First, emotional response may provide a competing influence (with the frame) on cognitive interpretations of choice. Second, emotional considerations might either exacerbate or ameliorate the influence of a particular frame itself. In other words, emotion may provide an important key in explaining variance in framing effects, including susceptibility to them. Our goal is not to negate earlier cognitively focused work, but rather to supplement it by integrating emotion into an understanding of framing effects. We next describe how emotional states can directly affect individuals’ risk assessments, and then how emotions might exacerbate or depress the impact of a frame.

**Emotion and Risk**

A growing literature suggests that emotions can affect risk assessments in systematic and predictable ways. This work goes back, at least, to Bower (1981) who posited a relationship between mood and memory, suggesting that mood congruence enhanced memory (e.g., individuals in a bad mood proved more likely to remember negative events while those in a good mood more readily recalled positive experiences). Johnson and Tversky (1983) extend this logic to argue that specific emotions could affect risk assessment. They show that positive emotions trigger optimistic risk assessments, while negative emotions lead to more pessimistic risk assessments. This proved true even when the specific emotion resulted from factors wholly unrelated to the issue whose risk individuals assessed. For example, sad people tend to inflate their risk of negative events like getting cancer more than happy people (also see Hsee and Weber 1997). In short, this work suggests that positive emotions, such as enthusiasm, tend to lead to greater risk-seeking because people become more optimistic about future outcomes when they are feeling good. Similarly, negative emotions, such as anxiety, tend to make individuals more pessimistic about future outcomes, and this can lead to risk aversion.

More recent work in psychology accentuates the importance of moving beyond general positive and negative mood states into the study of discrete emotions. DeSteno et al. (2000), for example, demonstrate that mood states increase the perceived likelihood of emotion specific (i.e., beyond just positive or negative) congruent future events. For instance, an angry individual will perceive future events that generate anger (a negative emotion) as likely but sad events (also a negative emotion) as less likely to occur. DeSteno et al. argue that this effect results
from the informational value provided by particular emotional states (also see Bodenhausen et al. 1994; Mitchell et al. 2001). This interpretation is consistent with Clore’s (see Schwarz and Clore 2003, for a review) affect-as-information model of mood.

Lerner et al. (2003, p. 144) emphasize the “importance of examining specific emotions rather than global (positive–negative) feelings.” They reference Smith and Ellsworth’s (1985) appraisal-tendency theory to argue that emotions become an implicit perceptual lens for interpreting situations. From this perspective, negative emotions, such as fear or distress, that generate anxiety stem from appraisals of uncertainty and the need for situational control, while other negative emotions, such as anger or hostility, that generate aversion emerge from certainty married to the same need for control. Because of this, hostility or anger produces optimism about future outcomes (due to certainty) and risk-seeking choices, possibly because of the desire for revenge in the face of a clear target. In contrast, distress or fear leads to pessimistic judgments (due to uncertainty) of the future and greater risk aversion as individuals strive to figure out who or what is hurting them, and how they can best stop the threat (Lerner and Keltner 2000; Lerner and Keltner 2001; Lerner et al. 2004). The central point to take from this work lies in the critical importance of differentiating specific negative emotions that vary in their concomitant certainty and consequential affect on risk (e.g., distress or anxiety versus anger or aversion).

While much prior work in political science ignores such distinctions between types of negative emotions (e.g., Abelson et al. 1982; Marcus 1988; Marcus et al. 2000; Brader 2006; Brader et al. 2007), some recent work recognizes the varying impact of negative emotions. Notably, MacKuen et al. (2005, p. 3) emphasize the need to distinguish the negative emotion of anxiety from another negative “emotional response not previously considered… the emotion of aversion,” which

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3 In later work, DeSteno et al. (2004) apply their model to persuasive communication, arguing that specific emotions can alter the effectiveness of certain appeals based on their emotional framing. They note that the “influence of affective states on judgments of likelihood may not occur as a function of simple valence.” In other words, the extent to which an emotional state will influence a particular judgment depends on the event and the context, as well as the specific emotion elicited. Based on their earlier findings, they suggest that persuasive attempts will be more successful when they are framed to match the emotional state of the observer. Mayer et al. (1992) also investigated mood congruent judgments in a series of experiments designed to show the generalizability of the phenomenon. They showed that individuals judge attributes to be more characteristic, and judge outcomes to be more likely, when mood is congruent. In addition, they note that negative affect deflates the perceived risk of a positive event (also see, e.g., Berkowitz and Harmon-Jones 2004).

4 This view mirrors Slovic’s (1999) argument that emotions serve an orienting function. In this view (Slovic et al. 2004, 2005), risk is understood and acted upon in two fundamental, and profoundly different, ways. The first approach considers risk as feelings; the second understands risk as analysis. The first represents a rapid, intuitive, often unconscious experiential response or reaction to perceived danger or threat; this interpretation constitutes the “affect heuristic” (Finucane et al. 2000). Because this system evolved to aid humans in survival, it remains the most common and automatic way for individuals to assimilate risk. The second approach considers risk as an analytic problem requiring normative solutions involving rationality and logic. This process is relatively slower, and requires much greater conscious effort. While many advocates of this approach consider emotional responses to risk as irrational, more recent work in neuroscience demonstrates that these systems work largely in parallel and take direction from each other (Damasio 1994).
includes feelings of anger and disgust (e.g., Marcus et al. 2000, p. 168; Marcus 2003).

For some tasks, different positive emotions can have distinct effects as well. However, we are unaware of any expectations (e.g., from the work on which we build) of variation in distinct positive emotions when it comes to risk attitudes or framing effects. As far as we know, positive emotions, such as enthusiasm, should generally lead to risk-seeking as suggested above.

Emotions as a Framing Moderator

Aside from directly influencing risk assessments, emotional states can condition the impact of a given frame. Marcus et al.’s (2000) influential model of affective intelligence posits that people tend to become more involved and interested when they feel positive emotions such as enthusiasm, but actually become more attentive to external stimuli, information-seeking, and open to attitude change when they are experiencing negative emotions that generate anxiety (e.g., distress) (also see Brader 2006). Marcus et al. (2005) assert that people with a high level of anxiety or distress should prove more susceptible to preference change because they are more attuned to external information (e.g., frames). The logic behind this is that anxiety signals a “sense of danger and novelty... [and] alerts people to stop, think, and adjust behavior” (Marcus et al. 2005, p. 950). More concretely, anxiety triggers the surveillance system of evaluation which “monitors the environment for novel and threatening stimuli...[and] interrupts habitual routine and engages thought” (Marcus et al. 2000, p. 53). Increased attention to the environment means increased power of information and how that information is framed (as opposed to reliance on long-standing risk-attitudes).

In contrast, negative emotions of aversion, such as anger, will not have this effect. “[A]version is an actively negative emotion distinct from both anxiety and the absence of enthusiasm (Learner and Keltner 2001)... when people experience an aversive response... they will avoid exposure to learning [i.e., information]” (MacKuen et al. 2005, pp. 7–8). Aversive emotions like anger, then, trigger the disposition system rather than the surveillance system; the disposition system leads people to be less attuned to the external environment.6 (For a detailed discussion of the causes and consequences of anger, see Berkowitz and Harmon-Jones 2004a, b). Similarly, increases in positive emotions such as enthusiasm tend to temper the impact of external information such as alternative frames because it also activates the disposition system.7 Notably, then, as with our expectations regarding direct effects on risk-attitudes, we expect different negative emotions to have distinct effects in moderating the frame’s impact with aversive emotions like anger having

5 Lerner and Keltner (2000, pp. 477–480) offer an example of expected differences among the positive emotions of pride and surprise (but not with regard to risk attitudes) (also see Lerner and Small 2002, p. 300).

6 We thank an anonymous reviewer for guidance on this point.

7 This is consistent with Kowert and Hermann (1997) who find that experimental participants who are low on measures of the negative emotion anxiety appear less susceptible to framing effects.
similar effects to positive emotions like enthusiasm, but different effects than negative anxiety emotions such as distress.

Preference Confidence

A final topic which we explore is preference confidence. While citizens’ preferences themselves play an important role in democratic governance, preferences also matter because they often determine subsequent behaviors (e.g., policy decisions, voting, and participation). The likelihood that an individual’s behaviors will reflect his or her preferences dramatically increases as the individual gains confidence in the preference. Increased confidence in a particular preference also leads individuals to deepen their commitment to the preference, to ignore and not pursue additional information, and to resist persuasion (e.g., Sieck and Yates 1997, p. 218; Visser et al. 2003, pp. 135–136; Druckman 2004).

As far as we know, the role of emotions in affecting preference confidence has gone unexplored. It seems plausible and consistent with our theoretical discussion that the certainty that comes with aversion or anger (and possibly enthusiasm) will increase confidence while the uncertainty common with anxiety will depress confidence. This prediction also would be consistent with work showing that anger relies on heuristic processing, in ways similar to positive emotions (Moons and Mackie 2007).8

Predictions

It is relatively straightforward to derive predictions from these research programs on emotion and risk, and emotion and information seeking. As should be clear, both literatures point to distinct effects for positive emotions, negative aversive emotions, and negative anxious emotions. In terms of operationalizing each specific type of emotion, we follow prior work. For the positive emotion, we focus on enthusiasm which has been central to work by Marcus and his colleagues on the affective intelligence model (e.g., Marcus et al. 2000, 2005). We also follow Marcus et al. (2005, p. 962) by focusing on distress to capture anxiety. Our negative aversion emotion is anger (see, e.g., Watson et al. 1988; Marcus et al. 2000, p. 168; Lerner and Keltner 2001; Lerner et al. 2003).9 Our specific predictions are as follows.

1. Enthusiasm will be positively correlated with risk-seeking behavior, regardless of frame. We expect this finding because positive emotions like enthusiasm lead to optimistic appraisals of risk, regardless of the consequentialist data. So when an individual is presented with a positive frame, he or she will expect a positive outcome to be particularly likely given his or her current mood congruent state.

8 We thank an anonymous reviewer for this insight.

9 Lerner and Keltner (2000, 2001) focus on fear rather than distress, but as they make clear, the same logic applies to analogous emotions like distress (i.e., in terms of their implications for certainty and control) (also see Schwarz 2000; Nabi 2003).
However, when presented with a negative frame, the individual will see the negative outcome as particularly unlikely given the incongruence between the frame and his or her present level of enthusiasm.

2. **Distress and anger will produce distinct impacts on risk-seeking behavior (due to the aforementioned difference in uncertainty).** First, distress will be negatively correlated with risk-seeking behavior. Second, anger will be positively correlated with risk-seeking. This would also be consistent with adopting a negative frame (also see Lerner and Keltner’s 2000, p. 146).

3. **Exposure to a negative (dying or losing) frame will be positively correlated with risk-seeking behavior.** This is the conventional framing prediction that negative frames lead to risk-seeking choices while positive frames produce a tendency toward risk-aversion (Tversky and Kahneman 1981, 1987).

4. **Distress and anger will produce distinct impacts on the frames.** First, distress will enhance the impact of frames. We expect this effect to be particularly pronounced in the negative frame due to congruence enhancement. This hypothesis derives from the expectation that, as explained, distress generally increases attention to external information. Second, anger will temper the impact of the frame, due to its operation through the disposition system.

5. **Enthusiasm will temper the impact of frame.** We expect this effect to be particularly pronounced in the positive frame because of congruence effects.

6. **Anger and enthusiasm will increase preference confidence while distress will depress confidence.**

To test our expectations, we implemented two experiments. We now describe each.

**Experiment 1**

Participants, Design, and Procedure

In the first experiment, a total of 214 individuals participated in the main part of the study in exchange for a cash payment and a snack. We recruited participants from a large, public university and the surrounding urban community by taking out newspaper advertisements, advertising in classes, sending e-mails, posting flyers, and contacting local community organizations. We invited participants to take part in a preference formation study at the university’s Political Psychology Laboratory. While students constituted a majority of the sample, a substantial numbers of non-students also participated (approximately 35%).

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10 This prediction finds a counterpart in the decisional paralysis so characteristic of depression. Anxiety, distress, and depression often intertwine. And, indeed, there may be some good evolutionary reasons why paralysis in feelings of distress promotes survival. Freezing in fear or distress, for example, often prevents predators from attacking.

11 The average age was about 26. Other sample statistics include: 57% females, 88% Caucasian, 52% self-identified Democrats, and 27% self-identified Republicans.
Each participant responded to two randomly ordered framing problems and a background questionnaire.\textsuperscript{12} We used two classic and widely cited risky-choice framing problems: (1) a problem that focuses on the outbreak of a disease (Tversky and Kahneman 1981, p. 453), and (2) a problem that focuses on how to invest a community grant (Tversky and Kahneman 1987, pp. 74–75).\textsuperscript{13} For the disease problem, we randomly exposed some respondents to the following positively framed description and question:

Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

- If Program A is adopted, 200 people will be saved.
- If Program B is adopted, there is a 1/3 probability that 600 people will be saved, and a 2/3 probability that no people will be saved.

Which of the two programs would you favor?

Two elements of this problem are worth noting. First, the two choices—Program A and Program B—are equivalent in expected values. Both would result in saving 200 people in expectation (i.e., 1/3\times600 = 200), but Program A has a certain or risk-averse outcome whereas Program B has an uncertain or risk-seeking outcome. Second, the programs are framed in terms of how many lives will be saved. This differs from the version that other recipients (randomly) receive where, after receiving the same exact initial description, they are told of the same programs but framed negatively in terms of people dying:

- If Program A is adopted, 400 people will die.
- If Program B is adopted, there is a 1/3 probability that nobody will die, and a 2/3 probability that 600 people will die.

Which of the two programs would you favor?

The investment problem had two analogous (randomly distributed) versions. The positive frame asked:

Imagine that the community where you live was given a $3,000 government grant for future community development. The community must however immediately invest the grant in one of two programs, and everyone agrees that the estimated impact of each program is as follows:

- If Program Y is adopted, your community will gain $1,000.
- If Program Z is adopted, there is a 50% chance that your community will gain $2,000 and a 50% chance that your community will gain nothing.

Which program would you vote for—Program Y or Program Z?

\textsuperscript{12} Respondents actually responded to four randomly ordered problems, however, two of these problems are not relevant to this study. There also were randomly assigned experimental conditions that are not relevant to this study, and thus, we do not discuss them (see Druckman 2004 for discussion). Like other studies that include multiple problems (e.g., Fagley and Miller 1997; Jou et al. 1996), we instructed participants to treat each problem independently and imagine that they were being confronted with each scenario (see Frisch 1993, p. 419; Levin et al. 2002 on using multiple problems).

\textsuperscript{13} We use a variation of the Tversky and Kahneman’s (1987, pp. 74–75) investment problem.
Again, notice Program Y is a risk-averse choice while Program Z constitutes a risk-seeking option (that is equivalent in expected outcome). The negative frame stated:

Imagine that the community where you live was given a $3,000 government grant for future community development. The community must however immediately invest the grant in one of two programs, and everyone agrees that the estimated impact of each program is as follows:

If Program Y is adopted, your community will lose $1,000.
If Program Z is adopted, there is a 50% chance that your community will lose nothing and a 50% chance that your community will lose $2,000.

Which program would you vote for—Program Y or Program Z?

We used two problems from different domains (i.e., life and money) because prior work has shown that framing effects sometimes vary by topic. People tend to be more risk-seeking with problems involving life-death choices than with problems involving public property, personal money, or investment (Wang 1996 p. 153; Jou et al. 1996, pp. 8–9; Kühberger et al. 1999, pp. 221–222). This variation stems from differences in the location of lives and money on individuals’ utility curves (see Fagley and Miller 1997 pp. 361–362; also see Fagley and Miller 1990; Marteau 1989; Levin and Chapman 1990; Levin et al. 1998).

As should be clear, for each problem, participants expressed a preference for one of two alternatives (i.e., Program A or B, or Program Y or Z). A framing effect occurs when, compared to individuals who receive a positive frame, individuals who receive a negative frame are significantly more likely to express a preference for the risk-seeking alternative (see Druckman 2001a). For example, in the original disease experiment, Tversky and Kahneman (1981, pp. 453) found that those who received the negative (dying) frame were significantly more likely to express a preference for the risk-seeking Program B (78%), than those who received the positive (saved) frame (28%). This difference in the percentages is called a preference shift (e.g., a 50% preference shift). In the original investment experiment, Tversky and Kahneman (1987, pp. 74–75) find 64% of respondents opt for Program Z (the risk-seeking alternative) when given the negative frame and only 28% do so when given the positive frame.

We randomly assigned each participant to either receive both problems using a positive frame ($N = 101$) or both problems using a negative frame ($N = 113$). (The problems themselves appeared in a random order.) Participants dealt with one problem at a time and expressed a preference for each problem by checking an alternative on a separate page that followed the particular problem. For each problem, participants also recorded how confident they were that their “choice is the best possible choice.” This item allows us to explore preference confidence, as previously discussed.

Participants also completed a background questionnaire that included our emotion measures as well as other demographic and social questions. To gauge the

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14 This variation stems from differences in the location of lives and money on individuals’ utility curves (see Fagley and Miller 1997 pp. 361–362; also see Fagley and Miller 1990; Marteau 1989; Levin and Chapman 1990; Levin et al. 1998).

15 Consistency in the frame used follows prior work (Fagley and Miller 1997).
participants’ emotional states, we used select items from Watson et al.’s (1988) well known PANAS scale. For example, we measured distress by asking respondents: “To what extent do you feel distressed right now, at this present moment?” Respondents chose one of five response options: “very slightly,” “a little,” “moderately,” “quite a bit,” or “extremely.”16 We coded the variable so that higher scores indicate greater distress. We used analogous items to measure anger and enthusiasm.17

The background questionnaire included other items that prior work has shown to be relevant to risk attitudes and/or framing. We measured propensity toward risk using questions from Zuckerman’s risk taking scale (see Bromiley and Curley 1992, p. 123). Specifically, we include four items (scenarios) to which a person can report a risk-averse or risk-seeking response. We then added together risk-averse responses to create a risk aversion scale. While we expect more risk taking individuals to make more risk-seeking choices and more risk neutral individuals to be more susceptible to framing effects, past research on the effects of risk propensity has been inconclusive (see, e.g., Fagley and Miller 1990, p. 505; Bromiley and Curley 1992; Druckman 2001b).

We also account for expertise since some have posited that experts differ from non-experts in risk attitudes (Bajtelsmit 1999, Unpublished manuscript), and/or susceptibility to framing effects (e.g., Larrick et al. 1993). We construct our expertise measure by combining two commonly used constructs (in the behavioral decision-making literature). First, we measured need for cognition by using Bizer et al.’s (2000) scale, where higher scores indicate greater need for cognition. Second, we asked participants to report the number of economics and statistics courses they had taken (Larrick et al. 1993). We classified participants as experts if they were above the median for both need for cognition and the number of classes

16 These questions clearly tapped into the current emotional state of the subject, which could have reflected either “state”-based (i.e., the subject is transiently enthusiastic at the moment) or “trait”-based tendencies (the subject is endemically anxious in most situations). We remain agnostic as to the source of the emotion in this context, although future research might explore potential differences in the impact of state versus trait based emotion on risky decision-making. Obviously, this test examines the impact of background emotion on current choice. Experiment 2, reported below, experimentally manipulates background emotion to induce equivalency in emotional states in order to examine their impact on choice.

17 As we will shortly discuss, the background questionnaire included various expertise measures such as need for cognition items and questions about statistics background. We worried that asking these items before having the participants complete the problems could prompt them to view the problems in a more statistical sense and exert more thought, which could substantially change the impact of the problems (see Bless et al. 1998 for evidence of such effects). For this reason, participants filled out the background questionnaire after all participants in a given session finished the problems (the typical session had ten participants). We did, however, include another condition that randomly assigned participants to complete the background questionnaire without taking part in the framing problems. Forty participants were assigned to this condition (these participants were not included in the aforementioned 214 who were in the “main part” of the experiment). The average emotion scores for these participants were nearly identical to the scores of participants who read the problems first. Specifically, the respective averages for the participants in the main experiment and the forty participants in the non-treatment condition are as follows. For anger: 1.78 (SD: 1.13; n: 213) and 1.79 (1.06; 40); for distress: 1.87 (1.06; 212) and 1.85 (1.04; 40); and for enthusiasm: 3.75 (2.76; 213) and 3.77 (.82; 40). This confirms that, as our hypotheses assume, the problems themselves did not affect the participants’ emotional states, and thus, any emotion effects stem from emotion influencing reactions to the problems.
since we expect a moderating effect only for individuals who possess both motivation and ability (e.g., Payne et al. 1993, p. 112).

The impact of gender on framing effects has long puzzled researchers, and thus, we include a dummy variable that identifies female participants. Fagley and Miller (1990, p. 507, 1997) find that women exhibited framing effects while men did not in both monetary and life domains. However, Druckman (2001a) did not replicate this and in general the results are mixed. Evidence also suggests that males tend to be more optimistic than females (Lerner et al. 2003, p. 146) and will thus prefer the risky options (risk-seekers) (Kowert and Hermann 1997, p. 623; Bajtelsmit, 1999, Unpublished manuscript). Finally, we control for whether the participant is a self-identified student or non-student (recall that our sample included a mix of students and older non-students).

Framing Results

We begin by investigating for the presence of framing effects (e.g., hypothesis 3). In Tables 1 and 2, we present crosstabs of preferences by frame received for each problem. Both show significant framing effects; exposure to the negative (dying) frame in the disease problem leads 67% of respondents to opt for the risk-seeking alternative, compared with just 45% who received the positive (saving) frame ($z = 3.24; p < .01$ for one-tailed difference of proportions test). The analogous percentages for the investment problem are 66% and 28% ($z = 5.55; p < .01$). Also, consistent with the aforementioned tendency towards risk-seeking in life-death problems, we see greater risk-seeking behavior, across frames, in the disease problem (57%) than in the investment problem (48%) ($z = 1.87; p < .05$).

To explore the impact of emotions and the other variables, we use logit regression. The dependent preference variable is coded such that 0 equals a positive or risk-averse preference while 1 equals a negative or risk-seeking preference. Similarly, frame is coded with 0 indicating exposure to a positive or gains frame and 1 identifying participants exposed to the negative or losses frame. A significant positive coefficient on the frame variable would indicate a framing effect. All other variables are coded as noted above, and are re-scaled to be between 0 and 1. We display the results in Table 3.

The first regression, which is for the disease problem, shows a significant main framing effect—those who received the negative frame express significantly more negative or risk-seeking preferences. The results also support most of the emotion hypotheses. Anger leads to more risk-seeking behavior (hypothesis 2), distress leads to less risk-seeking behavior (hypothesis 2), and enthusiasm leads to more risk-seeking behavior (hypothesis 1). The distinct directional impacts of anger and distress accentuate the importance of distinguishing negative emotions.

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18 The results are the same if we instead use a continuous measure of age. We opt for the dichotomous measure since it is mostly meant to test for differences between student and non-student participants.

19 The results are the same when using alternative models, such as ANOVA.
To explore the moderating effects of emotions, we interact each emotion variable with the frame variable; a significant coefficient indicates a moderating effect. Interestingly, we see evidence that two of the emotional states moderate framing effects. Enthusiasm tempers the framing effect such that those who are more...
enthusiastic tend to be less affected by the frame (the interaction is highly significant and negative) (hypothesis 5). The opposite is the case for distress, as predicted (hypothesis 4)—increased distress leads to a greater impact of the frame. Finally, anger does not display a significant moderating effect (and its sign is in the opposite direction of what was predicted). This may not be too surprising since distress may be a more relevant negative emotion than anger given the life-death nature of problem (i.e., death may cause people to become upset). The differing results for distress and anger also support our claim that it is necessary to distinguish types of negative emotions when it comes to their effects on attention to external information.

To gauge the substantive main effect, we assume average values on all variables, except distress. In this case, if an individual has no distress (=0), then he or she has nearly a 60% chance of opting for the risk-seeking alternative. The same individual’s probability of being risk-seeking drops to .51 if his or her level of distress rises to the midpoint (=.5), and the all the way to .43 if he or she is maximally distressed (=1).20 This substantial tendency away from risk-seeking and toward risk aversion is heightened even further (by quite a bit) for individuals who receive the gains or save frame since higher levels of distress enhance the impact of the frame.

The precise nature of the interaction between distress and the save frame can be seen in Fig. 1, which plots the expected probability of opting for the risk-seeking alternative for different levels of emotion (minimum, median, and maximum), contingent on frame. (We do this for distress and enthusiasm since those have significant main effects and interactions.) The figure shows that as distress increases, the size of the framing effect substantially widens. Those with no distress (minimum) display a small framing effect (i.e., a .76 probability of risk-seeking for the save frame and .47 for the die frame) while those with maximal distress (maximum) show enormous susceptibility to the frames (with respective probabilities of .89 and .08). We also see that the previously discussed main effect of distress in reducing risky choice occurs only for those exposed to save frame. (The marginal increase for those exposed to the die frame is not significant.)

20 We used Clarify to compute these probabilities (as well as ones subsequently reported). Standard errors are available from the authors.
We see the inverse relationship with enthusiasm—those with no enthusiasm (minimum) display a significant framing effect (.70 and .18) while those with maximal (maximum) enthusiasm not only show no framing effect in the predicted direction but they actually flip their risk-preferences (.38 and .72) (i.e., maximally enthusiastic people display more risk-seeking in the save frame). Additionally, we see that the aforementioned main effect of enthusiasm enhancing risk-seeking only occurs for those exposed to the save frame.

Apart from the emotion variables, the only other significant finding is that females are more susceptible to framing effects (the interaction is significant and positive). This is consistent with some prior work, although, as mentioned, gender effects have been inconsistent overall (see Fagley and Miller 1990, 1997). It also shows that variations in emotion by gender do not wholly explain the impact of gender (see Lerner et al. 2003). The lack of significance for the other variables is interesting insofar as prior work focuses on risk proclivity, expertise, and age rather than emotion. Our results suggest that emotions play a much more salient role.

The second column in Table 3 presents the results for the investment problem. Frame again has a significant impact with the negative framing leading to substantially more risk-seeking behavior. This time, however, only one of the three emotions directly affects risk attitudes; enthusiasm leads to more risk-seeking behavior (as predicted by hypothesis 1). Moreover, none of the emotion variables moderate framing effects. As for the controls, the results show that females are significantly more risk-averse as are younger people. We suspect the age finding reflects the fact, for the student participants, that smaller amounts of money are more meaningful, leading to risk aversion.

We find the different results across domains intriguing. Variation in risk attitudes by problem area has received little attention, beyond the aforementioned expectation of greater risk-seeking behavior on life and death problems. Moreover, we know of no work that explores differences in the impact of emotion on risk attitudes by problem domain. There is, however, some evidentiary basis for the greater impact of life and death decisions over other types of choice in terms of exerting an impact on risky choice in risk-sensitive optimal foraging theory, which suggests that risk-seeking increases the closer an organism comes to subsistence level survival (McDermott et al. 2008). Our finding that negative emotions mattered only on a life and death problem and not a financial problem may reflect the inherently emotional nature of life-death decisions, or may suggest that such decisions remain less susceptible to abstract decision-making and conscious override. In contrast, investment decisions, especially when not involving the person’s own money, are not particularly distressing or anger provoking. The significance of enthusiasm on the investment problem may be akin to an irrational exuberance (or greed) that occurs when it comes to decisions involving money.

Our results suggest that emotions affect risk attitudes and in some domains moderate framing effects. Moreover, different negative emotions can have opposite effects; emotions should not be grouped simply based on valence. The impact of emotions will depend on the specific emotions (beyond valence), the issue at hand (problem domain), and the relationship under study (moderating or direct effect).
As mentioned, after expressing their preferences, participants were asked to rate the confidence they had in their expressed preference on a 7-point scale ranging from a low score of “not confident at all” to “moderately confident” to a high score of “very confident.” We examine preference confidence by using ordered probit regressions with confidence scores as the dependent variable. The key independent variables are our three emotion variables. Recall that we expect that anger and enthusiasm will increase confidence while distress will decrease it.

In our analyses, we also include a variable called “frame agreement” that measures whether a participant’s preference on a given problem matches the preference that would be predicted from the frame the participant received. For example, agreement occurs if a participant who received the negative (positive) frame expressed a preference for the risk-seeking (risk-averse) program (i.e., it equals 1 if the participant’s preference agreed with the frame and 0 if not). We expect that possibly being affected by the frame will generate overconfidence since it mitigates conflict (see Tetlock 1986; Druckman 2004; also see Kuklinski et al. 2000; Payne et al. 1993, p. 209). We also include the female variable as well as the non-student and expertise variables (the latter two may increase preference confidence (e.g., Sieck and Yates 1997)).

The results in Table 4 show that emotions affect preference confidence. Specifically, higher levels of distress cause individuals to be less confident in their preferences for both problems. On the investment problem, anger also is significant, while a score of 1 is not sufficient evidence that the frame had a causal impact, it is a necessary condition and is the most direct measure available.

22 We also ran regressions with dummy variables indicating the order in which the individual received the problem (e.g., the disease problem first or second). These variables do not affect the substantive results we present here.

23 In Table 4, we also note significance when $p \leq .13$ for a two-tailed test, since on both problems this allows us to note that distress is very close to significant (and would be if we used a one-tailed test).

Table 4  Determinants of preference confidence (Experiment 1)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Disease problem</th>
<th>Investment problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame agreement</td>
<td>.30* (.16)</td>
<td>−.001 (.16)</td>
</tr>
<tr>
<td>Anger</td>
<td>.30 (.27)</td>
<td>.49* (.28)</td>
</tr>
<tr>
<td>Distress</td>
<td>−.43* (.27)</td>
<td>−.41* (.27)</td>
</tr>
<tr>
<td>Enthusiasm</td>
<td>.37 (.28)</td>
<td>.34 (.27)</td>
</tr>
<tr>
<td>Female</td>
<td>−.64** (.16)</td>
<td>−.04 (.16)</td>
</tr>
<tr>
<td>Non-student</td>
<td>−.05 (.16)</td>
<td>.08 (.16)</td>
</tr>
<tr>
<td>Expert</td>
<td>.21 (.15)</td>
<td>.01 (.15)</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>−350.42</td>
<td>−312.98</td>
</tr>
<tr>
<td>Number of observations</td>
<td>206</td>
<td>206</td>
</tr>
</tbody>
</table>

Note: The dependent variable is coded so that higher scores indicated increased confidence. Table entries are ordered probit coefficients with standard errors in parentheses. ** $p \leq .05$; * $p \leq .1$; + $p \leq .13$ for two-tailed tests. Cutpoints are available from the authors.
leading to increased confidence. While these results are consistent with our expectations, we also find no significant effect for enthusiasm (although it is signed in the predicted direction).

While noting the speculative nature of our findings, we also highlight four implications. First, the results suggest that negative emotions may matter more than positive emotions when it comes to preference confidence, perhaps reflecting a negativity bias of some sort. This asymmetry would not be uncommon or atypical; loss aversion robustly demonstrates the greater impact of loss on risk propensity overall. Second, the results again accentuate the importance of distinguishing negative emotions from one another, according to variations in control and uncertainty. Third, they also reveal that reasoning may differ across problem domain. Fourth, even if emotions do not directly affect preference formation, they may still be consequential—in the case of the investment problem, anger and distress did not influence the alternative chosen but did affect confidence in that decision. On the disease problem, we also see two other variables are significant—frame agreement and being female.

Experiment 2

The design of our second experiment mimicked that used in the first experiment with one major exception. This time instead of measuring individuals’ emotions with standard items, we experimentally induced emotional variations between participants. This approach enables us to assess the possibility that our experiment 1 emotion results stem from some other unmeasured variable (e.g., a spurious relationship) (Lerner and Keltner 2000, pp. 486–487). It also might provide insight into the relative impact of chronic versus temporary emotional states. Emotions expressed in the first experiment may have reflected either dispositional variations between individuals or situational—shorter term—distinctions that individuals happen to be experiencing. In our second experiment, emotional variations are presumably temporary (i.e. “state”-based as opposed to “trait”-based) as determined by the experimental manipulation.

Participants, Design, and Procedure

A total of 185 individuals participated in the experiment, after having completed an unrelated survey. Participants were non-student community members who had been asked to take part in an unrelated voting behavior study (for details on the sample, which was largely representative of the community, see Druckman 2007, unpublished manuscript). After completing the unrelated study, we asked a sub-sample of individuals to take part in another study (i.e., the experiment described here) in exchange for a cash payment.

We randomly assigned each participant to one of six experimental conditions that varied the frame—using either a positive frame ($N = 91$) or a negative frame ($N = 94$)—and the emotional inducement—priming enthusiasm, anger, or distress.
Our emotional inducement technique followed the approach used by Lerner and Keltner (2001, p. 152) (also see Lerner et al. 2003; DeSteno et al. 2004). Specifically, prior to receiving the framing problems, participants were asked to “Imagine a few things that make you feel [“enthusiastic or excited”/“angry”/“distressed or upset”].” We then asked participants to answer the same two framing problems we used in the prior study (i.e., the disease and the investment problems).

Results

We display the results for each problem in Tables 5 and 6. We present the percentages of respondents who reported risk-seeking preferences. We need not include control variables given random assignment to the emotional inducements.24

We find significant overall framing effects, across conditions, for both problems. In the disease problem, 66% of participants in the negative frame condition opted for the risk-seeking alternative while 52% did so in the positive frame condition ($z = 1.98; p < .05$). The analogous percentages for the investment problem are 66% and 48% ($z = 2.35; p < .01$). We do not, however, replicate our prior finding of significantly greater overall risk-seeking behavior in the disease problem (compared to the investment problem).

Enthusiasm again leads to significant increases in risk-seeking behavior, across frames, with 68% displaying such preferences in the disease problem and 66% in the investment problem. Both these percentages significantly exceed the amount of risk-seeking displayed by those in the distress condition (for the disease problem, $z = 2.71; p < .01$; for the investment problem, $z = 1.94; p < .05$). We find mixed results for the anger group; in the disease problem, as predicted, the anger condition (64%) is significantly greater than the distress condition (43%; $z = 2.35; p < .01$), but this is not the case in the investment problem where the respective percentages are 57% and 48% (although it is in the correct direction; $z = 1.0; p < .20$). Overall, then, we have strong support across problems that enthusiasm promotes risk-seeking behavior relative to distress, and some support for the hypothesis that anger does the same and thus differs in its impact from the negative emotion of distress. As before, we find slightly different dynamics across problem domains with the disease problem displaying stronger emotion effects.

In terms of emotion and framing, we find evidence consistent with prediction that negative emotions have distinct effects on framing. Distress enhances framing and anger tempers it. For both problems, the distress group displays significant framing effects (for the disease problem, $z = 2.47; p < .01$; for the investment problem, $z = 1.62, p < .05$) while the anger group does not (for the disease problem, $z = .98; p < .20$; for the investment problem, $z = 1.02; p < .20$). The results on enthusiasm are more mixed—in the disease problem, enthusiasm clearly vitiates framing as the effect disappears, but a nearly significant framing effect remains in the investment problem ($z = 1.49; p < .07$). We thus again find distinctions across domains.

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24 Given the nature of experiment 2, we were unable to measure some of the relevant controls used in experiment 1 including risk neutrality and expertise.
We explore preference confidence in Table 7, using a similar approach as in experiment 1. The design of our experiment means we can only investigate relative confidence in the different emotion conditions. Since we predict that anger and enthusiasm will increase confidence, and distress will depress it, we include dummy variables for the former two variables which reveal the effects relative to the distress condition. The results show that for both problems, anger and enthusiasm prompted participants to exhibit significantly greater confidence than those in distress condition. We also again find that frame agreement enhances confidence.

In sum, evidence from our second experiment—that used a distinct sample and manipulation—confirms what we found in the first study. The framing of problems affects risk preferences, but so do emotions. Moreover, different negative emotions have divergent effects both in terms of their direct impact on risk preferences and on how they interact with the frames. This accentuates the importance of incorporating discrete emotions in the study of risky framing. We also find that emotional states influence preference confidence, which might in turn impact the relationship between preferences and behavior. Finally, the precise impact of emotions and frames may vary across problem domains.

Table 5 Risk-seeking preferences by condition for the disease problem (Experiment 2)

<table>
<thead>
<tr>
<th></th>
<th>Negative (dying) frame</th>
<th>Positive (saving) frame</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enthusiasm</td>
<td>69% (32)</td>
<td>68% (28)</td>
<td>68% (60)</td>
</tr>
<tr>
<td>Anger</td>
<td>70% (33)</td>
<td>58% (36)</td>
<td>64% (69)</td>
</tr>
<tr>
<td>Distress</td>
<td>59% (29)</td>
<td>26% (27)</td>
<td>43% (56)</td>
</tr>
<tr>
<td>Total</td>
<td>66% (94)</td>
<td>52% (91)</td>
<td>59% (185)</td>
</tr>
</tbody>
</table>

Table 6 Risk-seeking preferences by condition for the investment problem (Experiment 2)

<table>
<thead>
<tr>
<th></th>
<th>Negative (loss) frame</th>
<th>Positive (gain) frame</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enthusiasm</td>
<td>74% (31)</td>
<td>56% (27)</td>
<td>66% (58)</td>
</tr>
<tr>
<td>Anger</td>
<td>64% (33)</td>
<td>51% (35)</td>
<td>57% (68)</td>
</tr>
<tr>
<td>Distress</td>
<td>59% (29)</td>
<td>37% (27)</td>
<td>48% (56)</td>
</tr>
<tr>
<td>Total</td>
<td>66% (93)</td>
<td>48% (89)</td>
<td>57% (182)</td>
</tr>
</tbody>
</table>

We explore preference confidence in Table 7, using a similar approach as in experiment 1. The design of our experiment means we can only investigate relative confidence in the different emotion conditions. Since we predict that anger and enthusiasm will increase confidence, and distress will depress it, we include dummy variables for the former two variables which reveal the effects relative to the distress condition. The results show that for both problems, anger and enthusiasm prompted participants to exhibit significantly greater confidence than those in distress condition. We also again find that frame agreement enhances confidence.

In sum, evidence from our second experiment—that used a distinct sample and manipulation—confirms what we found in the first study. The framing of problems affects risk preferences, but so do emotions. Moreover, different negative emotions have divergent effects both in terms of their direct impact on risk preferences and on how they interact with the frames. This accentuates the importance of incorporating discrete emotions in the study of risky framing. We also find that emotional states influence preference confidence, which might in turn impact the relationship between preferences and behavior. Finally, the precise impact of emotions and frames may vary across problem domains.

Table 7 Determinants of preference confidence (Experiment 2)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Disease problem</th>
<th>Investment problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame agreement</td>
<td>.24* (.15)</td>
<td>.30** (.16)</td>
</tr>
<tr>
<td>Anger</td>
<td>.51** (.19)</td>
<td>.54** (.19)</td>
</tr>
<tr>
<td>Enthusiasm</td>
<td>.58** (.20)</td>
<td>.47** (.20)</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>−340.35</td>
<td>−308.60</td>
</tr>
<tr>
<td>Number of observations</td>
<td>185</td>
<td>181</td>
</tr>
</tbody>
</table>

Note: The dependent variable is coded so that higher scores indicated increased confidence. Table entries are ordered probit coefficients with standard errors in parentheses. ** p ≤ .05; * p ≤ .1; + p ≤ .13 for two-tailed tests. Cutpoints are available from the authors.
Recall that in our second experiment, due to the inducements, we can be confident that the emotions reflect temporary states. Thus, the similarity of our results across the two experiments suggests either that the emotions measured in experiment 1 also reflect temporary states, or that chronic emotions (perhaps captured in experiment 1) and temporary emotions have the same effects.

Towards a Theory of Emotion and Framing

In its original incarnation, Kahneman and Tversky labeled their nascent theory of decision-making under conditions of risk, “value theory” (Kahneman 2000). They did this, in part, to highlight the distinction between decision utility and experienced utility, noting the important difference between thinking and feeling. This differentiation in many ways presaged Slovic et al.’s (2004) delineation of risk as analysis and risk as feelings. While prospect theory progressed in a more cognitive fashion, representing the apex of the revolution it signified in psychology, the underlying notion of experienced utility was not lost altogether. Indeed, Kahneman has gone on to investigate the impact of emotion on assessments of well-being and happiness in his more recent work (Kahneman et. al. 1999). And framing effects can encompass such experiential utility.

One of the ways in which framing effects inculcate emotion is through the process of mental accounting (Thaler 1980). Mental accounting offers a description of how people seek to organize, trade-off, evaluate, assess and rationalize various options and events in their lives. Mental accounts induce strong emotions when they come to be closed, and individuals must draw up a kind of psychic balance sheet for particular experiences. In this way, choosing to instigate or terminate a mental account creatively incurs punishments or rewards, whose timing is often at least partly determined by the actor (Kahneman 2000). In normative judgments, sunk costs should never be counted in rendering decisions concerning future actions, but emotional considerations often pull in an opposite direction, and individuals may choose to delay shutting a particular mental account in order to put off the day of reckoning with past failures. Given previous discussion, it should not be surprising that these emotional and analytical processes can occur simultaneously on different tracks, all the while moving in opposite directions. At some point, the parallel mental processes must arrive at the same station and come to a halt, but conscious processes can sometimes delay that moment of evaluation and assessment.

In this light, emotion can clearly serve as a basis, at least in part, for a more comprehensive understanding of the origins of framing effects (Bueno de Mesquita and McDermott 2004). Emotion can provide a foundation upon which the framing of particular options can be based or constructed, thus influencing decision prior to choice, as well as during choice itself. While prospect theory may not present an explicit theory of framing, the indication of experiential utility points the way to at least one mechanism by which individuals may choose the frames they adopt as default values, through processes of mood congruence.

As with other aspects of prospect theory, the impact of emotion on frames may depend on domain (e.g., Forlani 2002). This may help explain why negative frames
induced more risk-seeking regardless of emotion. For example, distress may have more of an impact in life and death decisions than those concerning investment precisely because the former presents more of an imminent threat of loss in the vast majority of situations; for one thing, loss of life represents a threat encompassing a much broader scope than even the prospect of financial collapse (a theory of domain effects, however, still eludes us). Further, anger may not exert the kind of impact expected precisely because it does not easily map onto a gain/loss divide. Indeed, anger may represent an internal calculus of a relational welfare trade-off ratio, by which individuals assess whether or not others are treating them with the respect they believe they deserve (Tooby et al., n.d.). Rather, anger appears to increase the biased nature of information search, which reduces the impact of a presented frame, precisely because the angry perceiver imposes an internal filter designed to seek biased confirmation and assimilation of preexisting beliefs (Lord et al. 1979). This strategy may exist, in part, to perpetuate the mood state in order to maintain a motivation to fight if necessary.

Conclusion

Our results, combined with previous literature, suggest the merit of analyzing the impact of specific, discrete emotions on particular outcomes of interest, including their impact on framing effects. Further, the effect of these emotions on particular outcomes of interest may vary by context and domain, such that issues representing more critical, or familiar, challenges may produce systematically different effects. In this case, for example, the disease problem appeared more evocative than the investment one. Loss aversion suggests that losses hurt more than equal gains please; similarly, it may be the case that emotions may exacerbate the assessment of potential losses more than they might influence the assessment of prospective gains.

Overall, emotion clearly affects risk propensity in ways previously underappreciated. And further, emotion can also moderate framing effects in particular contexts (also see Lerner and Keltner 2001; Chang 2007). Importantly, different negative emotions, such as distress and anger, exert opposite effects, at least in some domains. Anger encourages greater risk-seeking, while distress encourages a more cautious approach. The study of decision-making needs to incorporate, explicitly, the effect of specific emotions on particular issues at hand. In so doing, however, it is important that researchers resist exploring a proliferation of emotions. The theoretical work on which we drew suggests that, in the case of negative emotions, there will be differences based on the extent to which the emotion generates anxiety as opposed to aversion. While we focused specifically on distress and anger, we would expect our results to be the same if we had instead looked at fear (an anxiety provoking emotion) and hostility (an aversion emotion), for example (see Lerner and Keltner 2001; however, also see Roseman et al. 1994). Future work also needs to more explicitly explore the origins of emotions and emotional reactions (e.g., Strelau et al. 2002).

Emotions serve motivating functions. As such, discrete emotions can encourage individuals to adopt particular frames for choice, establish internal feedback loops
for experienced utility, and create foundations for the assessment of events through mental accounting. While cognitive biases clearly tell part of the story about the mechanisms by which individuals make rapid and efficient decisions, emotional motives must also enter the narrative to provide a more complete picture of the intertwined processes by which humans make judgments and choices about the world around them.

Acknowledgments We acknowledge support from the Russell Sage Foundation’s Small Grants Program in Behavioral Economics, the University of Minnesota McKnight Land-Grant Professorship, and Northwestern University’s AT&T Research Scholar Fund. We also thank the participants at the 2005 “Workshop on new Methods for Studying Social Behavior in Political Science” at Rice University for stimulating conversations.

References


Beyond the Self: Social Identity, Altruism, and Political Participation

James H. Fowler  University of California, San Diego
Cindy D. Kam  University of California, Davis

Scholars have recently extended the traditional calculus of participation model by adding a term for benefits to others. We advance this work by distinguishing theoretically a concern for others in general (altruism) from a concern for others in certain groups (social identification). We posit that both concerns generate increased benefits from participation. To test these theories, we use allocations in dictator games towards an unidentified anonymous recipient and two recipients identified only as a registered Democrat or a registered Republican. These allocations permit a distinction between altruism and social identification. The results show that both altruism and social identification significantly increase political participation. The results also demonstrate the usefulness of incorporating benefits that stem from sources beyond material self-interest into rational choice models of participation.

“Avarice, or the desire for gain, is a universal passion which operates at all times, in all places, and upon all persons” (Hume, Of the Rise and Progress of the Arts and Sciences, [1742] 1991, 113)

A large body of work, ancient and modern, posits that self-interest is the primal force for political attitudes and behaviors. Although this parsimonious assumption explains many observed political phenomena, it fails to illuminate some of the most important features of political life (Citrin and Green 1990; Mansbridge 1990; Sears and Funk 1991). For example, rational choice scholars have typically approached the problem of political participation by using models based on pure self-interest (Aldrich 1993; Downs [1957] 1985; Feddersen and Pesendorfer 1996; Ledyard 1982; Palfrey and Rosenthal 1985). These models encounter a well-known difficulty: although an individual may derive personal benefits from a certain political outcome, the probability that a single act of participation will significantly affect the outcome is very small in large populations. This gives individuals an incentive to avoid the costs of participation and free ride on the efforts of others, producing the well-known paradox of participation.

If self-interest does not motivate political participation, then what does? One possibility is that individuals consider benefits to others, beyond the self, when deciding whether or not to participate. Even Downs, so often portrayed as the archetypal champion of self-interest as a motivating factor of political choice, states that a concern for the welfare of others might influence political attitudes and behaviors: “In reality, men are not always selfish, even in politics. They frequently do what appears to be individually irrational because they believe it is socially rational—i.e., it benefits others even though it harms them socially” ([1957] 1985, 27). Extending the foundation for political choice beyond the self is not an easy task. It forces analysts to confront an important question: When individuals decide whether and how to act, to whom do they refer? On whose benefit will they act?

In this article, we distinguish theoretically two different kinds of other-regarding considerations that influence political participation. Some people are motivated by social identification, which creates a desire to improve the welfare of certain groups in society, possibly at the expense of other groups. These individuals will likely participate when they believe that their actions will give them an opportunity to help their preferred group(s). Other people are motivated by altruism, a willingness to pay a personal cost to provide benefits to others in general, regardless of the identity of the beneficiaries. These individuals will
likely participate when they believe that their actions will give them an opportunity to make everyone better off. Our core expectation is that altruists and social identifiers will participate more than egoists—that is, individuals who are primarily self-interested.

We test the social identifier and altruism theories of participation using a unique experimental design. Subjects are asked a number of standard questions regarding their socioeconomic status, political attitudes, and participation behavior. They then play three “dictator” games (Forsythe et al. 1994), in which they divide a set of lottery tickets between themselves and an anonymous individual. The recipient is completely anonymous in all three games. However, in two of the games, subjects are informed that the recipient is a registered Democrat or a registered Republican. We use these dictator games to uncover the degree to which each subject is generally concerned about the well-being of others, as evidenced by allocations to the unidentified anonymous recipient, and the degree to which each subject socially identifies with the political parties, as shown by allocations to the Democrat and Republican.

These experiments yield several novel results for behavior in the dictator game and its relationship to political participation. First, we show that behaviors in these dictator games reveal a key characteristic of social identification: a preference for the ingroup versus the outgroup. Democrats and Republicans both give more to the recipient from their own party than the opposing party; independents give more to the anonymous recipient than the partisan recipients, while partisans do just the opposite. Second, behaviors in these dictator games reveal that strength of social identity magnifies preferences for the ingroup. Subjects who identify themselves as strong Democrats and strong Republicans tend to give much less to the recipient from the opposing party than partisans identifying with weaker affiliations. Third, we uncover a bias against Republicans. The Republican recipient tends to receive less than the Democrat or the unidentified anonymous recipient, even when the donor is a Republican. Finally, both altruism and social identity increase political participation. People who share with an anonymous individual in the dictator game participate in politics more than those who do not share. People who vary the amount they give depending on the partisan affiliation of the recipient also participate more than those who give (or withhold) the same amount to (from) everyone. These results suggest that other-regarding behavior plays an important role in the decision to participate.

Our work has broad implications for existing scholarship in several fields. Since it is the first examination of the impact of partisanship on dictator game allocations, this work should be of interest to behavioral and experimental economists. It should also be of interest to psychologists and sociologists, since our uniquely designed dictator game provides a novel means of tapping social identity. Most existing work on social identification does not focus on individuals to sacrifice their own material well-being in order to affirm support for their ingroups, but in the dictator game, social identifiers must deliberately deprive themselves of personal rewards so that they can affirm the position of someone else in their group. In our design, affirming social identification has a cost. We demonstrate that subjects are in fact willing to bear this cost, and we demonstrate the political consequences of this behavior.

Finally, our work should be of interest to political scientists, since we not only introduce an innovation in the measurement of dispositions towards groups and others in general, but we also identify the political implications of these dispositions by using them to predict political participation. Our work therefore allows us to address the literature on rational choice by demonstrating that the core motivational elements of rational choice theory need not rest entirely or solely on self-interest, that other-regarding behavior can and should be taken into account, and that rationality in no obvious or necessary way requires material self-interest to be privileged as the primary motivator in models of political behavior.

Social Identity, Altruism, and Participation

Traditional rational models of participation based on self-interest posit that individuals receive a benefit $B$ from some political activity if their preferred outcome occurs. However, the participatory acts that yield this outcome are individually costly (e.g., Aldrich 1993; Downs [1957] 1985; Feddersen and Pesendorfer 1996; Ledyard 1982; Palfrey and Rosenthal 1985). The sticking point for these models is that a single act of participation usually has only a very small probability $P$ of affecting some political outcome. For example, if the participatory act is voting, then the outcome can only be changed when there is an exact tie, or when the vote can create a tie. If the participatory act is a contribution of money or time to a candidate or political organization, it may be just one of thousands or even millions of other contributions. Thus, the expected benefit of participation $PB$ is typically less than the cost $C$, even when populations are not too large and even when the cost of participation is very low.
Riker and Ordeshook’s (1968) D term seems to offer one solution to the paradox of voting. The D term suggests that individuals who participate in politics derive a benefit associated with the act of voting, resulting from satisfying a sense of citizen obligation, affirming their allegiance to the political system or reinforcing their own sense of efficacy. This benefit associated with completing the act of voting is orthogonal to the benefits derived from the policy outcome of the political action. Thus, political participation is an expressive act in which the desired policy outcomes are essentially irrelevant in the participation calculus, given how small P and B are.¹

The D term provides one answer to the paradox of voting, but it is not the only answer. We argue that citizens can consider political action to be instrumental not only for themselves but for others as well. Empirical research suggests this to be the case: activists frequently participate in politics in order to enact changes in public policy—that is, they act for instrumental reasons—no matter how “irrational” this motivation seems (Schlozman, Verba, and Brady 1995). Further, activists frequently note that the political stakes of participation affect individuals beyond themselves and their families (Schlozman, Verba, and Brady 1995). That is, they act instrumentally, not just for their own benefit, but for the benefit of others. As such, the policy outcomes of political actions should affect individual decision making. We explicitly address the possibility that an individual may care about the impact of policies as these policies apply beyond the self. We do so by incorporating social identity and altruism into the calculus of participation. Note that the benefits associated with altruism and social identification are distinct from those captured by the D term. The D term can be conceived of as system affirmation or fulfillment of a moral obligation to participate. Moreover, the D term is independent of political outcomes—people with a strong sense of social obligation will participate even if they think the act of participating will have no influence on benefits derived from policy outcomes. In contrast, we argue that altruism and social identity will encourage political action in order to benefit others, generally or specifically; altruism and social identity affect B.

According to social identity theory, individuals yearn to acquire and maintain a positive self-identity (Tajfel 1981). This sense of self is derived in large part from formal membership with or psychological attachment to social groupings. In contrast with a theory based purely on self-interest, social identity theory suggests that individuals gain utility from affiliating with social groups, from bestowing benefits upon the ingroup, and from withholding benefits from the outgroup. Social identity theory resonates with Converse’s (1964) observation that the fundamental way in which many citizens understand politics is through groups. Social identity theory implies that individuals will make political choices by using specific groups rather than the self as a reference point. Social identity predicts policy preferences (Campbell et al. [1960] 1980; Kinder and Winter 2001; Price 1989), and under some conditions, social identity spurs collective action (for a review, see Huddy 2003). So far, however, the literature has not linked social identity with the policy-oriented benefits of participation in an attempt to address the paradox of participation.²

We argue that social identifiers may be spurred into political action when they believe that political outcomes will positively affect members of their group. When individuals perceive political outcomes as distributive—as opportunities to transfer resources from outgroups to their ingroup—social identifiers should be more likely to participate than individuals who are self-interested. Moreover, as people identify more strongly with their ingroup or more strongly against some outgroup, they should experience greater benefits from distributive politics and thus be more likely to participate.

While social identity theory suggests that individuals partition the world into ingroups and outgroups, in a wide range of contexts, human beings

¹Riker and Ordeshook’s (1968) approach is decision-theoretic and based on the assumption that the D term is exogenous. However, two recent attempts to endogenize the D term in a game theoretic model show that “ethical” preferences can help to explain turnout even when voters are well informed and fully strategic (Coate and Conlin 2004; Feddersen and Sandroni 2006a, 2006b). These models suggest that voters act as social planners by trying to maximize social welfare, and they gain utility from “doing their part.” However, both of these models assume that voters prefer the lowest turnout possible, and neither of these models considers the possibility that voters might care about the distributive implications of political outcomes that provide benefits to some groups at a cost to others.

²One exception worth noting is Uhlner’s (1989) treatment of group members, group leaders, and candidates in her formal model of turnout. She argues that group leaders can manipulate the costs and benefits of voting, e.g., through ostracism of abstainers or social invitations directed at compliers. This approach differs from ours because group leaders manipulate benefits obtained from the act of voting—where the act of voting is still expressive and not instrumental, and the instrumental functions of voting remain untouched by the actions of group leaders.
have been observed to be motivated by the welfare of others in general (Fehr and Fischbacher 2003; Monroe 1996; Piliavin and Charng 1990). They engage in acts of altruism, or “behavior intended to benefit another, even when this risks possible sacrifice to the welfare of the actor” (Monroe 1996, 6). In contrast with social identifiers, altruists do not typically target individuals from certain groups for benefits. Monroe (1996) explains that individuals who are willing to engage in uncommon acts of altruism express a sense of universalism in viewing the human condition. Instead of viewing an individual (and the self, in particular) as tied to specific social groupings, altruists “share a view of the world in which all people are one” (198). Thus, while social identifiers are more likely to help members of their ingroup, altruists are unlikely to discriminate in whom they help.3

Scholars have recently incorporated altruism into the traditional calculus of participation model by assuming that each citizen also cares about the benefits that others secure from the preferred outcome (Edlin, Gelman, and Kaplan 2007; Fowler 2006; Jankowski 2002, 2007). Although a single participatory act may have little effect on a political outcome, the number of people who benefit may be quite large. Thus, those who exhibit a sufficient degree of concern for the welfare of others will be willing to engage in costly political participation. Moreover, as people become more concerned for the welfare of others, they should experience greater benefits when political outcomes portend improvements for the welfare of others generally. Thus, altruists will be more likely to participate than individuals who are self-interested.4

Political outcomes might be construed by individuals as improving the general welfare and/or as favoring particular social and political groups. Consequently, the decision to participate in politics may be motivated by both a desire to make things better for everyone (altruism) and a desire specifically to acquire as many benefits as possible for the ingroup (social identification). Thus the benefit from participation may be derived by some combination of self-interest, altruism, and social identity.

Finding Altruists and Social Identifiers among Dictators

Our study contributes to existing empirical work by adopting an innovative measure of altruism and social identity. Previous attempts to examine the relationship between other-regarding behavior and participation have relied on questions in the National Election Study (NES) pilots. Knack (1992) creates an index of “social altruism” from questions about charity, volunteer work, and community involvement on the 1991 NES Pilot Study and finds a positive relationship between the index and voter turnout. However, the questions used in the index are very close to those used by scholars who argue that organizational involvement (not altruism) enhances political participation (Verba, Schlozman, and Brady 1995). Jankowski (2007) finds a relationship between voter turnout and “humanitarian” norms (i.e., agreement with the statement that “One of the problems of today’s society is that people are often not kind enough to others.”). These questions certainly reflect expectations about the altruism of others, but it is not clear how they relate to the respondent’s own willingness to bear costs to provide benefits to others. Typical measures of social identification rely upon self-reports (Kinder and Winter 2001) or are based on group membership (Price 1989).

The above studies rely on respondents’ expressed preferences for helping others generally or for identifying with a group. In neither case do respondents actually experience a cost in order to give a benefit to someone else. In contrast, preferences for helping others are revealed in what experimental economists call the “dictator game” (Forsythe et al. 1994). In this game, the experimenter gives player 1 a certain amount of money and then asks the subject to divide that money between herself and player 2.5 If player 1 is motivated only by her own economic gain, she should keep all the money for herself and allocate nothing to player 2. However, this is not what players normally do. In a survey of dictator game results, Camerer (2003) shows that the mean allocation to player 2 ranges from 10% to 52%. Anonymity conditions tend to decrease the mean allocation, but even in the most anonymous treatments (Hoffman et al. 1994) about 40% of the allocations still exceed 0.

3Note that we do not address the evolutionary or social origins of altruism and other forms of nonself-interested behavior as has been done elsewhere (e.g., Samuelson 1993). Our primary interest here is in how variation in altruism and social identification predicts political participation.

4For a formalized sketch of how altruism and social identity might be inserted into the classic paradox of voting model, see the online appendix at http://journalofpolitics.org/articles.html.

5Unlike the ultimatum game (cf. Hibbing and Alford 2004), the dictator game does not give player 2 an opportunity to accept or reject the offer. In the dictator game, player 2 simply pockets the money that player 1 allocates to her and the game is over.
Interpretations of Excess Giving in the Dictator Game

Excess giving in dictator games is a replicable empirical regularity. Scholars offer several explanations for this excess. We adopt the most prominent explanation: altruism—that individuals engage in “other-regarding” behavior. The altruism explanation suggests that dictators give to others because they want to improve the well-being of other individuals, even when doing so impinges on their own material interests. In his thorough overview of dictator games, Camerer notes that “there is some pure altruism” that explains excess giving (2003, 56). For example, in their study of altruism and dictator games, Eckel and Grossman (1996) manipulate the target of the giving; they find that subjects are much more likely to give when the target is the Red Cross. Eckel and Grossman conclude that “altruism is a motivating factor in human behavior in general and in dictator games in particular” (1996, 182).

A companion explanation for excess giving is a taste for fairness; this fairness hypothesis is often discussed interchangeably with altruism, but they are distinguishable from each other. The altruism explanation hinges upon the idea that individuals care about others’ welfare. The fairness explanation in its simplest formulation is standards-oriented: an individual cares that the division of goods satisfies some standard of equity (typically, in the standard dictator game, one-half). Further elaborations of the fairness explanation tilt the balance even more towards the self: Fehr and Schmidt (1999) offer an extension of this line of reasoning in suggesting that individuals care about not just equity in outcomes across individuals but also about the absolute difference between an individual’s allocations vis-à-vis that of other individuals. They specify an asymmetric utility function, where individuals receive the most utility when payoffs are equal, slight (and increasing) disutility from being advantaged when compared to others (“guilt,” per Camerer 2003, 102), and sharper (and increasingly sharper) disutility from being disadvantaged compared to others (“envy,” per Camerer 2003, 102). Yet, even after incorporating a sense of fairness, guilt, and envy into account, Fehr and Schmidt still note that “Altruism is consistent with voluntary giving in dictator and other public good games” (1999, 854).67

In an ingenious design that compares the altruism and fairness interpretations, Andreoni and Miller (2002) examine choices in a series of dictator games with different payoffs. In some treatments, player 2 is given $.20 or $.30 for every $.10 player 1 allocates. In other treatments, player 1 must allocate $.20 or $.30 for every $.10 player 2 receives. By varying the payoffs, Andreoni and Miller are able to distinguish between individuals who give in order to equalize payoffs (whom they call “Rawlsians”) and those who give in order to maximize total payoffs to both players (whom they call “utilitarians”). The results show that about two-thirds of those who incorporate the recipient’s utility in their decision can be described as “utilitarians.” Thus, while a concern for fairness undoubtedly plays an important role, altruism, or consideration of others’ welfare, appears to be the dominant motivation behind giving in the dictator game.

Another explanation for excess giving rests on the notion of reciprocity. Hoffman et al. (1994) and Hoffman, McCabe, and Smith (1996a) argue that excess giving occurs in order to satisfy norms of reciprocity. Dictators give to others because future rewards are contingent upon the individual’s “social reputation as a cooperative other-regarding person” (Smith 2000, 84). Dictators thus give more than would be expected because they are concerned, in the short run, that appearing “greedy” will decrease the likelihood that they would be invited back for more experiments, or they are concerned in the long run of other negative consequences for themselves. To dispute this reciprocity argument, Johannesson and Persson (2000) manipulate the target recipient in a dictator game, specifying that the recipient is one of the other subjects recruited for the study or a randomly selected and from their relative standing compared with others. The core argument, thus, is that individuals do not really care about making others better off; instead, they take their own standing and the relative standing of others into account. However, the ERC still includes the notion of a “social reference point,” a standard against which decisions are measured. In dictator games, this social reference point is an equal division of the payouts. The notion of equity, or fairness, has a pivotal place in this formulation. A subtle distinction between the Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) models is that in the former, individuals care about the absolute level of difference between themselves and others, whereas in the latter, individuals care about their relative shares in the allocations rather than absolute differences in these shares (Camerer 2003, 104).

67Fehr and Schmidt (1999) note that it is harder to account for behaviors in other games using altruism. This is not a central concern of ours in this paper, as we do not believe that other games provide as appropriate a means of tapping altruism.

6Using a similar approach, the Bolton and Ockenfels (2000) Equity, Reciprocity, and Competition (ERC) Model specifies that individuals receive utility from their own level of material standing
individual from the general population. They argue that “If donations in dictator games are motivated solely by reciprocity, donations should therefore drop to zero with this experimental treatment” (2000, 138). Johannesson and Persson are unable to reject the null hypothesis of no difference between the two groups, which suggests that excess giving in the dictator game cannot be ascribed to reciprocity on its own.

A final explanation for excess giving is that subjects do not understand the game and are just making random allocations. Andreoni and Miller (2002) address this concern by examining within-subject patterns of choices in their series of dictator games with different payoffs. They find that 98% of the subjects make choices that are consistent with the general axiom of revealed preferences across eight treatments, suggesting that most of them understand the game and are not choosing randomly.

These results from the literature on giving in the dictator game suggest that while there are several factors that might explain giving, dictator game allocations may be a good proxy for an individual’s concern for the well-being of others. The well-being of others is probably more important to a person who chooses to allocate 20% than one who allocates 0%. In fact, the utility function used in Andreoni and Miller (2002) to explain behavior in the dictator game yields a monotonic relationship between the equilibrium allocation in the dictator game and the weight a player places on the other player’s utility. In other words, the more a player cares about the well-being of others, the more she will allocate to the other player in the dictator game.

Tapping Altruism and Social Identity in a Unique Dictator Game

Behavior in dictator games can reveal other-regardingness at a general level (that is, altruism). We can also use dictator games to investigate whether or not individuals exhibit politically relevant group-based preferences. Past experiments have varied the characteristics of the anonymous recipient with some interesting results. People are more willing to give to charities than an anonymous individual (Eckel and Grossman 1996), to women (Saad and Gill 2001), and to people who have been introduced to them (Bohnet and Frey 1999). In their experiment, Bohnet and Frey manipulate the amount of information provided about the target to the dictator. They find that more information “transforms anonymous, faceless entities into visible, specified human beings, i.e., identifiable victims” (1999, 339). They argue that this pattern of increased giving suggests that “the more we know, the more we care” (citation from Schelling 1968). Camerer notes that the “identification effect is target specific and is not the result of general sympathy toward others” (2003, 76).

Our design enables us to capture this distinction between concern for others, generally, and a concern for specific groups. We are interested in whether or not people give more to members of one political group than another or whether they give the same amount to an anonymous individual versus individuals affiliated with groups. By varying information about the political group to which the target recipient belongs, we can uncover the extent to which social identity might drive allocation decisions. In contrast to Bohnet and Frey (1999), we compare giving in the anonymous game with giving to anonymous individuals affiliated with political parties. As a result, we find that there is an important qualification to the observation that decreasing social distance increases giving: it is not just the more you know, but both the more you know plus how you feel about the target. Dictators can, as Camerer notes, show “empathy or contempt” (2003, 76).

We select individuals from partisan groups as target recipients because political parties are among the most relevant groupings in political life. As Campbell et al. argue, “the strength and direction of party identification are facts of central importance in accounting for attitude and behavior” ((1960) 1980, 121). Identification with parties is typically measured with a 7-point Likert scale of subjective identification, although it has also been measured with self-reports on closeness to parties and implicit associations (Huddy 2003). These measures of social identification allow individuals to claim allegiance or closeness to groups, but they do not require individuals to sacrifice anything personally in making such a claim. Using dictator game allocations as a measure of social identification is a methodological innovation. The dictator game enables us to measure an individual’s willingness not only to claim allegiance to a party but also to affirm that allegiance by withholding material benefits from the self in order to transfer benefits to a different individual who happens to be a member of the ingroup. Further, the nature of political competition makes it more socially acceptable for individuals to confer benefits to in-partisans and deny benefits to out-partisans (as opposed, to, say, racial groupings which might invoke social desirability concerns). This social acceptability thus improves our ability to distinguish between self-interested, social-identity-based, and altruistic behavior.
In December 2004, about 350 subjects were recruited from undergraduate political science and sociology courses at a large Western public university to participate in a computer-based survey. Subjects were offered credit towards their course grade to participate in the study; 306 (about 85%) of them elected to do so. Each individual answered a number of standard questions regarding their socioeconomic status, political attitudes, and participation behavior and then played three dictator games. In one game, subjects are told, “You know nothing about this anonymous individual.” In the other two games subjects are told, “The only thing you know about this individual is that he or she is a registered Republican [Democrat].” The order of these treatments is randomized, and a variable indicating the order is included in the analysis below. Allocations to the anonymous recipient reveal the degree to which each subject cares about the well-being of others generally, while allocations to the Democrat and Republican reveal the extent to which subjects are motivated by social identity.

In a typical dictator game, subjects are given a small amount of money ($5 to $10) and then give back the portion of the money they choose to allocate to the other player. This procedure can be very costly for larger samples, so we employ a different technique. Subjects are given 10 lottery tickets that each have an equal chance of winning a prize of $100. They are then given two identical opaque envelopes. They are asked to place the tickets they wish to keep for themselves in one envelope and the tickets they wish to share with an anonymous individual in the other envelope. They seal both envelopes, place the envelope designated for the anonymous individual in a locked mailbox under their computer, and then keep the other envelope for themselves. They then type on the computer the number of tickets they kept for themselves. Computers and the locked mailboxes are separated by partitions to protect the anonymity of choices each subject makes. After the study a ticket number for each of the three dictator game prizes was drawn and announced by email to participants. All three prizes were claimed.

### Partisanship and Dictator Game Allocations

We begin with mean allocations for each of the three kinds of recipients. In general, results from the dictator game in this experiment appear to be similar to those of other researchers. Forsythe et al. (1994) specifically compare “with pay” dictator games in which subjects are given $5 or $10 to divide and “without pay” dictator games in which subjects are asked to make hypothetical choices. They find that more people keep everything for themselves in the “with pay” treatment (30.4% vs. 13.0%) and the mean allocation is lower (22.6% vs. 38.7%). By comparison, subjects in this experiment were even more likely (38.0%) to keep everything for themselves than those in both treatments. However, the mean allocation (29.9%) falls between the two treatments. This suggests that the lottery mechanism used in our design is replicating at least some of the incentives from dictator games that use cash stakes.

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8Subjects range in age from 18 to 43 years; the average age is 21. The sample consists of 56% women and 43% minority; it is quite similar to the undergraduate body from which it is drawn (the undergraduate body is 56% female and 51% minority). The median family income is about $80,000 a year. The average subject leans left and Democratic—the modal response to the liberal-conservative 7-point scale is a “2,” or “liberal” (30% of the sample), and 57% of subjects identify as Democratic.

9For a summary and exact question wording, see the online appendix.

10One important difference between our method and the typical dictator game is the stake size. Note that the expected value of the prize is only $100/N = $3.3. Though economists sometimes criticize low-stakes experiments like this one, a survey of the experimental economics literature by Camerer and Hogarth (1999) shows that stake size has only a small effect on average behavior and the biggest effect of stakes on behavior is changing from zero to positive stakes. Furthermore, Forsythe et al. (1994) and Carpenter, Verhoogen, and Burks (2005) show specifically for the dictator game that changing from low stakes to high stakes has no effect on mean allocations.

11A chi-square test of the distribution of computer responses and the distribution of tickets that were physically placed in the mailboxes suggests that these two distributions are not statistically different.

12In many dictator games the recipients are also subjects. This was not true in our experiment—recipients are drawn randomly from the U.S. population (this is also the case in Johannesson and Persson 2000, who send the allocations to a randomly drawn individual in the Swedish population). Increasing the social distance between the dictator and the recipient should minimize the potential effect of reciprocity and thus make altruism a more compelling explanation for excess giving (Johannesson and Persson 2000). We did not hand all the envelopes with donated tickets to randomly chosen individuals. Instead, we waited to see if a donor claimed the prize for a given dictator game. If they did not, then we used random digit dialing to locate an individual and request their name and address (and partisanship for the Republican and Democrat treatments) and mail them the prize.

13Another way to compare the results of this experiment to the existing literature is by examining the relationship between dictator game allocations and demographic variables. Camerer (2003) notes that most demographic factors have little effect on dictator game allocations, but there are two notable exceptions. Carpenter,
Table 1  Partisanship and Allocations in the Dictator Game

<table>
<thead>
<tr>
<th>Donor</th>
<th>Anonymous Recipient</th>
<th>Democrat Recipient</th>
<th>Republican Recipient</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>29.9%</td>
<td>30.1</td>
<td>27.3</td>
<td>306</td>
</tr>
<tr>
<td>Democrat</td>
<td>29.6</td>
<td>31.5</td>
<td>26.0</td>
<td>173</td>
</tr>
<tr>
<td>Republican</td>
<td>29.2</td>
<td>29.6</td>
<td>32.7</td>
<td>78</td>
</tr>
<tr>
<td>Difference</td>
<td>.4</td>
<td>1.9</td>
<td>−6.7</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>.41</td>
<td>.23</td>
<td>.02</td>
<td></td>
</tr>
</tbody>
</table>

Note: *p*-values reflect probability that true relationship is opposite to the sign of the difference (Wilcoxon signed rank test).

Before moving to tests of the relationship between social identity, altruism, and participation, we discuss how social identity manifests itself in the dictator game results. No previous studies have examined the effect of partisanship on dictator game allocations, so we probe this relationship in some detail. Our experimental design provides us with a unique opportunity to test several hypotheses about social identification behavior as it applies to partisanship:

Preference for the ingroup over the outgroup. Partisan identifiers will be more generous when asked to allocate rewards between themselves and a member of their own party compared with a member of the opposition party. Partisan identifiers will also be more generous to an ingroup member compared with someone not in the ingroup (the anonymous individual). This implies that Democratic identifiers will give more to a Democratic target than a Republican target, and Democratic identifiers will give more to a Democratic target than an anonymous individual. Likewise, Republican identifiers will give more to a Republican target than a Democratic target, and Republican identifiers will give more to a Republican target than an anonymous individual. Independents will give less to a Democratic target and a Republican target than to the anonymous individual, since partisan targets are more obviously an “outgroup” to independents than an anonymous individual would be.

Strength of social identity. The stronger the partisan attachment, the more the ingroup should be rewarded and the more the outgroup should be deprived. As such, we would expect strong Democrats to give more to a Democratic target than weak Democrats would and strong Republicans to give more to a Republican target than weak Republicans would. Conversely, strong Democrats will likely withhold more from a Republican target than weak Democrats will; strong Republicans will withhold more from a Democratic target than weak Republicans will.

Bias against Republicans. Experimental work suggests that individuals may discriminate against members of different groups when they are choosing whether or not to bear a personal cost to help them. Additionally, considerations of deservingness enter into dictators’ decisions. For example, Eckel and Grossman (1996) note that altruism increases when the recipient appears to be more “deserving” or in need of resources (for more on deservingness, see Hoffman, McCabe, and Smith 1996b; Burrows and Loomes 1994). The Republican Party has typically been associated with business interests and the wealthy, whereas the Democratic Party has typically been associated with the working class and the less advantaged (Bastedo and Lodge 1980; Campbell et al. [1960] 1980; Miller, Wlezien, and Hildreth 1991). These associations imply that, on average, individuals might be less generous towards a Republican target compared with a Democratic target.

Table 1 shows mean allocations in the dictator game by partisanship of the donor and recipient. Notice first that the Republican recipient receives 2.8% less on average than the Democrat from all donors. However, this difference may be due to the larger number of Democrats in the sample. When we take into account the partisanship of the donor, mean allocations tend to diverge along party lines. Subjects who identify themselves as Democrats and Republicans both give about the same amount to the anonymous recipient, but they tend to give more to the recipient from their own party, suggesting ingroup favoritism occurs. Notice that the Republican recipient inspires the largest divergence, receiving 6.7% more from Republican donors than Democratic donors, or about a fifth of the mean allocation.

Table 2 indicates that both direction and strength of partisanship are significantly related to dictator

Verhoogen, and Burks (2005) find that subjects with higher family incomes tend to give less, while Eckel and Grossman (1998) find that women tend to give more. Our results replicate both findings. Consistent with results from other dictator games, subjects from families with low incomes (below the median) give 6.4% more than subjects from families with high incomes to the anonymous recipient. Further, in this experiment, women give away 6.1% more tickets than men.
game allocations. Strong partisans give most to in-party targets, and they give significantly less to the anonymous recipient (Wilcoxon signed rank test, \( p = .007 \)) and to the out-party target (\( p = .001 \)). Weak partisans show about the same degree of favoritism towards the in-party target, but they show much less hostility towards the out-party target, compared with strong partisans. Weak partisans also show much more generosity towards the anonymous recipient compared with strong partisans. This evidence suggests that strength of partisanship does not necessarily affect generosity towards the ingroup, but it does affect punishment of the outgroup. The stronger the partisanship, the greater the propensity to withhold benefits from those not explicitly affiliated with the ingroup. We also see that independents make distinctions as well—but differently from partisans. Independents are much more inclined to be generous towards an anonymous individual compared with a partisan identifier. This is consistent with our expectation that independents see themselves as a group separate from the major political parties and thus are less generous towards these explicit outgroups compared with the anonymous individual.

Recall that a single subject participates in three dictator games, so our design enables us to determine how the partisanship of the target recipient affects the within-subject tendency to give more to some political groups and less to others. About 61.7% of the subjects gave exactly the same amount to the registered Democrat and registered Republican that they gave to the anonymous recipient. The remaining 38.3% of the subjects discriminated across targets, changing their allocation in at least one of the games based solely on information about the partisanship of the recipient. Table 3 shows each of the three possible combinations of within-subject differences in the amount given to the anonymous and partisan recipients and how this breaks down by partisanship of the donor. First, note that the average subject gave somewhat less to the Republican than the Democrat or anonymous donor, yielding additional evidence for an anti-Republican bias in giving. The partisan identity of the donor also seems to have an effect on allocations. Democrats give significantly less to the Republican than to the Democrat or anonymous recipient. Republicans give more to the Republican than to the Democrat or anonymous recipient, but the significance of the difference is weak. Once again, the raw data appears to suggest an in-party bias, with the strongest difference in behavior exhibited by Democrats towards Republicans. Finally, people who did not identify themselves as either a Democrat or Republican tend to give less to both the Republican and Democratic recipient. In fact, the mean difference for

### Table 2  Strength of Partisanship and Allocations in the Dictator Game

<table>
<thead>
<tr>
<th>Donor</th>
<th>Anonymous Recipient</th>
<th>Partisan Recipients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In-Party</td>
</tr>
<tr>
<td>Strong Partisan</td>
<td>24.4</td>
<td>31.7</td>
</tr>
<tr>
<td>Weak Partisan</td>
<td>34.6</td>
<td>32.0</td>
</tr>
<tr>
<td>Independents</td>
<td>32.0</td>
<td>26.7</td>
</tr>
</tbody>
</table>

### Table 3  Within-Subject Difference in Giving to Anonymous and Partisan Recipients

<table>
<thead>
<tr>
<th>Donor</th>
<th>Amount Given to Republican Minus Amount Given to Democrat</th>
<th>Amount Given to Republican Minus Amount Given to Anonymous</th>
<th>Amount Given to Democrat Minus Amount Given to Anonymous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>( p )-value</td>
<td>Mean</td>
</tr>
<tr>
<td>All</td>
<td>–2.8%</td>
<td>.01</td>
<td>–2.2</td>
</tr>
<tr>
<td>Democrat</td>
<td>–5.5</td>
<td>.00</td>
<td>–3.6</td>
</tr>
<tr>
<td>Republican</td>
<td>2.8</td>
<td>.16</td>
<td>4.1</td>
</tr>
<tr>
<td>Independent</td>
<td>–2.1</td>
<td>.32</td>
<td>–6.2</td>
</tr>
</tbody>
</table>

Note: \( p \)-values reflect probability that true relationship is opposite to the sign of the difference (Wilcoxon ranked sign test).
both is exactly the same at 6.2%, or about one-fifth of the mean allocation. Although these differences are only weakly significant, they lend qualified support to the strength of social identification observed above. Partisans tend to receive less from nonpartisans and vice versa.

To further assess the effect of partisanship on differences in dictator game allocations, Table 4 presents results from three sets of multiple regressions that also control for demographic factors. The first set of results analyzes partisan discrimination: the extent to which subjects make distinctions between the Republican and Democratic targets. We see that partisan identification has a positive and significant effect on the difference in the amount given to the Republican versus the Democrat, providing additional evidence for ingroup preference and outgroup hostility. The direction of partisan identification also has a positive and significant effect on the difference in the amount allocated to the Republican versus the anonymous recipient. Given that there is no such effect for the difference in giving between the Democrat and the anonymous recipient, these two findings suggest that subjects give less to Republicans than other kinds of recipients and an anti-Republican bias exists.

The regressions reveal partisan strength bias: strong partisans give 14% and 16% more than independents do to the Republican and Democratic targets, respectively. These results suggest that strong partisans see themselves as part of two ingroups, rewarding members of their own party at the expense of the opposing party, and rewarding members of any party over those who do not affiliate with a party.

### Table 4 Determinants of Within-Subject Differences in Giving in Dictator Games with Anonymous and Partisan Recipients

<table>
<thead>
<tr>
<th>Donor Characteristics:</th>
<th>Amount Given to Republican Minus Amount Given to Democrat</th>
<th>Amount Given to Anonymous Minus Amount Given to Republican</th>
<th>Amount Given to Democrat Minus Amount Given to Anonymous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>S.E.</td>
<td>p</td>
</tr>
<tr>
<td>Partisan Identification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partisan Strength</td>
<td>-.03 (0.06)</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td>High Income</td>
<td>.01 (0.03)</td>
<td>.41</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-.05 (0.03)</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>.01 (0.04)</td>
<td>.37</td>
<td></td>
</tr>
<tr>
<td>Order Variables:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Republican First</td>
<td>-.04 (0.04)</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>Democrat First</td>
<td>-.04 (0.04)</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.00 (0.06)</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>Log scale variable</td>
<td>-1.28 (0.04)</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Deviance / Null</td>
<td>43 / 57</td>
<td>108 / 123</td>
<td></td>
</tr>
</tbody>
</table>

Note: N = 300. Interval regression, where dependent variable is within-subject difference in allocation in the dictator game. All independent variables are dichotomous except the partisan variables which are scaled from 0 to 1. Order variables indicate which dictator game subject played first.

14 In Tables 4 and 5 we use interval regression because the dependent variable is truncated at its minimum and maximum value. This estimation method is common in the literature on dictator games (e.g., see Carpenter, Verhoogen, and Burks 2005) and is conducted using maximum likelihood. We scale all variables from 0 to 1 for ease of comparison across coefficients, and we report the residual deviance of the model and compare it to the null deviance of a model with a constant.

### Altruism, Social Identity, and Political Participation

Our main expectation is that those who are motivated by altruism and by social identity will participate in politics more than those who are motivated by material self-interest. To test this expectation, we create a 7-point scale of participatory acts, including voting, contributing to a candidate, joining a political organi-
Table 5  Altruism, Social Identification, and Political Participation

<table>
<thead>
<tr>
<th>Dependent Variable: Political Activity Index</th>
<th>Simple Model</th>
<th></th>
<th>Model with Controls</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Other-Regarding Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altruism</td>
<td>.74 (.39)</td>
<td>.03</td>
<td>.66 (.29)</td>
<td>.01</td>
</tr>
<tr>
<td>Social Identifier</td>
<td>.57 (.24)</td>
<td>.01</td>
<td>.40 (.18)</td>
<td>.01</td>
</tr>
<tr>
<td>Political Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partisan Identification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partisan Strength</td>
<td>1.05 (.34)</td>
<td>.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Interest</td>
<td>2.66 (.40)</td>
<td>.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Information</td>
<td>.18 (.34)</td>
<td>.00</td>
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<tr>
<td>External Efficacy</td>
<td>.11 (.50)</td>
<td>.00</td>
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<tr>
<td>Civic Duty</td>
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<td>.00</td>
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<td>Socioeconomic Status</td>
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<tr>
<td>High Income</td>
<td>−.22 (.20)</td>
<td>.13</td>
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<tr>
<td>Female</td>
<td>−.29 (.18)</td>
<td>.06</td>
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<td>.08</td>
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<tr>
<td>Citizen</td>
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<td>.03</td>
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<td>Skills</td>
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<tr>
<td>Give Presentation</td>
<td>.05 (.22)</td>
<td>.41</td>
<td></td>
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<tr>
<td>Write Letter</td>
<td>.89 (.19)</td>
<td>.00</td>
<td></td>
<td></td>
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<tr>
<td>Make Decisions</td>
<td>.40 (.21)</td>
<td>.03</td>
<td></td>
<td></td>
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<tr>
<td>Chair Meeting</td>
<td>.08 (.23)</td>
<td>.36</td>
<td></td>
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<td>Constant</td>
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<td>.00</td>
<td>−2.25 (.61)</td>
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<td>.00</td>
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<td>Deviance / Null Dev.</td>
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<td></td>
<td>1081 / 1226</td>
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</table>

Note: N = 300. Interval regression, where dependent variable is the sum of political activities in which an individual participates (an integer from 0 to 7). All independent variables are dichotomous or scaled from 0 to 1.

zation, donating to a political organization, attending a local board meeting, volunteering for a local board, and protesting.15

Participation is a function of the benefits that individuals receive, and benefits can be decomposed into three categories: benefits to the self, benefits to society generally, and benefits to a preferred group. First, the benefits from participation should increase as altruism increases, and second, the benefits from participation should increase as social identification increases. We operationalize the altruism incentive by using the proportion of tickets allocated towards the anonymous target in the dictator game, since this best captures the extent to which individuals are willing to give to others in general.16 For the social identity incentive, we use a dummy variable that is 0 if an individual gives the same amount in all three dictator

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15About 73.4% said they voted in the 2004 general election (compared to official turnout of 81.4% for the city in which the study took place) while 20.6% said they had given money to a candidate. About 36.0% claimed to belong to a political organization but only 24.9% had given money to one. Two questions about local politics show that 19.3% regularly attend board meetings while 25.2% had volunteered at least once to serve in some capacity for a board. Finally, 42.2% said they had participated in at least one political protest. A participation index was created using an equally weighted sum of responses to each of these seven questions. The average subject participated in 2.41 of these activities, with 12.5% of them never participating in any activity and 2.3% participating in all of them. The correlation between the participation index and the first component of a principal components analysis of these seven activities is .981 (±.004, 95% confidence), suggesting that the index captures the main dimension that these activities share in common.

16Alternative specifications such as averaging the allocations for all three dictator games or using a dummy variable for individuals who gave more than the median amount yielded substantively identical results.
games, and 1 otherwise, indicating the individual discriminates in giving based on partisanship of the target.\footnote{We also included various measures to capture the strength of social identification by incorporating the difference of all three allocations into a single variable, such as their variance or standard deviation. These alternative measures yielded substantively identical results, but we use the dummy variable approach here for transparency.}

The raw data provide initial support for the notion that both altruism and social identity drive political participation. Those who gave more than the median allocation (30% of their tickets) to the anonymous recipient participated in 2.64 of 7 activities compared to 2.24 activities for those who gave 30% or less. Social identifiers (those who gave different amounts depending on the partisanship of the recipient) participated in 2.74 activities compared to 2.21 for those who gave the same amount to all three recipients. One-sided $t$-tests suggest that both of these differences are significant ($p = .03$, $p = .01$, respectively).

We begin by estimating a simple model in which the participation index is regressed on the altruism and social identity variables. This simple model appears in the first column of results in Table 5. Notice that even when we consider both altruism and social identity together in a single model, they continue to be positively and significantly related to participation. Table 5 also shows that when multiple covariates widely thought to affect participation are included in the model, altruism and social identity continue to have a strong and significant effect on participation.\footnote{We do not attempt to provide a comprehensive explanation of political participation. We aim to add the concepts of altruism and social identity to existing explanations of participation. Some of the factors that influence participation also influence allocations in the dictator game. In our regression model, we include a series of controls to rule out confounding factors that would bias our estimates of the effects of altruism and social identity (see Verba, Schlozman, and Brady 1995 for a comprehensive treatment of the control variables). Coding and question wording can be found in the online appendix.}

To make these results more concrete, subjects who give everything to the anonymous recipient in the dictator game participate in .66 more activities than subjects who keep everything for themselves. In other words, altruists appear to be more likely to participate in politics than egoists. Moreover, subjects who change the amount they give based on the partisanship of the recipient also participate in .40 more activities than those who give the same amount to each recipient. Thus, social identifiers participate in politics more than individuals who weigh benefits to all groups equally. Since variables in the model are dichotomous or scaled to range from 0 (sample minimum) to 1 (sample maximum), we can roughly compare effect sizes between independent variables by looking directly at the coefficients. Notice that the altruism and social identifier variables have a stronger effect than many other variables thought to be important. Only partisan strength, political interest, citizenship, and letter-writing skills are stronger predictors. Thus, these findings suggest that self-interest is not the only consideration that drives political participation. Rather, regard for others, generally, and regard for specific others, affiliated with groups, both predict participation.

**Conclusion**

While there can be no doubt that much of human behavior is motivated by self-interest, the results in this article suggest that other-regarding behavior may also contribute to political participation. Altruists who want to help others regardless of their group affiliation may have a larger incentive to participate than those who are merely self-interested. However, this will only be true when political outcomes are perceived as generating benefits for everyone—if political outcomes are perceived as being distributive, altruists gain nothing from shifting resources from one group to another. In contrast, social identifiers gain the most from participation when politics is distributive, since this gives them an opportunity to help acquire benefits for their ingroup, and better so if this occurs at the expense of outgroups. Since political outcomes are frequently viewed as improving the general welfare as well as posing more generous gains to some groups over others, both altruists and social identifiers ought to participate more frequently than egoists, who are purely self-interested.

Our results show that social identity has an important effect on allocation decisions. Subjects exhibit a preference for the ingroup over the outgroup. Democrats and Republicans both give more to the recipient from their own party than the opposing party, and independents give more to the anonymous recipient than the partisan recipients, while partisans do just the opposite. These preferences are magnified by the strength of social identity. Subjects who identify themselves as strong Democrats and strong Republicans tend to give much less to the recipient from the opposing party than other partisans.

We then use the dictator game allocations to test the altruism and social identity theories of participation and find that the evidence supports both theories.
People who share with an anonymous individual in the dictator game participate more in politics than those who do not share. People who vary the amount they give depending on the partisan affiliation of the recipient also participate more in politics than those who give the same amount to everyone. Participation in political life is driven by considerations beyond the self.

We use dictator games in a laboratory setting to measure self-oriented, social-identity-oriented, and altruistic dispositions. The primary explanation for giving in dictator games focuses on other-regardingness, and this is the interpretation that we take. However, we note that other interpretations exist: subjects may give in order to fulfill an external standard of fairness, or because they feel it is their “duty” to make donations—that is, they donate in order to comport with some external standard for appropriate behavior. Or, they might give to fulfill norms of reciprocity, or they might give randomly. We think the existing evidence rallies primarily around other-regardingness as an explanation, and hence we interpret our results as such.

Our study, like most studies utilizing experimental economics, examines dictator behaviors among college students. A standard criticism of studies utilizing convenience samples is that these samples are atypical of the general population, and any results are thus limited in their applicability to the general public. We note, however, that one must establish that the student sample is atypical from the general population in ways that are relevant to the study in question (Sears 1986).

Our core contribution is in identifying an innovative way to measure altruism and social identity and showing the empirical relationship between these measures and political activity. How would our results translate to the general public? Perhaps college students who are in a repeated-interactions environment would display, on average, higher levels of excess giving (to an anonymous individual and to a partisan) than members of the general population. It follows that perhaps the level of altruism and social identity may be higher in our convenience sample compared with a representative sample. However, we have no reason to expect that the relationship between altruistic and identity-based giving would differentially predict political participation. Hence, although we acknowledge that our empirical example may hold limited generalizability, we do not dismiss the possibility that these results could be replicated in the general population. (And, in fact, we are in the process of replicating these results in a general population study).

Altruism and social identity are likely to have broader applications beyond political participation, and our innovative measures might serve other researchers’ purposes in this regard. At a very general level, altruism and social identity might have implications for individuals’ understandings of politics and subsequent beliefs about political processes. Social identifiers may see politics as a competition among groups for governmental outputs, and thus they would favor political processes that would allow groups opportunities to press for their own cases. Altruists may see politics as a forum for the production of policies to improve the public good, and thus they might favor political processes that foster wide participation and dialogue. More narrowly, altruism and social identity could have implications for policy preferences. Altruists may oppose policies that are targeted at specific groups and instead favor policies that are more generally applied, much as humanitarians might (Feldman and Steenbergen 2001). Social identifiers are likely to support policies that disproportionately help their own group, to oppose policies that help other groups, and perhaps to provide the most support for policies that increase the standing of their own group at the expense of other groups.

Finally, the altruism and social identifier theories of participation have important implications for rational choice. The rationality assumption means only that people have preferences that are complete and transitive. Notice that the words “self-interest” appear nowhere in this definition (Jackman 1993). While it is true that most rational models are based on material self-interest, a concern for others need not be excluded from these models. Social identity theory suggests people gain utility by helping their ingroup, often at the expense of an outgroup. Theories of altruism suggest that people can use altruism to support policies that benefit others, even when it is personally costly. Rational calculations need not be limited to narrow definitions of material self-interest, especially since such models have failed to explain observable behavior. The evidence clearly suggests that individuals look beyond the self when deciding whether or not to participate in politics.

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**References**


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