Emotional Responses Shape the Substance of Information Seeking under Conditions of Threat

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Abstract: Menacing news inclines individuals to acquire information, and research has explored how emotional reactions such as fear or anger condition this process. While scholars have debated the relevance of fear and anger for levels of attentiveness and learning in politics, fewer studies consider how variation in emotional responses can shape the substance of information searches in times of threat. We posit that heightened fear motivates interest in defense-oriented information among threatened individuals, while heightened anger motivates interest in aggression-oriented information. To test these hypotheses, we focus on international terrorist threat because of its known tendency to elevate both anger and fear. We use data that permit a behavioral measure of information seeking, via an experiment embedded within a dynamic process tracing environment (DPTE) platform. Within this information-rich context, exposure to terrorist threat motivates a search for relevant information. Further, we find that while an induction to elevate anger prompts more immediate attention to aggression-oriented information, an induction to elevate fear is more effective in steering attention toward defense-oriented information.

Keywords: Political information, threat, emotions, fear, anger, terrorism

Note on Data: Data and code for replication of analyses in this article are available at https://github.com/traviscoan/info_seeking_under_threat

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Political information plays an important role in opinion formation, electoral decision making, and ultimately the policies enacted by governments. While some people seek as much political news as they can, most individuals vary in terms of the information they acquire. Among other factors, this variation can be affected by situations that generate negative emotional states (Albertson & Gadarian, 2015; Brader, 2006; Marcus, MacKuen & Neuman, 2000). Affective intelligence models suggest that individuals experiencing heightened anxiety or fear will tend toward elevated levels of attention and the prioritization of new information, more so than those who enter a mode of judgement characterized by enthusiasm (Marcus et al., 2000; see also Brader, 2006) or heightened anger/aversion (MacKuen, Wolak, Keele & Marcus, 2010). Scholars have relied on this research, as well as other appraisal theory frameworks, to reach similar conclusions (Carver, 2004; Harmon-Jones, Harmon-Jones, Abramson & Peterson, 2009; Huddy, Feldman & Cassese, 2007; Lerner & Keltner, 2000; Valentino, Hutchings, Banks & Davis, 2008). Though political psychologists have documented exceptions and nuances, there exists a general consensus that fear motivates more attentiveness to information, while anger instead prompts individuals to act (Brader, Marcus & Miller, 2011).

While important, the steady stream of discussion regarding differences in political behavior conditional on fear versus anger risks taking attention away from the fact that high arousal emotions often evoke some greater degree of attentiveness and information seeking (Brader, Marcus, and Miller, 2011; Schupp et al., 2004). Especially in information-rich contexts, we argue that it is important to consider another question: what implications does the relative salience of fear versus anger have for the substance of information seeking? We argue that both elevated fear and elevated anger can motivate individuals to acquire threat-relevant information; what differs is the *type* of

information that is sought. Political psychologists have examined how emotional reactions affect information seeking tendencies and whether the search is biased or not (MacKuen et al., 2010; Valentino et al., 2008). However, little attention has been given to how emotions intersect with threat to affect the types of threat-relevant political information that citizens seek (but see Ryan, 2012). To advance theory and research on this topic, we focus on responses to terrorist threat—a particularly salient context in recent times and one associated with a number of negative emotions, including both anxiety/fear and anger/aversion.

We draw on conceptualizations of the tendencies associated with fear and anger to argue that, in a condition of threat, individuals for whom one emotional state is elevated to a greater degree than another can be similarly inclined to seek out information and, yet, they will differ in the type of information they privilege. Fear is typically experienced when an individual perceives a situation as uncertain and is often accompanied by an inclination to engage in defensive behavior. As such, individuals experiencing relatively higher levels of anxiety/fear in relation to terrorism should be more likely to search for protection-oriented information (Smith & Ellsworth, 1985; see also discussions in Albertson & Gadarian, 2015 and Stein, 2013). On the contrary, anger is elevated when individuals assign a high likelihood to a negative outcome caused by a specific external actor; in such circumstances, individuals are more inclined toward riskier and punitive actions (Smith & Ellsworth, 1985). Thus, to the degree that anger is comparatively more salient in individuals' reactions to terrorist threat, they ought to be more motivated toward information on aggressive responses.

We assess these expectations in a U.S.-based study in which research participants were randomly exposed to either a media story with positive information about the country or one with

news of terrorist threat. To test our core hypothesis about the comparative salience of fear vs. anger, those in the threat condition were further assigned at random to an emotion induction task meant to elicit feelings associated with either the former, or the latter. Participants then engaged in information seeking for a hypothetical election within a dynamic processing tracing environment, which provides a behavioral measure of information seeking.

Theoretical Perspectives on Threat, Emotions, and Information Acquisition

Scholars generally agree that varying emotional states shape differential reactions to threats. While individuals tend to experience different emotions simultaneously (Watson, Clark & Tellegen, 1988, Abelson, Kinder, Peters & Fiske, 1982), one (or one set of) emotion(s) can be comparatively more elevated and thus take a predominant role in influencing subsequent appraisals, attitudes, and behavior. Some early studies on the role of emotions in public opinion focused on positive (enthusiastic) versus negative (threatening/anxiety-producing) states (Marcus & MacKuen, 1993; Marcus et al., 2000), and argued that the latter cause individuals to seek out more information and to rely less on prior beliefs when expressing preferences. More recently, political psychologists have begun to explore how distinct negative emotional reactions shape information seeking and policy preferences (e.g., Banks & Hicks, 2015; Huddy et al., 2007; MacKuen et al., 2010; Ryan, 2012; Valentino et al., 2008).

Much of this research draws on, and/or represents variations on, appraisal theories of emotion, which propose that different perceived emotions emerge from and are related to different appraisals (evaluations) and action (behavioral) tendencies (see discussions in Frijda, 1987; Lazarus, 1991; Lerner & Keltner, 2000; Smith & Ellsworth, 1985), and may therefore be associated with distinct modes of judgment (Marcus et al., 2000).[1] For instance, though fear and anger both

emerge from appraising a stimulus as unpleasant, fear tends to be relatively more salient when a situation is uncertain. In contrast, anger tends to be elevated in situations with clear consequences that are attributable to a specific source (Carver, 2004; Ellsworth & Smith, 1988; Harmon-Jones et al., 2009; Lerner & Keltner, 2000; Smith & Ellsworth, 1985). Moreover, while anger is more commonly associated with individuals believing that they are in control and prepared to act (Marcus et al., 2000), fear tends to be associated with the opposite evaluation (Ellsworth & Smith, 1988; Lerner, Gonzalez, Small & Fischhoff, 2003). Fear is thus associated with an individual's preparation to engage in defensive behavior, while anger is associated with preparation to confront the source of the threat (Frijda, 1987; Hall, 2011; Marcus et al., 2000; Steimer, 2002; Valentino, Brader, Groenendyk, Gregorowicz & Hutchings, 2011).

Collectively, appraisal theory frameworks inform expectations regarding how individuals will respond to threatening conditions. Angry individuals, as opposed to fearful individuals, are more prone to act, to rely on heuristic-based processing of information, to place blame on specific actors (Keltner, Ellsworth & Edwards, 1993; Small, Lerner & Fischhoff, 2006), to exhibit higher out-group animosity, and to support more risky and vengeful policies (Bang Petersen, 2010; Huddy et al., 2007; Lerner, Goldberg & Tetlock, 1998; Lerner et al., 2003). Not only has this line of research offered numerous important findings, it also provides a foundation for deriving expectations about how the substance of information acquisition behavior is shaped by the relative salience of particular emotions.

Emotional Reactions to Politics and Information Seeking Under Threat

Conditions of terror threat provide an appropriate test case for examining the intersection of threat, emotions, and information seeking, given these threats are salient in modern politics and

generate a diverse set of negative emotions, including fear and anger (Merolla & Zechmeister, 2009; Hall & Ross, 2015). It makes sense that individuals would react with fear/anxiety, as the varying of targets, times, and methods increases worry about the possibility of another attack, at any time, any place. Individuals may also react with anger, given that terrorist attacks are deliberate acts often by specific individuals and groups. Conditional on the way an attack is framed by leaders or the media, one of these emotions may end up relatively more dominant than the other (Hall & Ross, 2015). This diversity in reactions is important. While there is consensus in the literature that individuals in high arousal and negative emotional states are more likely to pay attention to threatening stimuli (MacLeod & Mathews, 1988; Marcus et al., 2000; Schupp et al., 2004), there is less consensus regarding whether information seeking varies with the degree to which one negative emotion is comparatively more elevated than another. There is even less consideration of the types of information individuals may prioritize depending on their emotional state.

One strand of what has become, for some, conventional wisdom puts a spotlight on anxiety as a powerful motivator of information acquisition. Drawing from a variety of appraisal theories, some evidence in political science supports the hypothesis that individuals experiencing fear in relation to a political threat are comparatively more likely to seek out information than are individuals experiencing anger (MacKuen et al., 2010). For example, Huddy et al. (2007) found that fear about the war in Iraq had a significantly stronger positive effect than anger on citizens' levels of thinking about the war. In an experimental study, Valentino et al. (2008) found that even though induced fear and anger (evoked in response to a political campaign) increased self-reported attention, fear had the strongest and most consistent effect. In addition, individuals induced to feel anger spent less time seeking information than those in a control group (see also MacKuen et al., 2010).

Yet, other research suggests that anger can stimulate information searches (Hansen & Hansen, 1988; Huddy et al., 2007; Tavris, 1989), and this may be more likely in circumstances when costs are low (Ryan, 2012) and when there are limited opportunities for other types of action. For example, if an angry individual is in an information-rich environment such as social media, she may choose to act by engaging in information seeking. Some scholarship provides support for this perspective: Ryan (2012) found that an anger-inducing advertisement was more effective in motivating information seeking online than a fear-inducing advertisement.

In short, there are theoretical and empirical reasons to expect both fear and anger to promote information seeking in response to a threat, particularly in contexts in which the most accessible action available is seeking information (e.g., social media-saturated environments). Much of the scholarship to date focuses on the sheer tendency toward or amount of information seeking, as well as whether individuals engage in biased information seeking. If we turn to the *content* of information seeking, we first expect that individuals experiencing negative emotions will be more inclined to search for threat-relevant information (Albertson & Gadarian, 2015). That is, they will focus on information linked to the source of their emotional experience. In the context of our study, this would be information about terrorism. We consider this hypothesis in the analysis below: under threat, elevated fear and anger both can motivate terrorism-relevant information seeking (H1).

Further, since individuals tend to perceive new stimuli in a manner consistent with the appraisals linked to their specific emotional state (Lerner & Keltner, 2000, 2001), we also expect that they will focus on threat-relevant information that is consistent with these appraisals. Seeking out information that is consistent with a particular emotional appraisal may also aid in attaining one's goals (Ryan 2012).

Given that perceived anger arises with appraisals of certainty and control (Lerner & Keltner, 2000; Smith & Ellsworth, 1985) and an inclination to fight against the source of the threat (Frijda, 1987; Marcus et al., 2000), we posit Hypothesis 2a: angry individuals will be more likely to search for information relating to aggression-oriented policy responses to the threat (H2a). This would help to fulfill goals pertinent to retributive-action. Meanwhile, since fear is associated with uncertainty, lower levels of control (Huddy et al., 2007; Lazarus, 1991; Smith & Ellsworth, 1985), and a behavioral tendency to engage in defensive behavior (Frijda, 1987; Marcus et al., 2000; Steimer, 2002), we establish Hypothesis 2b: fearful individuals will search for information related to defensive policy responses to the threat (H2b). These expectations are similar to those developed in Ryan (2012) and Nabi (2003), though the focus in our work is most similar to Ryan's with respect to the contention that emotions serve motivational, as opposed to framing, roles. A difference in our theoretical framework is that our expectations hold for information that is relevant to the threat, which is not a distinction drawn in Ryan (2012). That is, we would not expect individuals to prioritize anger/fear-consistent information about an unrelated topic, only anger/fear-consistent information that is threat-relevant.

A limited number of studies have examined similar hypotheses. In a study of reactions to drunk driving, Nabi (2003) found that angry individuals were more likely to seek information on retribution-related policies on the issue of drunk driving, while fearful individuals were more likely to look for information on protection-oriented policies (for similar frameworks, see also the discussions in Eckhardt & Cohen, 1997; Smith & Waterman, 2003). However, the same results did not hold for the issue of gun violence. Ryan (2012) did not find a difference in information seeking (as measured by click-through rates) depending on whether the information was protection- or

retribution-oriented and matched the relevant emotion. One limitation in Nabi's study is that the measure was based on a self-report and there was not information unrelated to the issue available as an option. In Ryan's study, the retribution information condition was mild and only linked to "winning" the election, which some may not clearly see as related to retribution. With so few empirical studies to draw on, it remains an open question whether or not these expectations are (or are not) borne out in general and, for our purposes, with respect to terror threat.

Experimental Design and Sample

Our data are drawn from a multi-investigator, multi-site dynamic processing-tracing environment (DPTE; see https://dpte.polisci.uiowa.edu/dpte/) experiment, which allows us to compare the content of information seeking under conditions of terrorist threat compared to times of relative well-being. The data come from 303 volunteer participants residing in communities surrounding three major research universities (102 from California, 98 from New Jersey, and 103 from Tennessee; the IRBs at each institution reviewed and approved the study). These participants were recruited using a variety of methods to alert the local (non-student) community of the opportunity to enroll in a "computer-based study about electoral decision-making" at the university. The recruitment text indicated that individuals did not need to be familiar with computers, have a college education, or any interest in politics. Recruitment notices were sent to community organizations, emails to community listservs, and community bulletin boards. Interested individuals contacted a research assistant and set up an appointment. The recruitment and study ran during April and May of 2011.[2] Our sample is in no way representative of the U.S. population; the only criteria for participation were that the subject was a U.S. citizen, able to read English, had access to the internet, and was not currently attending college (see Online Appendix A for sample characteristics; in post-

diagnostic assessments, we found no evidence that the treatment groups were unbalanced by these characteristics). At the time of our study, the DPTE software was best used in a lab, compared to an online setting, in case there were glitches in the program.

As an orientation, subjects were told that they would be participating in a "simulated" presidential campaign with candidates who were fictional but realistic—"that is, very much like the type of people who usually run for president." They were told that there would be more information available than it is possible to fully track, as in any campaign, and asked to "do the best you can deciding which candidate you want to support." Subjects were also informed that they could withdraw from the study at any time; upon completing the study, participants were debriefed and compensated $30.

To the degree possible, the setup of the experiment mirrored an actual election in which citizens are asked to consider and decide on candidates in a campaign without any additional inducement or reward for making a quality decision. As with campaigns, information presented in the study was designed to motivate engagement in the following ways: a) a dynamic and interactive environment that allowed individuals to access candidate information and poll information; b) clear instructions at the start of the study that the goal of the process, for the participants (voters), is to evaluate candidates and make a decision.

Subjects began the study by answering a pre-treatment questionnaire that included a standard set of questions on socio-demographics, political attitudes, and political knowledge. Next, subjects completed a 2-minute practice session in order to gain familiarity with the DPTE software, which places them into a context of a two-stage mock election (primary and general). Participants were then randomly assigned to experimental conditions. Subjects were first randomly assigned to

a control group, a terrorism group, or a "good times" group. Those in the terrorism and good times groups were exposed to mock news stories delivered as audiovisual presentations, (see Online Appendix B for the scripts). We modeled the audiovisual presentations after media clips commonly seen on news websites, which combine images with voiceover. These presentations were compiled by a professional video editor, narrated by a professional voice actor, and recorded in a university sound studio.

The *terrorism* treatment was designed to elevate concerns about terrorism relative to the control and *good times* conditions. We modeled the treatment after the types of mock news stories that have been validated by use in past research (Albertson & Gadarian, 2015; Merolla & Zechmeister, 2009). The *terror threat* article discussed past attacks by Al Qaeda and the potential for future attacks.[3] The *good times* treatment contained positive information about the country; it sought to induce subjects to not think about pending national threats. This condition, therefore, serves as another type of baseline, a more positive informational state, which is consistent with the approach often used in framing research (see Druckman, 2001) and in research on threat (Merolla & Zechmeister, 2009). Since these types of threat treatments have been shown to increase both anger and fear in past work (Merolla & Zechmeister 2009, 2018), we would expect to find that exposure to the terrorism conditions makes individuals more likely to search for terrorism-relevant information (H1).

After making terrorism more salient in the minds of participants, we then wanted to make either fear or anger more salient to a subset of respondents in the terrorism conditions, to assess the relative effects of elevated anger versus fear (H2). Subjects in the terror threat conditions were randomly assigned to no emotion induction, a fear induction, or an anger induction. Given our

interest in affective responses to terrorist threat, we used a repeated "feel" prompt to solicit their feelings. The instruction was:

> "We'd like to ask you to think a bit more about the threat posed by terrorism. In what ways does the terrorist threat make you feel [anger prompt: angry, hostile, or disgusted/fear prompt: afraid, nervous or scared]? Please write down a few sentences that explain why the terrorist threat makes you feel [angry, hostile, or disgusted/afraid, nervous, or scared."

This approach to experimentally manipulating emotions is common in social psychology research (Lerner & Keltner, 2001; Tiedens & Linton, 2001), and has been successfully applied to the study of emotions in political contexts (Albertson & Gadarian, 2015; Banks & Hicks, 2015; Lerner et al., 2003; Valentino et al., 2008, 2011).[4] While individuals may still feel anger-related emotions in the fear condition and vice versa, the goal of these inductions was to make one of the negative emotions comparatively more salient. The terror only condition, which did not do an induction, represents a group that experiences a mix of negative emotions; scholars have documented that news about terrorist threat elevates a range of negative emotions, including anger and fear, in the lab and at large (Merolla & Zechmeister, 2009, 2018; Hall & Ross, 2015).

In sum, we randomly assigned subjects to five conditions: *good times*, *terror only (no emotion induction)*, *terror-anger, terror-fear*, and a *control* group. To test H1, we compare conditions in which individuals were exposed to either a terrorism news-story, or that plus an emotions induction test (see below), vs. the good times or control conditions. To test H2a and H2b, we test each particular emotion induction condition (anger, fear) against all other conditions. Note that the cleanest test is provided by the comparisons across individuals assigned to the fear or anger

induction; since both groups were exposed to the same terrorism news story prior to that induction, we effectively hold all else equal, except the nudge we give to one group toward anger-related emotions and the other toward fear-related emotions. Further, we note that all treated conditions were designed to elicit cognitive evaluations (e.g., awareness of threat or a more positive assessment of current times) and emotional arousal (negative emotions such as anger and fear, or a set of positive emotions). While other designs (e.g., mere emotion induction) may have their own benefits, integrating news stories into the design increases external validity, in that it mirrors mechanisms by which individuals experience politically-relevant threat and related emotions.

Following the treatment, participants in both primaries (individuals "registered" to vote in the Democratic or Republican primary) were presented with a screen providing the names and pictures of six fictitious candidates. This slate is smaller than the menu of 17 who entered into the Republican presidential primary in the 2016 election, equal to the 6 that entered the 2016 Democratic presidential primary, and more than the 2 who effectively contested the latter. At that time, the DPTE was initialized and individuals began to view information. We restrict our attention to the primary since our treatments were administered prior to the primary election.

In contrast to the static approach of measuring information seeking, the DPTE exposes participants to a column of information that moves down the screen continuously. The participant has the option to click on a particular piece of information to learn more about the topic. For example, if an item with the title "Candidate A's Religion" moves down the screen, and the participant decides to click on it, she will be provided with information regarding Candidate A's religious affiliation, and information will still be scrolling as the individual is reading this information. Thus,

there is a tradeoff: selecting one piece of information to view may mean that another piece of information is no longer available.

The order of the information was randomized. There were 18 themes for which individuals could read about the stances of a given candidate, and these ranged from topics such as terrorism, to education, to global warming. Participants could also search for other types of information about the candidates, including their education, family, military experience, and work prior to politics. Finally, participants could search for the endorsement of a number of liberal and conservative organizations. This process gives us a behavioral measure of the information accessed by participants. While many studies have relied solely on self-reports of attention or interest in information (e.g., Huddy et al., 2007; Marcus et al., 2000; Nabi, 2003), studies are increasingly turning to behavioral measures (e.g., MacKuen et al., 2010; Valentino et al., 2008; Ryan, 2012).

As with all experiments, it is crucial to address differences between the lab setting and the everyday world. For one, we use fictional candidates, but they have biographies and issue stances that are commonly seen in everyday political environments. Another feature of the DPTE is that there are fewer distractors and fewer options for action available to subjects in the lab. In this way, the design is closest to those cases in which individuals are operating in an information-rich environment with low-costs. From our perspective, it is this type of environment that may be most amenable to finding increased tendencies toward information seeking among those induced to experience a high arousal emotion, such as fear or anger.

Manipulation check

To assess the extent to which our emotion inductions were successful in elevating comparatively more anger or fear, we employed a research assistant (blind to the study's hypotheses) to

code the open-ended responses provided by individuals in the *fear* or *anger* treatments. Specifically, the assistant coded for 1) whether the respondent articulated the correct emotion (fear or anger), 2) the identity of the "target" of the respondent's emotional response (e.g., terrorism, the US government, human capacity for evil, etc.) and 3) the primary aspect of terrorism that elicited the emotional response (e.g., the threat to the respondent, threat to others, etc.). The results of this open-ended analysis show that about 45.9% of those in the anger condition gave responses that reflected anger, while 49.2% of those in the fear condition gave responses the reflected fear. Among those who reflected on the emotion in the treatment, we see some meaningful differences emerge between those in the fear and anger conditions. In coding the target of their fear/anger, individuals in the fear condition directed their fear primarily toward terrorism (97%), while this target was lower among those in the anger condition (75%). A non-trivial percentage of those in the anger condition were also likely to mention anger at the U.S. government (14%, see appendix Table C.1). In our coding of the primary aspect of terrorism that elicited an emotional response, the modal aspect of terrorism that made respondents feel fear was personal threat (32%), while the modal aspect of terrorism that made respondents feel anger was threat to others (52%, see appendix Table C.1).

To develop a more fine-grained measure of the extent to which anger and fear were elevated in the emotion induction conditions,[5] we invited 60 MTurk Master workers to complete a task in which they coded 10 statements submitted by subjects who had completed the emotion induction task. For each statement, they scored (on a 10-point scale) the extent to which the text expressed the set of emotions subjects had been asked to express in the task, as well as the set of emotions they had not been asked to express (see Appendix C.2 for full description of the task).

Each of the statements in the study received 5 different assessments and we averaged over these multiple assessments to estimate the expressed level of emotion for each statement. For those in the anger condition, the mean on the angry/hostile/disgusted measure is 4.9, while the mean for this group on the afraid/nervous/scared measure is 3.0 (this difference is statistically significant at $p<.001$). For those in the fear condition, the mean on the afraid/nervous/scared measure is 4.6, while the mean for this group on the angry/hostile/disgusted measure is 1.4 (difference significant at $p<.001$). The averaged induced emotion scores on this measure for each treatment, 4.9 in anger and 4.6 in fear, are statistically indistinguishable from each other ($p=0.49$, two-tailed); therefore, the treatments were of similar strength in inducing the given emotion. In short, the treatments were successful in elevating expressions of anger in the anger induction and fear in the fear induction, and they did so to a similar degree, that is at a moderate level, which seems reasonable given the nature of the study.

The data demonstrate heterogeneity in individuals' inclinations to feel certain emotions when presented with the induction task. For example, some individuals asked to reflect on fears about terrorism simply report that they do not have any. Some individuals asked to reflect on anger state they only feel it to a moderate extent. To the degree that is the case, one can argue that intent-to-treat (ITT) results better reflect what we would observe if the subjects in this study were exposed to terrorist threat in a real-world situation. In the findings section, we therefore focus on ITT effects. However, to take into account that the induction was only successful in elevating fear or anger among some respondents, and for the sake of completeness, we also calculate complier average treatment effects (CATE) based on the instrumental variable approach described in Imbens and

Rubin (2015). For these analyses, we use the more fine-grained measures of compliance generated based on ratings from the MTurk Master workers.[6]

Measures

Prior to assessing hypotheses, we must operationalize information seeking in the context of the DPTE experiment. Our interest is in whether subjects choose to read (and thus click on) different types of threat-relevant information. As such, we capture information seeking by measuring the proportion of clicks associated with a particular type of information. There are four types of information directly relevant to security threats: each candidate's 1) position on terrorism policy, 2) position on military intervention, 3) position on the defense budget, and 4) level of military experience. We consider these first in combination (H1) and then treat a subset separately (H2).

An important feature of measuring information seeking in the context of the DPTE study is that, if given enough time, individuals could have viewed virtually all of the information provided in the primary election. Our assumption is that subjects will prioritize the more important information by seeking it out first. Therefore, we focus attention on the proportion of the first 5 and 10 clicks devoted to security-related information (i.e., terrorism policy, military intervention, defense budget, and military experience) versus all other information items in the main text and report robustness checks using 2 to 10 clicks in section D of the appendix.[7]

Results I: Combined Measure of Security-Related Information

We first turn to an analysis of the proportion of clicks associated with combining all of the security information items. Based on past scholarship on political threat, we expect that the proportion of clicks for all of the security-related items will be higher among those in the terror threat conditions relative to the *good times* condition and *control group* (H1). Yet, our primary interest is

in assessing whether the *type* of information acquired depends on the subject's emotional state (H2a and H2b). We examine each of these expectations in turn.

Figure 1 shows the ITT estimate for the mean difference in the proportion of clicks across experimental conditions for all security-related items through the first 5 and 10 clicks. Turning to the first 5 clicks, as demonstrated in the figure, subjects who were exposed to the *threat-only* treatment searched, on average, for more information on security-related items than subjects in the *good times* condition (ITT = 0.046, $p = 0.039$).[8] When comparing to the *good times* condition, we observe even larger differences for the *terror-anger* condition (ITT = .077, $p = 0.002$; CATE=0.164, p=0.002), while we fail to detect differences for the *terror-fear* treatment.[9] On average, individuals in the *terror-anger* condition are also more likely than respondents in the *terror-fear* condition to click on security-related information in the first 5 clicks (ITT = .052, $p = 0.056$; CATE=0.113, p=0.044). And while subjects in the *terror-anger* condition have a higher propensity to seek out security-relevant information (on average) relative to those in the *threat-only* condition, the difference is insignificant at traditional levels.[10] We do not find significant differences between any of the threat conditions and the *control* group.[11]

Thus, for two out of the three terror threat conditions, we find some support for the expectation (H1) that individuals feeling threatened are more likely to access security-related information, at least when compared to subjects who were actively treated not to think about any pending threats (*good times*). The null findings for the *terror-fear* condition are somewhat surprising given prior work on anxiety leading to increased information seeking, where the effects of anxiety often are stronger than anger. As we will demonstrate in the next section, an explanation for this is

linked to our contention that individuals induced to feel comparatively more fearful or angry about the threat of terrorism will tend to seek out different types of security-relevant information.

[Insert Figure 1 about here]

By the time participants reach their 10th click, substantive differences across the experimental conditions begin to diminish. There are two exceptions to this rule: individuals in the *terror-anger* condition are more likely to seek out security-related information when compared to the *good times* (ITT = 0.042, $p = 0.025$; CATE = 0.084, $p = 0.013$) and *terror-fear* (ITT = 0.031, $p = 0.086$; CATE = 0.063, $p = 0.070$) conditions. Nevertheless, it is notable that the extent to which these treatments have effects in this environment, they decay rather quickly.

The overarching argument assessed above is that individuals exposed to a context of terror threat will seek out threat-relevant information. To further assess this thesis, we conduct a series of placebo tests. If our argument is correct, we should not see increases in attention to information across experimental conditions for non-threat relevant information. We thus examined whether the treatments had an effect on increasing clicks for issues unrelated to security: namely, information about the candidates' positions on abortion, affirmative action policy, economic philosophy, education policy, energy policy, health policy, jobs policy, and welfare policy. As can be seen in Figure 2, we find no evidence that those in the threat conditions, compared to the control or good times, are more likely to seek out information on these non-threat-relevant topics.[12] In brief, subjects in the threat conditions tend to seek out only more threat-relevant information, lending more confidence in our conclusion that individuals exposed to threatening conditions are more likely to seek out information directly related to the threat (H1).

[Insert Figure 2 about here]

Results II: Individual Measures of Security-Related Information

We now turn to analyses that separate the different types of security-related information available in the study to test the expectations that angry individuals will be more prone to pay attention to militant, action-oriented information on the threat (H2a), while fearful individuals will be more prone to pay attention to defense- and protection-related information (H2b). Recall that these expectations are derived from the tendencies associated with each emotion; past research has connected anger to preferences for vengeful policy (Huddy et al., 2007) and fear (anxiety) with preferences for protective policy (e.g., Albertson & Gadarian, 2015; Nabi, 2003). We restrict our focus to the measure based on the first 5 clicks and to the security items that most closely connect to our hypotheses. The military intervention item most clearly falls into the category of an action-oriented and aggressive policy that may appeal to those made angry about terrorism. The item that most closely approximates defense-oriented information—and thus may appeal to those made fearful about terrorism—is the defense spending item. This item is not ideal, since individuals may also think of defense spending as being used for aggressive policies, but it is the closest option available.[13] Military experience and terrorism policy do not neatly fall into a more defensive or more militant type, so we do not analyze these items individually in the main text but do so in the appendix (see Figure F.1 for those results).

In order to assess our assumptions about the extent to which these items reflect more aggressive or more protective-oriented information, we recruited 100 Mechanical Turk (MTurk) workers to do a classification task. After describing the purpose of the task and completing a training question, participants classified the four military intervention items—the candidate's stance on terrorism policy, military intervention, defense budget, and the candidate's military experience—

into whether the item is more appropriate for **protecting** against terrorism or **fighting** terrorism. Specifically, subjects were required to "drag and drop" each policy item to a box labeled "Protecting against terrorism" or "Fighting against terrorism" (see appendix Figure E.1 for an example of the question format). The position of the labels and the order of the policy items were randomized across participants.

The results of this exercise provide clear support for our characterization of aggressive and defense-oriented information items. The military intervention item was most often classified as relevant for "fighting against terrorism" (80%), followed by the candidate's military experience (69%), their stance on terrorism policy (33%), and lastly their stance on defense policy (31%). Conversely, the defense budget item was classified as relevant for "protecting against terrorism" 69% of the time. In general, the results of this classification task line up well with our assumptions, though as expected the percentage is somewhat lower for the defense policy item.

Figure 3 provides the ITT estimate for the proportion of the first 5 clicks devoted to each of the separate, security-related information items. When looking at the military intervention items, we find that subjects in the *terror-anger* condition tend to be more likely to search for this information compared to other groups. Considering, first, the difference between those who read the terror news story and differ only to the extent that they were assigned to either the anger or fear induction, subjects in the *terror-anger* condition are more likely than those in the *terror-fear* condition (ITT = 0.033, $p = 0.094$; CATE = 0.066, $p = 0.054$) to click on the military intervention items (on average). We also see that subjects in the *terror-anger* condition are more likely than individuals in the *control* group (ITT = 0.036, $p = 0.037$; CATE = 0.073, $p = 0.035$) and the *good times* condition (ITT = 0.047, $p= 0.002$; CATE = 0.104, $p = 0.001$) to click on the military

intervention items (on average).[14] Further, though mean propensity to view the military intervention items was higher in the terror-anger condition relative to the terror-only condition, the difference is outside of traditional significance levels (p=0.196).[15] These findings provide support for H2a in that the terror-anger condition is significantly different from the terror-fear condition and, as well, the two baseline conditions of a non-threat (the control and good times). We do not observe significant differences between *terror* and *terror-fear* and the *control* or *good times* conditions.

[Insert Figure 3 about here]

Lastly, Figure 3 presents the proportion of clicks across each of the treatment conditions for the defense budget item. When examining the defense budget item, we find that subjects in the *terror-fear* condition are more likely to search for information related to the defense budget, when compared to subjects in the *terror-anger* condition (ITT = 0.023, p = 0.065; CATE = 0.046, p = 0.034). This finding is consistent with our expectation (H2b). However, all other differences for the defense budget item are weak and statistically insignificant. Therefore, we find modest support for H2b.[16] While conventional wisdom and previous evidence hold that fear and anxiety are dominant drivers of information seeking tendencies under times of threat, the evidence from our study supports a more nuanced interpretation. Specifically, the findings suggests that, under conditions of terrorist threat in which multiple types of information are available to individuals (especially information consistent with appraisal tendencies for those feeling anger), and costs are low, a particular effect of elevated fear may be attenuated as a driver of information seeking behavior, in general, and in comparison to heightened anger.

Conclusion

How individuals react to national security threats, and specifically whether they react with comparatively more fear or anger, has significant consequences for information seeking. The types of information individuals tune into can have implications for the formation of political attitudes and decision-making (e.g., Lau & Redlawsk, 2006; Marcus et al., 2000). Yet, previous scholarship has focused mostly on general differences between emotional responses and, within the field of research on threats, a dominant perspective has evolved around the notion that anxiety is more effective in motivating information seeking than anger. We believe that such a conclusion overlooks theoretical and empirical reasons to suspect that anger can also motivate information seeking, conditional on the nature of the environment in which the threat is presented.

Our research advances understandings of how threats may evoke emotions that in turn influence information orientations among the public. The findings from the DPTE study show quite clearly that individuals exposed to a condition of terror threat are more likely to attend to threat-relevant information (as compared to the good times group). We find very few significant differences between the baseline conditions and the threat conditions for non-threat information. These findings dovetail nicely with work by Albertson & Gadarian (2015), who find that individuals made anxious (about immigration) are more attuned to threat-relevant information.

Our study goes beyond this, however, in considering the intersection of threat, emotions (fear versus anger), and types of threat-relevant information seeking. More specifically, our study shows how outcomes can vary when different types of security-relevant information are available. We found that those made angry about terrorism were more likely to search for an aggregated measure of security-relevant items than those made fearful about terrorism. Part of this may have been linked to the particular content of security items available in the DPTE environment, which

contained more aggressive approaches to the threat of international terrorism. This intuition is supported in our second set of analyses where we isolated the effects of two types of information items: one that should be more appealing to those angry about terrorism, military intervention, and one more appealing to those fearful about terrorism, defense spending. Here, we find that individuals made angry about terrorism are more likely to click on the military intervention item in the first five clicks, while those made fearful are more likely to click on defense spending. That these effects are ephemeral in the lab setting makes sense, as the terrorism news treatment is itself fleeting; our supposition is that the endurance of the influence of threat and emotions on information seeking is conditional on the duration and salience of the threat, and the corresponding emotions it generates. Nonetheless, the key finding here is that elevated anger and fear can motivate orientations toward different *types* of information, which is consistent with and extends beyond a small set of prior research into this question (e.g., Nabi, 2003). The extent to which a threat arouses fear or anger to a greater degree affects information seeking outcomes, and the balance of information available also will shape the extent to which fearful or angry individuals show a propensity to access information.

We conclude by noting that the argument and analyses presented here have relevance beyond a contribution to academic scholarship. Our contention is that threats to national security, and the fear and anger they elicit, have important effects on public opinion. Threats, like that posed by international terrorism, can cause people to pause and pay attention to politics. Within such a context, the extent to which the media, politicians' rhetoric, or other factors make one emotion comparatively more salient than the other has important consequences for the types of information that the voting public finds relevant and appealing.

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Figures

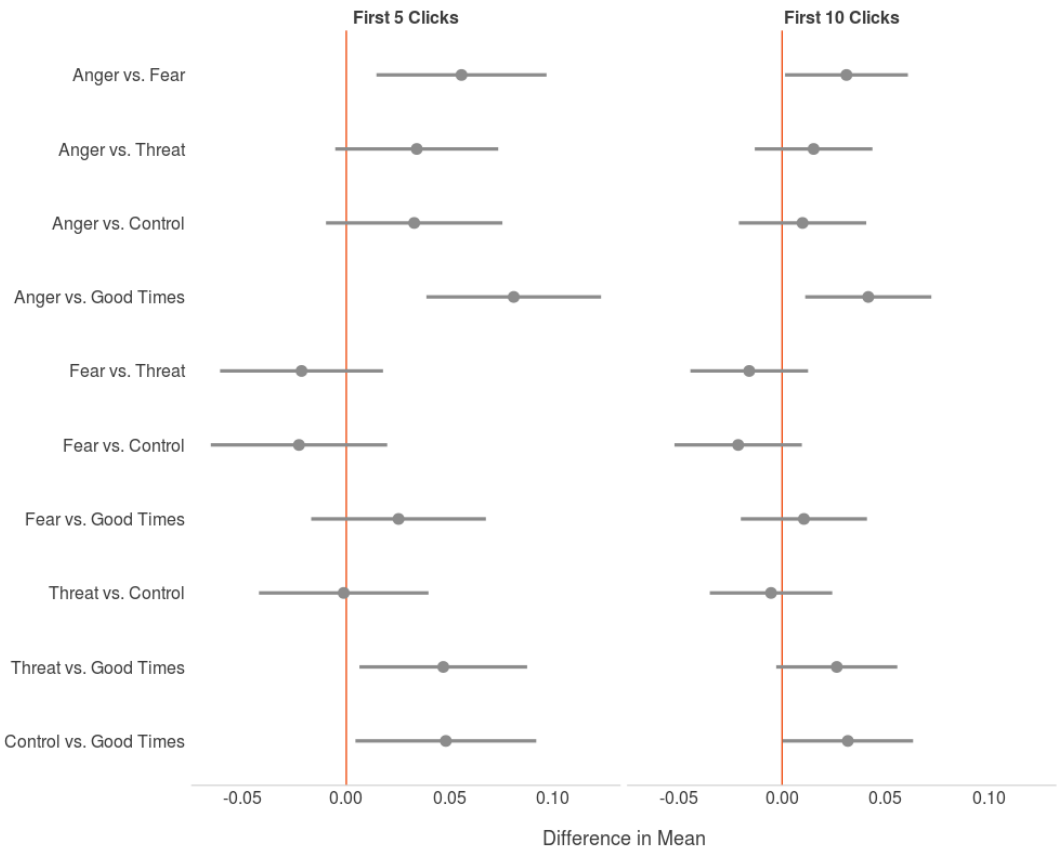

Figure 1: All Security-Related Items, Intent-to-Treat (ITT) Estimates. Dots equal the mean difference in the proportion devoted to all security-related issues included in the DPTE study through the first 5 and 10 "clicks," respectively. Security-related items include positions terrorism policy, military intervention, defense spending, and military expenditures. The (grey) lines indicate 90% confidence intervals for the estimated differences.

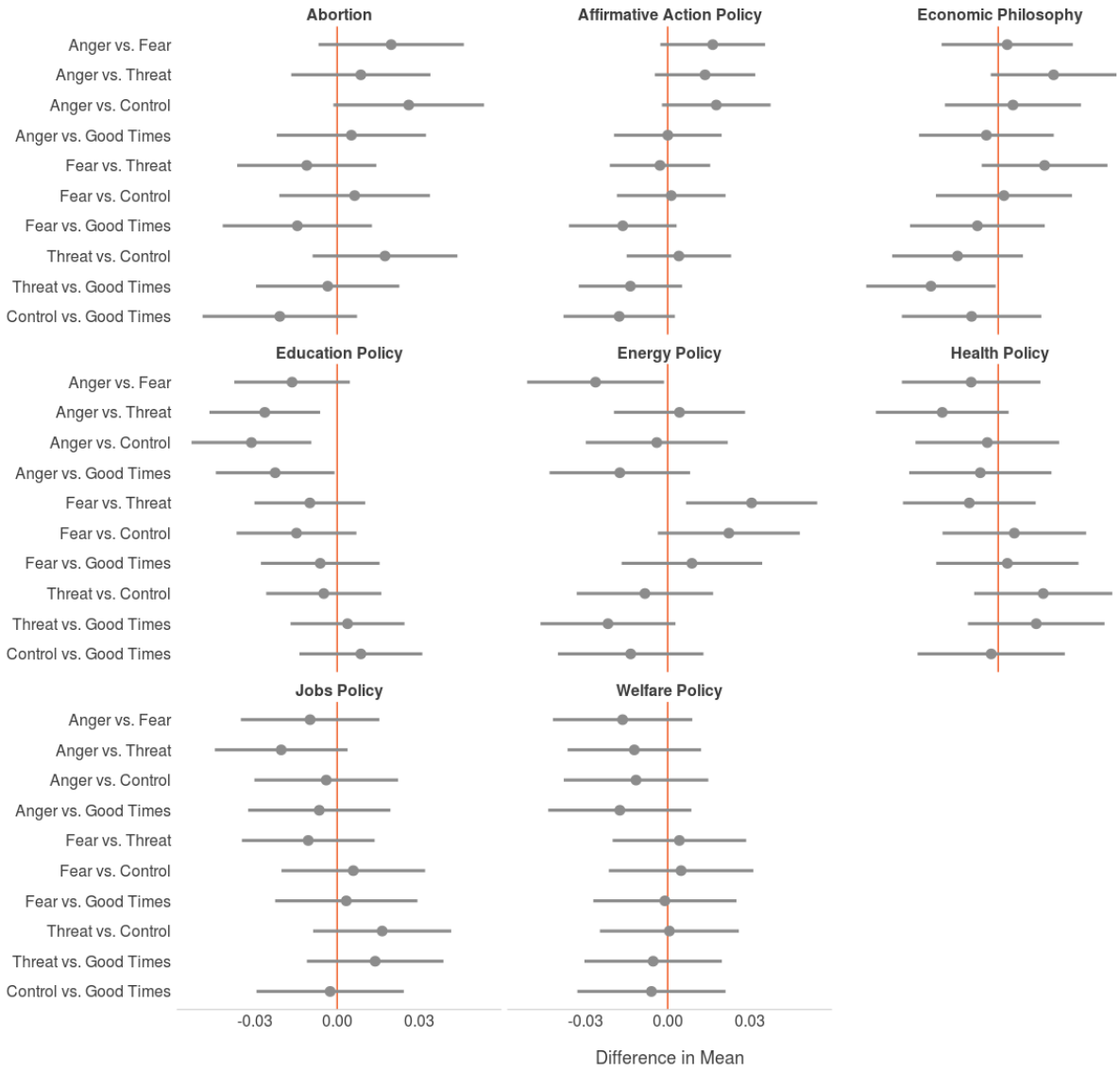

Figure 2: Placebo Tests, Intent-to-Treat (ITT) Estimates (above figure). This figure presents the mean difference for 8 non-military (or "placebo") issues. The grey lines represent 90% confidence intervals. As expected, there are few statistically significant differences across the treatment conditions for the placebo policy issues.

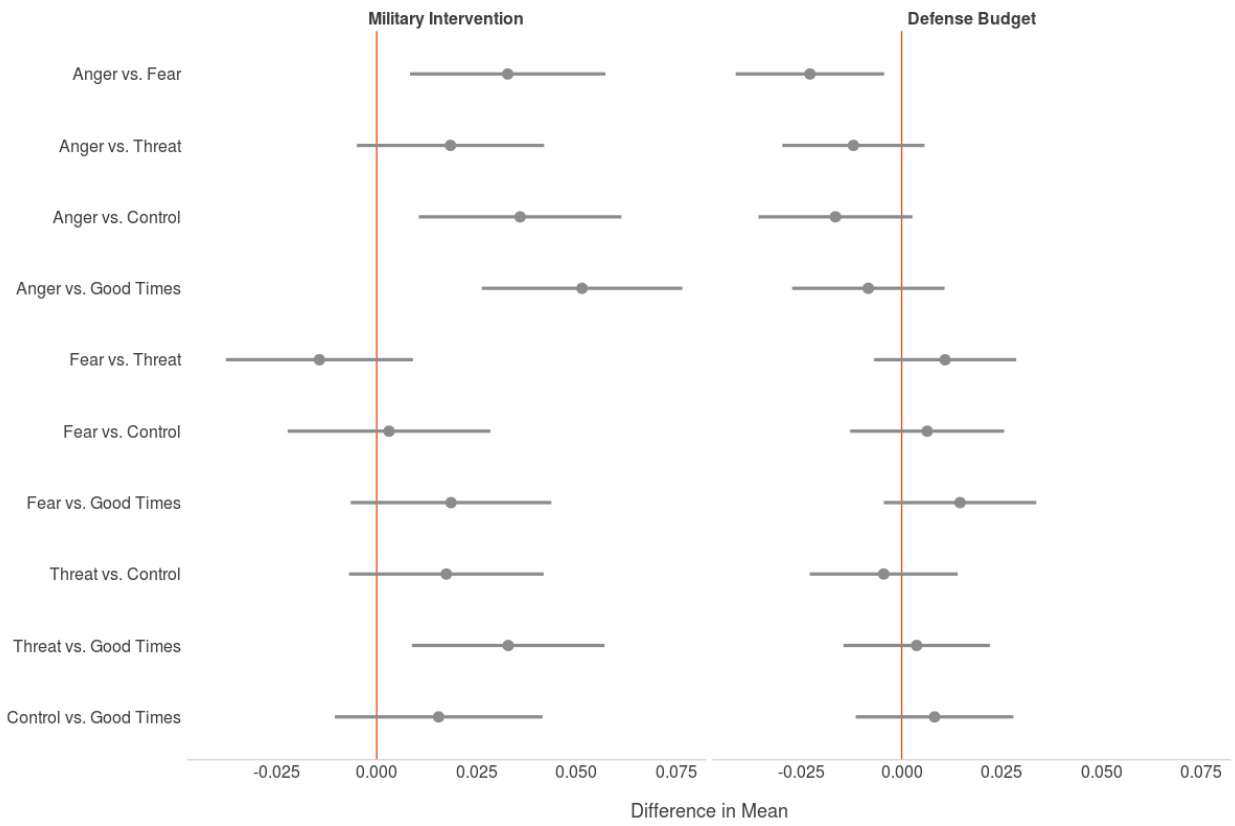

Figure 3: Security-Related Items by Type, Intent-to-Treat (ITT) Estimates. Dots equal the mean in the proportion devoted to two key security-related policy areas through the first 5 "clicks." The grey lines represent 90% confidence intervals for the estimated differences.

ENDNOTES

[1] Marcus et al. (2000) propose that distinct pre-conscious appraisals cause citizens to enter three distinct "modes of judgment", while other appraisal theories differ in that they focus on how emotions are expressed, considered, and influential within a conscious cognitive state. Our objective is not to adjudicate between varying appraisal theory frameworks but, instead, we draw on the general lessons provided by appraisal theory frameworks to derive a set of expectations about the relevance of the comparative elevation of fear versus anger.

[2] We note that in the middle of this period, on May 2, 2011, Osama bin Laden was killed in a raid on his hideout. As with any salient news related to terrorism, this event could have pre-treated all subjects with greater (or lessened) concern about terrorist threat, and potentially – at least in this case - higher levels of anger. Unfortunately, the software used for data collection did not track the study date, so we cannot explore if responses differed before and after this event. However, we were able to look at whether Osama bin Laden was referenced in the open-ended responses in the emotion induction conditions and we do not find any references. Furthermore, if respondents were pre-treated with higher anger, we might expect to find higher anger among those in the fear induction condition, but instead expressions of anger are quite low for this group (see details in the manipulation check section).

[3] The treatment is focused on the threat of attacks by groups who are unambiguously associated with carrying out lethal attacks and planning to conduct future attacks. The treatment refers several times to Al Qaeda's past attacks and expressed plans for the future. The news stories did not mention religion or ethnic identities, yet one could ask whether some readers perceive news about violent plots and attacks by Al Qaeda and similar groups as political spin to build support for anti-

Muslim policies; if this is the case, they may have reacted against the treatment. We do not find that this is the case (see also Online Appendix B.4).

[4] When we designed and fielded our study, we debated which terms to include in our induction task, since the word or words used tend to vary across studies. To pick the terms, we relied on a combination of terms used in induction tasks in prior work, as well as survey batteries to capture anger and fear. To induce fear, we used afraid, which has been used in a number of induction tasks (e.g., Lerner et al. 2003; Valentino et al. 2008; 2011), as well as nervous and scared, which has been included in survey based batteries to capture the concept (Lerner and Keltner 2001; Nabi 2003). To induce anger, we used anger, which has been used in a number of induction tasks (e.g., Lerner et al. 2003; Valentino et al. 2008; 2011), as well as disgusted, which has been included in survey batteries to capture anger/aversion (e.g., Marcus et al. 2006; Nabi 2003). We recognize that scholars draw a distinction between disgust and anger, with disgust being motivated by a desire to avoid pathogens and contamination and anger being approach-oriented (e.g., Aarøe et al. 2017; Carver and Harmon-Jones 2009; Kam and Estes 2016; Tybur et al. 2012). While anger and disgust may be theoretically distinct, lay understandings of the term disgust map more closely to anger (Nabi 2002). In fact, if we look at direct mention of disgust in reaction to our anger induction, all of the responses link to anger-related themes. Another concern (raised by an anonymous reviewer) is that hostile may be interpreted more as an action rather than a feeling. We therefore carefully examined the open-ended responses to the anger induction for mentions of hostile and found that participants connected the term to feelings and anger-related themes.

[5] We thank an anonymous reviewer for this suggestion.

[6] If we use the more blunt dichotomous measures from the coding by our research assistant, our conclusions are unchanged. We recognize that calculating the CATE is primarily used to take into account whether participants comply with the treatment. In the context of our study, individuals might still comply with the treatment but not experience the induced emotion. Therefore, the CATE used here can be thought of as the effect among those who are more likely to have expressed the emotion we asked them to reflect on.

[7]Note that all participants first clicked on a synopsis page that included the candidate pictures and names. When deciding on the threshold number of clicks to use for this analysis, our goal is to construct a measure sensitive enough to gauge the information prioritized by participants. Given the structure of the DPTE environment, setting the threshold too high makes it difficult to discern which information is the most salient; setting the threshold too low implies that participants will only see a small, random subset of the available information. In light of these considerations and based on our experience observing the level of information available at different points in the system, we determined that between roughly 5 and 10 clicks offers a suitable balance between these two extremes. Nevertheless, to assess the robustness of our findings to alternative assumptions, Tables D.1, D.2, and D.3 in the online appendix replicate our main analysis using alternative threshold values (ranging from 2 to 10). The results are quite robust. The reported relationships tend to be weaker for low threshold values (2 clicks), as these measures are noisy and heavily influenced by the random starting position assigned by the DPTE environment. However, after about 3 clicks, the results are similar to those presented for 5 and 10 clicks in Figure 1.

[8] All statistical tests presented in this study are two-tailed, unless stated otherwise.

[9]It is important to note that when comparing good times to the threat conditions we cannot be entirely clear which manipulation is leading to the observed differences. While the terror-only and terror-anger conditions tend to search for more security-related information when compared with the control group, neither difference is significantly different from zero. On the other hand, differences between the control group and good times condition are significant at the 10% error level (ITT = 0.044, p= 0.082).

[10] Some of this may be due to anger being high in the threat-only condition. Recent work on terrorism and public opinion finds that the threat is more likely to elevate anger than fear (Fisk, Merolla & Ramos, 2018; Wayne, 2018).

[11]The difference between terror-anger and the control group is in the expected direction, but not significant by conventional standards ($p = 0.19$, two-tailed).

[12] We do instead find a few cases of individuals in the threat conditions being less likely to search for non-threat-relevant information (in particular on the issue of education). We also find one significant difference in information seeking on non-threat-relevant information between the terror-fear and terror only conditions.

[13] Since this was a multi-investigator study, we only had the opportunity to introduce manipulations before the DPTE environment, and did not have a say in exactly what information was available in that environment.

[14] One limitation to these comparisons (as pointed out by an anonymous reviewer) is that there are several things that are different between the conditions, in that the anger condition not only did an induction, but also watched an audiovisual report about terrorism, so a mixture of cognition and affect may be driving the findings. However, one thing to note is that we do not observe similar

effects for the terror condition that had participants watch the audiovisual but not do an emotion induction, or for the terror-fear condition that asked participants to watch the audiovisual and then asked them to express a different emotion. This combination of findings suggests to us that anger is therefore the more likely driver for the pattern we see, but as we note, the cleanest comparison is between the terror-anger and terror-fear conditions.

[15] As noted earlier, the lack of a significant difference may be due to feelings of anger being more prominent when people are exposed to news about terrorism, even in the absence of an emotion induction. There was not space on the instrument to test this intuition.

[16] Tendencies toward risk acceptance are relevant to the study of threat. To evaluate if risk orientations moderate our results, we interacted our treatment variables with two pre-treatment indicators of risk acceptance (see Appendix F.2). We do not find sufficient evidence to conclude that risk acceptance significantly conditions our conclusions.