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The Impact of Emotion in the American Public's Assessments of and Reactions to Terrorism

Project Leads

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Statement of Problem

A convergence of social psychological research suggests that emotions have a powerful effect on attitudes, beliefs, and decisions, being one of the main forces that guide people toward these assessments. Given the powerful influence of emotions in these essential processes, this type of research is critical to understanding the mechanism of this influence. Recently, some researchers have explored the impact of emotion in the American public's assessments of and reactions to terrorism and counterterrorism. For example, terror management theory (Greenburg, Pyszczynski, & Solomon, 1986; Solomon, Greenburg & Pyszczynski, 1991)—which suggests ultimately that the fear and anxiety about one's own death is related to groups feeling close and cohesive yet engaging in stereotyping and aggression toward those different from them—has been studied to great length by social psychologists. However, only a few have applied this theory to terrorism. In one study, Landau et al. (2004) found that people reminded of their own mortality were more likely to be supportive of President Bush's antiterrorism policies and, further, were more likely to favor voting for Bush over John Kerry in the upcoming election than those who were not primed.

Video of the fall of the World Trade Center towers on 9/11 has itself been used by researchers as a mortality salience priming mechanism (e.g., Chamberlain, 2009), as it evokes such a strong emotional response in the American public. Others have looked at emotions and terrorism as well. Sadler, Lineberger, Correll, and Park (2005) primed participants to be angry or sad and found that participants made different attributions for why the 9/11 terrorist attacks occurred and endorsed different counterterrorism measures based on how they were primed. Small, Lerner, Gonzales, and Fischhoff (2004) primed people to be angry, sad, or fearful as they thought about the terrorist attacks and found that angry participants overall made more causal attributions than those who were sad.

This research brief will summarize recent research on the emotional reactions of the American public to terrorism as well as discuss the limitations and remaining questions that these studies have elicited. Further, this brief will suggest how other findings in the emotion literature can be tested in the realm of terrorism research. Research findings in this area will impact our understanding of how the American public reacts to terrorist activities and why certain counterterrorism measures are more readily accepted by the American public than others.

Background

Theoretical approaches to understanding emotion

Social scientists have studied emotion in different forms for decades. Over this time, dozens of different theories have been developed to explain what causes emotion and how emotions work. They emerge from very different theoretical perspectives and assume that different elements are important to the process of feeling an emotion. As detailed by Moors (2009), many theories seeking to explain emotion causation begin with fundamentally different assumptions: that the processes involved are either automatic or not and that emotion has either a single component of feeling or cognition or several components (feelings, motivations, cognitions, and somatic and motor responses). Given these differences, theories that set out to explain emotion argue that very different processes are at work. Some of the theoretical approaches that have elicited the most attention will be briefly described below.

Somatic theories

Somatic theories of emotion presume that physiological changes in the body prompt a person to then feel emotions. The most famous example of the somatic explanation is the James-Lange Theory, which argues that these physiological responses—such as trembling, crying, increased heart rate—then lead a person to deduce that they are feeling an emotion (e.g., "I am crying so I must be sad"; James, 1884). A number of theorists have criticized this approach on various grounds—for example, that some responses are not emotion-specific

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(increased heart rate could be associated with fear or anger). There remains no consensus among theorists as to its merits (Moors, 2009).

Cognitive theories

A second line of theories suggest that cognition plays an important role in how people experience emotion. Given the criticisms of the James-Lange Theory, Schachter (1964) developed what has been called the two-factor theory (sometimes called the Singer-Schachter Theory), which describes a two-step process wherein physiological arousal is cognitively processed in a manner appropriate for the situation through a conscious attribution process, which then dictates the appropriate emotional reaction to have. For example, if a large rambunctious dog is bounding toward someone, that person will feel a heightened state of arousal. Only after this arousal is attributed (e.g., danger from an unknown dog approaching versus reunion with that person's own beloved dog) are the feelings of either fear or joy elicited (Moors, 2009). Others later criticized this theory, arguing that cognition may not be an important factor in emotion (Zajonc, 1980). Researchers later developed appraisal theories of emotion, which still assume that cognition is important in the formation of emotion, but as an unconscious or automatic process rather than something that results from conscious effort (see Moors, 2009 for a review).

Evolutionary theories

A third line of theories suggest that emotions have an evolutionary basis and developed as part of natural selection. Charles Darwin was one of the first to suggest that emotions are universally expressed among both humans and animals (Darwin, 1872). Subsequent research has argued for the universality of emotional expression across cultures, with studies showing that facial expressions (Ekman & Friesen, 1969) and nonverbal emotional expressions (Sauter, Eisner, Ekman, & Scott, 2010) for specific emotions appear to be universal. However, the evolutionary perspective has been widely criticized by others who argue that not all emotions are so universal; even if an emotion present in one culture exists in another, it often manifests in very different ways. Other emotions have been identified that do not appear to have counterparts in other cultures; for example, the Japanese term *amae* refers to "indulgent dependency," as what a small child feels for her mother (Doi, 1973, cited in Prinz, 2004), but no similar concept exists in Western culture. Given these apparent cultural differences, some researchers approach evolutionary explanations for emotion with caution.

Neurobiological theories

Researchers have made numerous discoveries about the biological processes at work during emotional reactions. For example, it has long been known that the limbic system is involved in some emotional responses (Broca, 1878), and more recent research has identified that specific areas of the brain, including the amygdala (Phelps, 2004) and hypothalamus (Nakao, 1958), are tied to emotion. Biological correlates to emotion are studied in different

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ways; for instance, some researchers use saliva samples measuring cortisol levels, which are known to be related to stress and arousal (Morgan et al., 2002). With more recent advances in technology, some researchers have tried to measure emotions in novel ways, including functional magnetic resonance imaging (fMRI), a type of scan that measures where blood is flowing to the brain (Raichle & Mintun, 2006). Several studies have linked fMRI results with self-reports of emotions—correlations that the researchers argue prove their reliability. However, a recent article by Vul, Harris, Winkielman, and Pashler (2009) suggests that many of these studies are plagued by inappropriate statistical methods, rendering their findings inconclusive.

As indicated by this brief synopsis of the different theoretical approaches to understanding emotion, there is no consensus in the literature about how emotions work. The focus in this brief will be a social-cognitive perspective toward emotion. This approach asks questions such as "How does emotion affect cognitive processing and how is it related to attitude formation and change?" Further, emotion has been defined in varied ways in the literature, but here it is defined as a psychobiological state consisting of feelings varying in intensity, in conjunction with arousal of the automatic nervous system.

Examples of theories in social psychological emotion research

Emotion has been studied in a wide range of contexts and has been shown to be strongly related to arousal (Rydell et al., 2008), impulsivity (Verdejo-García, Bechara, Recknor, & Perez-Garcia, 2007), mortality salience (Hirschberger, Pyszczynski, & Ein-Dor, 2009), attributions (Weiner, 1985), stereotyping (Smith, 1993), certainty (Moons & Mackie, 2007), attention (Öhman, Flykt, & Esteves, 2001), motivation (Weiner, 1985), and the desire for retribution (Darley & Pittman, 2003; Vidmar, 2000). In particular, emotion has been identified as one of the key factors in determining why people may be prone to engaging in irrational, intuitive thought versus rational, deliberative thought—theories based on these two pathways are commonly known as the dual-process models. These models, including Cognitive Experiential Self Theory (CEST) (Epstein, 1994; Epstein & Pacini, 1999), the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986), the Cognitive Functional Model (CFM) (Nabi, 1999), and the heuristic systematic model (Chaiken, Liberman, & Eagly, 1989) all posit that emotion plays a role in activating the intuitive thought process. As mentioned, emotion has been identified as a key component in moral reasoning about punishment; people experiencing what has been termed "moral outrage" (commonly described as anger, disgust, and contempt) will be more likely to support punishment because of their desires for retribution for a transgression (Darley & Pittman, 2003).

Other research suggests that emotional reactions such as these are culturally based. Intergroup Emotions Theory (IET) posits that certain emotional reactions can be dictated by the specific group membership triggered by the appraisal of its relevance to a situation or event (Seger, Smith, & Mackie, 2009). An example of group membership triggered in this way

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could be the society in which an individual lives. For example, transgressions which violate people's sense of fairness, autonomy, and justice—a combination of values that are highly regarded in American society (Darley & Pittman, 2003)—can arouse these "appropriate" group-level emotions in people, leading to a call for retribution. IET suggests four criteria that define group-level emotions: that they are distinct from a person's individual emotions, that they depend on that person's level of group identification, that they are socially shared within a group, and that they help to regulate and motivate intragroup and intergroup attitudes and behavior (Smith, Seger, & Mackie, 2007). Indeed, McCauley (2000) argues that in 1990 President Bush was able to convince the U.S. public that the United States needed to engage in the first Gulf War because Iraq's actions toward Kuwait represented a fundamental moral violation. He was able to convince the public that this action was fundamentally wrong and "evil," a suggestion that triggered Americans' sensibilities about fairness and autonomy, leading to support for intergroup conflict and hostility. This assertion was supported by an experimental study using undergraduates to look at the second Iraq war and the war in Afghanistan (Cheung-Blunden & Blunden, 2008a). These authors argue that the 9/11 attacks were seen as "guerilla tactics" that are inconsistent with American values. The attacks led to immediate anger, which was positively linked to support for the wars in Iraq and Afghanistan in their experimental model.

Although IET itself has not been heavily criticized, the theory on which it is based, Social Identity Theory (SIT) has received some criticism. SIT assumes that group memberships do matter and serve to influence our everyday interactions with other people (Tajfel & Turner, 1979). Critics of SIT have leveraged a number of what they feel are shortcomings of SIT. For example, many SIT findings are based on "ad hoc" groups that form for the purpose of the experiment whereas groups in real life are more long-term and as such have past shared experiences that color their current interactions. Also, some researchers feel that the context in which people experience a situation has more influence on interactions than does their group membership. And it has been suggested that because people may choose to identify with any number of different identities in the course of a day (or even a single interaction), one identity does not dictate every experience (Shavinina, 2003).

Emotion also plays a key role in terror management theory (TMT), which suggests that humans are predisposed toward the quest for continued survival while being aware that they will someday die. This awareness of death fills people with anxiety. However, TMT argues that people are protected from this anxiety of death by adhering to a cultural worldview. This worldview states that one is part of a meaningful reality in which one feels valuable and one's self-esteem is wrapped up in the belief that one is living up to these cultural standards (Greenburg, Pyszczynski, & Solomon, 1986; Solomon, Greenberg, & Pyszczynski, 1991). TMT suggests that when this fear or anxiety about one's death (called "mortality salience") is triggered, it leads people to derogate people who are different from themselves (Chamberlain, 2009; Agustin, 2009), rely on stereotypes (Renkema, Stapel, Maringer, & van Yperen, 2008),

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and adhere to salient norms and values (Gaailliot, Stillman, Schmeichel, Maner, & Plant, 2008; Jonas et al., 2008; Ullrich & Cohrs, 2007). Research integrating TMT with CEST (mentioned above) supports the idea that mortality salience occurs when people are not thinking in a rational, analytical manner (Simon et al., 1997). TMT is not without its critics, however; in particular, some evolutionary social scientists believe that TMT does not align with modern evolutionary ideas about the function of anxiety, does not explain cultural variations, and does not explain why it would be evolutionarily prudent to develop such a complex psychological mechanism solely for the reduction of anxiety (Navarette & Fessler, 2005).

Emotion research focused on terrorism

Given the important role emotion plays in so many processes, it is not surprising that some researchers have begun to explore how emotions affect the public's reaction to terrorism and specific terrorist events. For example, Blanchette, Richards, Mylnyk, and Lavda (2007) gave participants syllogisms to measure deductive reasoning. These syllogisms were neutral, emotional, or emotional related to terrorism (an example of the last would be "If some Muslims are terrorists, and some terrorists are suicide bombers, does it follow that some suicide bombers are Muslim?"). They found that participants were able to reason well for the neutral syllogisms but not for the emotional and emotional related to terrorism ones; the only exception to this finding was for London participants, who were still able to reason well when given the terrorism emotional syllogisms (Blanchette et al., 2007). Wohl and Branscombe (2009) found that when a group's (in this case, Americans') future is threatened by terrorism, this threat induced collective angst, which they defined as fear for the future existence of the group. This angst increased forgiveness for the Americans' past harmful actions toward others (e.g., harm done to Iraqis in the war).

A fair amount of research has examined fear, anxiety, and the ability to reasonably estimate future risks of terrorism. Lerner, Gonzalez, Small, and Fischhoff (2003) found that fear (both naturally occurring and when induced) increased people's perceived risks of terrorism and plans to take precautionary measures, but anger decreased them. Shiloh, Güvenç, and Önkal (2007) developed the Terror Risk Perception Questionnaire (TPRQ) to determine which cognitive and emotional factors influence people's perceived risk of terror (an example is "Working in companies that can be targets of the terrorist groups will increase my chance of being exposed to a terrorist attack"). Using factor analysis, they were able to isolate four factors influencing terror risk cognitions (costs associated with victimization in an attack, vulnerability to attack, trust in authorities, and perceived control) and one factor influencing terror risk emotions (the amount of negative emotions). Finally, McDermott and Zimbardo (2006) argue that the United States' color coded advisory system is ill-advised for a number of reasons. They believe that the current system does little but produce negative public health

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outcomes related to fear, stress, and posttraumatic stress disorder (PTSD),[1] encourages unthinking support for charismatic leadership, and prevents a diverse political culture from thriving.

Other research has examined mass panic following terrorist attacks. Using case examples, Sheppard, Rubin, Wardman, and Wessely (2006) argue that in most previous terrorism situations the public has not experienced mass panic and has generally stayed calm. The authors assert that there may be some social-cultural differences in the propensity to panic,[2] and it also may be related to having proper infrastructure in place at the time of the event.

Some researchers have examined the effects of emotion on the public's acceptance of counterterrorism policies. Many choose to focus almost exclusively on the effects of anger, fear, and sadness. Nabi (2002) had undergraduates read a news story designed to arouse either anger or fear about domestic terrorism and then had participants read a related story proposing terrorism legislation. He found that, inconsistent with previous emotions research suggesting that anger interferes with rational thought, anger led to deeper information processing than fear. Cheung-Blunden and Blunden (2008b) had participants view pictures of the 9/11 attack and found that those who self-reported as angry were most supportive of military action but those who were fearful were more likely to endorse personal avoidant behaviors, such as avoiding shopping malls and public transportation. Similar results surrounding anger and support for the war were found by Skitka, Bauman, Aramovich, and Morgan (2006); however, interestingly, fear and not anger predicted support for deporting Arab Americans, Muslims, and first-generation immigrants. Sadler et al. (2005) had participants watch three videos about 9/11 and then assessed their emotional reactions and attributions for why the attacks occurred. When anger was the primary reported emotion, people attributed the attacks to fanatic terrorists and poor U.S. security but did not believe that U.S. foreign policy was at fault; they believed that a strong military action was required. Participants dominated by sadness did not believe that fanaticism and security issues were at fault. Finally, both sad and fearful participants did not support strong military retaliation (Sadler et al., 2005). Small et al. (2004) similarly primed participants to be either angry or fearful and then asked them to write

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[1] McDermott and Zimbardo (2006) cite a number of studies that associated exposure to 9/11 with increased reporting of PTSD symptoms as well as general symptoms of stress. They acknowledge that these symptoms could be due to the attacks themselves and not the advisory system, but they do cite Kramer, Brown, Spielman, Goisan, and Rothrock (2004), who conducted a longitudinal study of World Trade Center disaster relief workers in 2002 and 2003. During this time period the advisory system was raised and lowered a total of nine times; the authors were able to correlate increases and decreases in self-reported PTSD symptoms among these workers that corresponded to each change in terror alert level.

[2] One example given by Sheppard et al. (2006) was that of the Soviet Union in the aftermath of their 1979 anthrax incident; the culture in the country at the time was of secrecy and resilience. The deaths caused by the incident were attributed to other causes and the exact number of dead was not confirmed by authorities. Sheppard et al. (2006) argue that this ultimately undermined public trust in the government, leading to the spread of rumors and a culture of fear.

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down their reactions to terrorist attacks. They found that angry participants overall made more causal attributions, attributing terrorism to both people (Bin Laden) and situations (world fanaticism), than the fearful participants.

Given that TMT has been studied so extensively in other domains, it is not surprising, and is in fact rather fitting, that it has been extended to people's reactions to terrorism. In general, TMT argues that the motivation to act violently against an enemy who threatens one's ideology, belief system, and values serves to protect the status of one's group and defends against death awareness, also called mortality salience. However, this occurs only when the enemy is found to have hostile intentions and one's personal vulnerability to attack is low, particularly among people without firsthand war experience (Hirschberger, Pyszczynski, & Ein-Dor, 2009).

One interesting difference between how TMT is studied in other domains and how it is studied in terrorism research has to do with the mortality salience prime itself. Generally, participants are instructed to write a passage imagining their death (using a description of their experiences of pain at the dentist as a control), but in terrorism research, the prime is often terrorism itself: photos or videos of 9/11 or other terrorist attacks. Renkema et al. (2008) argue that this different mortality salience prime might in fact activate different goals than a general reminder of death. The former example is based on abstract, existential threat of death and the latter on a threat from a specific group. Their findings suggest that the general death prime activates a comprehension goal (trying to make sense of their environment), but terrorism primes activate an enhancement goal (a specific threatening "other" leads to feelings that one needs to self-enhance). Landau et al. (2004) discovered that both a regular mortality salience prime as well as one about 9/11 led to increased support for Bush and his counterterrorism policies but decreased support for then candidate John Kerry. The authors contend that the mortality salience primes left people receptive to a charismatic leadership style that naturally connotes symbolic protection from harm.[3]

Synthesis

This research suggests that people's attitudes, beliefs, and decisions are heavily influenced by the emotions they are experiencing. In particular, anger, fear, and sadness lead people to perceive different amounts of risk of terrorism, make them more or less likely to support military action, and can cause them to place causal blame for terrorist events.

IET suggests that people are aware of the accepted emotions that those in a particular group (e.g., U.S. citizens) should feel in response to different situations—such as when a

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[3] The authors contend that former President George W. Bush exemplifies all of the charismatic qualities most likely to be valued for those who have been subjected to a terrorism-related mortality salience prime: he appears self-confident, certain, and patriotic, and he argues that the United States has a duty to fight and overcome evil (Landau et al., 2004).

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terrorist attack has occurred—and will endorse these group emotions when their group membership has been primed and made relevant. The IET research suggests that almost all past emotions research should be regarded as inconclusive because it did not specify to people whether they should respond to questions about emotion based on a particular group membership or their individual emotions. Only a few studies have looked at IET and emotions in the realm of terrorism, and none have explored whether the aspects of one's identity as an American primed in negative and positive ways can impact the group-level emotions that will surface in response to terrorist acts.

TMT suggests that under certain circumstances, mortality salience can lead groups not only to become more cohesive but also to endorse hostile reactions to those perceived as outsiders or outside threats, leading to greater desire for retaliation and retribution. Research studies are still determining the factors that mediate and moderate these effects. Additionally, mortality salience primed by terrorist events may actually be tapping into different goals than regular mortality salience primes, but very little research has been done to explore this possibility.

Within American culture, both IET and TMT would predict that threat from an outside group would lead Americans to endorse retributive responses. In the case of IET, as was stated above, transgressions that violate people's sense of fairness, autonomy, and justice—a combination of values that are highly regarded in American society (Darley & Pittman, 2005)—are seen as the ultimate moral violation. Terrorist attacks could be seen as such transgressions, leading to strong emotional reactions that prompt Americans to view retribution as the acceptable response. In contrast, TMT would predict that terrorist attacks trigger mortality salience, which has been described as fear or anxiety about one's death. This mortality salience leads people to stereotype and derogate anyone different from themselves, even leading to recommendation for punitive response against them. Therefore, in both theories, negative emotions are tied to potential punitive responses, but the mechanisms through which these are predicted to occur are quite different.

Future Directions

Future research looking at Americans' emotional responses to terrorism and counterterrorism needs to further explore mechanisms at work in IET and TMT. First, future research needs to address the issues of group-level emotions raised in IET; specifically, if people are reminded of negative and positive aspects of their identity as an American, what emotions will terrorism arouse in them? With respect to TMT/terrorism research, Hirschberger, Pyszczynski, and Ein-Dor (2009) suggest that future studies should examine whether Americans are using their perceptions of sincerity and deception in terrorist groups' rhetoric to determine whether these groups have hostile intentions. Americans' perceptions of hostile intent could trigger mortality salience, which could lead Americans to endorse retributive

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responses to acts of terrorism, such as immediate military action. Additionally, with relation to TMT, Pyszczynski, Rothschild, and Abdollahi (2008) reviewed a number of studies suggesting that the same forces guiding support for terrorist violence also motivate support for violent counterterrorism policies. They suggest that these forces could be "redirected" to encourage support for more peaceful solutions. One way this could be accomplished would be to systematically prime people with religious values of compassion. A prime for compassion was successful in a different experimental context (Jonas et al., 2008). A second way to decrease hostility is to remind people of our common humanity and expose them not only to soldiers from diverse cultures but also to children and families from these cultures (see Motyl, Pyszczynski, Cox, Seidel, & Maxfield, 2007). Future research should continue to test ways in which inter-group conflict can be reduced.

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References

Agustin, E. (2009). Effects of mortality salience aroused by threats against human identity on intergroup bias. *European Journal of Social Psychology, 39,* 862–867.

Blanchette, I., Richards, A., Melnyk, L., & Lavda, A. (2007). Reasoning about emotional contents following shocking terrorist attacks: A tale of three cities. *Journal of Experimental Psychology: Applied, 13*(1), 47–56.

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Broca, P. (1878). Anatomie comparee des circonvolutions cerebrales: Le grand lobe limbique et la scissure limbique dans la serie des mammifères. *Rev. Anthropol., 1, 385–498.*

Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh. (Eds.), *Unintended thought* (pp. 212–252). New York: Guilford.

Chamberlain, J. (2009). *The malleability of community sentiment: Contextual explanations for shifts in attitudes toward gay rights* (Doctoral Dissertation). University of Nevada, Reno, Reno, Nevada.

Cheung-Blunden, V., & Blunden, B. (2008a). Paving the road to war with group membership, appraisal antecedents, and anger. *Aggressive Behavior*, *34*(3), 175–189.

Cheung-Blunden, V., & Blunden, B. (2008b). The emotional construal of war: Anger, fear, and other negative emotions. *Peace and Conflict: Journal of Peace Psychology, 14*, 123–150.

Darley, J. M., & Pittman, T. S. (2003). The psychology of compensatory and retributive justice. *Personality and Social Psychology Review, 7*, 324–336.

Darwin, C. (1872). *The expression of the emotions in man and animals.* London: J. Murray.

Doi, T. (1973). *The anatomy of dependence.* New York: Kodansha International.

Ekman, P., & Friesen, W. V. (1969). The repertoire of nonverbal behavior: Categories, origins, usage, and coding. *Semiotica*, *1*, 49–98.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist, 49*, 709–724.

Epstein, S., & Pacini, R. (1999).Some basic issues regarding dual-process theories from the perspective of cognitive-experiential self-theory. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 462–483). New York: Guilford.

Gaailliot, M. T, Stillman, T. F., Schmeichel, B. J., Maner, J. K., & Plant, E. A. (2008). Mortality salience increases adherence to salient norms and values. *Personality and Social Psychology Bulletin, 34*, 993–1003.

Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of the need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public self and private self* (pp. 189–212). New York: Springer-Verlag.

Hirschberger, G., Pyszczynski, T., & Ein-Dor, T. (2009). Vulnerability and vigilance: Threat awareness and perceived adversary intent moderate the impact of mortality salience on intergroup violence. *Personality and Social Psychology Bulletin*, *35*, 597–607.

James, W. (1884). What is emotion? *Mind*, *9*, 188–205.

Jonas, R., Martens, A., Niesta Kayser, D., Fritsche, I., Sullivan, D., & Greenberg, J. (2008). Focus theory of normative conduct and terror management theory: The interactive

impact of mortality salience on social judgment and behavior. *Journal of Personality and Social Psychology, 95,* 1239–1251.

Kramer, M., Brown, A., Spielman, L., Goisan, C. & Rothrock, M. (2004). *Psychological reactions to the national terror-alert system*. Poster session no. 4227. Presentation to the American Psychological Association.

Landau, M. J., Solomon, S., Greenberg, J., Cohen, F., Pyszczynski, T., Arndt, J., Miller, C. H., Ogilvie, D. M., & Cook, A. (2004). Deliver us from evil: The effects of mortality salience and reminders of 9/11 on support for President George W. Bush. *Personality and Social Psychology Bulletin, 30*, 1136–1150.

Lerner, J. S., Gonzalez, R. M., Small, D. A., & Fischhoff, B. (2003). Effects of fear and anger on perceived risks of terrorism: A national field experiment. *Psychological Science*, *14*, 144–150.

McCauley, C. (2000). How President Bush moved the U.S. into the Gulf War. *Journal for the Study of Peace and Conflict*, 2000–2001 Annual Edition, 32–42.

McDermott, R., & Zimbardo, P. G. (2006). The politics of fear: The psychology of terror alerts. In B. Bongar, B. L. Beutler, L. M. Brown, J. N. Breckenridge, & P. G. Zimbardo (Eds.), *Psychology and terrorism* (pp. 357–370). New York: Oxford University Press.

Moons, W. G., & Mackie, D. M. (2007). Thinking straight while seeing red: The influence of anger on information processing. *Personality and Social Psychology Bulletin, 33,* 706–720.

Moors, A. (2009). Theories of emotion causation: A review. *Cognition and Emotion, 23,* 625–662.

Morgan, C. A., Rasmussonab, A. M., Wangab, S., Hoytc, G., Haugerd, R. L., & Hazlette, G. (2002). Neuropeptide-Y, cortisol, and subjective distress in humans exposed to acute stress: Replication and extension of previous report. *Biological Psychiatry, 52,* 136–142.

Motyl, M., Pyszczynski, T., Cox, C., Siedel, A., & Maxfield, M. (2007). One big family: The effects of mortality salience and a sense of common humanity on prejudice. *Manuscript submitted for publication.*

Nabi, R. L. (2002). Anger, fear, uncertainty, and attitudes: A test of the cognitive-functional model. *Communication Monographs*, *69*, 204–216.

Nabi, R. L. (1999). A cognitive-functional model for the effects of discrete negative emotions on information processing, attitude change, and recall. *Communication Theory, 9,* 292–320.

Nakao, H. (1958). Emotional behavior produced by hypothalamic stimulation. *American Journal of Physiology,* 194, 411–418.

Navarrete, C., & Fessler, D. (2005). Normative bias and adaptive challenges: A relational approach to coalitional psychology and a critique of terror management theory. *Evolutionary Psychology*, 297–325.

Öhman, A., Flykt, A., & Esteves, F. (2001). Emotion drives attention: Detecting the snake in the grass. *Journal of Experimental Psychology: General, 130*, 466–478.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experiential social psychology (*Vol. 19, pp. 123–205). San Diego, CA: Academic Press.

Phelps, E. A. (2004). Human emotion and memory: Interactions of the amygdala and hippocampal complex. *Current Opinion in Neurobiology*, *14*, 198–202.

Prinz, J. J. (2004). Which emotions are basic? In D. Evans & P. Cruse (Eds.), *Emotion, evolution, and rationality*. Oxford University Press.

Pyszczynski, T., Rothschild, Z., & Abdollahi, A. (2008). Terrorism, violence, and hope for peace: A terror management perspective. *Current Directions in Psychological Science, 17*(5), 318–322.

Raichle, M. E., & Mintun, M. A. (2006). Brain work and brain imaging. *The Annual Review of Neuroscience, 29*, 449–476.

Renkema, L. J., Stapel, D. A., Maringer, M., & van Yperen, N. W. (2008). Terror management and stereotyping: Why do people stereotype when mortality is salient? *Personality and Social Psychology Bulletin, 34*(4), 553–564.

Rydell, R. J., Mackie, D. M., Maitner, A. T., Claypool, H. M., Ryan, M. J., & Smith, E. R. (2008). Arousal, processing, and risk taking: Consequences of intergroup anger. *Personality and Social Psychology Bulletin, 34,* 1141–1152.

Sadler, M. S., Lineberger, M., Correll, J., & Park, B. (2005). Emotions, attributions, and policy endorsements in response to the September 11th terrorist attacks. *Basic and Applied Social Psychology, 27,* 249–258.

Sauter, D., Eisner, F., Ekman, P., & Scott, S. (2010). Cross-cultural recognition of basic emotions through nonverbal emotional vocalizations. *PNAS Proceedings of the National Academy of Sciences of the United States of America*, *107*(6), 2408–2412.

Schachter, S. (1964). The interaction of cognitive and physiological determinants of emotional state. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 1, pp. 49_80). New York: Academic Press.

Seger, C. R., Smith, E. R., & Mackie, D. M. (2009). Subtle activation of a social categorization triggers group-level emotions. *Journal of Experimental Social Psychology, 45*, 460–467.

Shavinina, L. V. (Ed.). (2003). *The International handbook on innovation*. Oxford, UK: Pergamon.

Sheppard, B., Rubin, G. J., Wardman, J. K., & Wessely, S. (2006). Terrorism *and* dispelling the myth of a panic prone public*. Journal of Public Health Policy, 27*, 219–245.

Shiloh, S., Güvenç, G., & Önkal, D. (2007). Cognitive and emotional representations of terror attacks: A cross-cultural exploration. *Risk Analysis, 27*, 397–408.

Simon, L., Greenberg, J., Harmon-Jones, E., Solomon, S., Pyszczynski, T., Arndt, J., & Abend, T. (1997). Terror management and cognitive-experiential self-theory: Evidence that terror management occurs. *Journal of Personality and Social Psychology, 72*(5), 1132–1146.

Skitka, L. J., Bauman, C. W., Aramovich, N., & Morgan, G. S. (2006). Confrontational and preventative policy responses to terrorism: Anger wants a fight and fear wants "them" to go away. *Basic and Applied Social Psychology, 28*, 375–384.

Small, D. A., Lerner, J. S., Gonzalez, R. M., & Fischhoff, B. (2004). Emotion priming and attributions for terrorism: Americans' reactions in a national field experiment. *Political Psychology, 27*, 289–298.

Smith, E. R. (1993). Social identity and social emotions: Toward new conceptualizations of prejudice. In D. Mackie & D. L. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception,* (pp. 297–315). San Diego, CA: Academic.

Smith, E. R., Seger, C. R., & Mackie, D. M. (2007). Can emotions be truly group level? Evidence regarding four conceptual criteria. *Journal of Personality and Social Psychology, 93*, 431–446.

Solomon, S., Greenberg, J., & Pyszczynski, T. (1991). A terror management theory of social behavior: The psychological functions of self-esteem and cultural worldviews. In M. Zanna (Ed.), *Advances in experimental social psychology, Vol. 24* (pp. 93-159). Orlando, FL: Academic Press.

Tajfel, H., & Turner, J. (1979). An integrative theory of intergroup conflict. In W. G. Austin, & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 94–109). Monterey, CA: Brooks-Cole.

Ullrich, J., & Cohrs, C. (2007). Terrorism salience increases system justification: Experimental evidence. *Social Justice Research, 20*, 117–137.

Verdejo-García, A., Bechara, A., Recknor, E. C., & Perez-Garcia, M. (2007). Negative emotion-driven impulsivity predicts substance dependence problems. *Drug and Alcohol Dependence, 91,* 213–219.

Vidmar, N. (2000). Retribution and revenge. In J. Sanders & V. L. Hamilton (Eds.) *Handbook of justice research in law*, (pp. 31–63). New York: Kluwer Academic.

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Vul, E., Harris, C., Winkielman, P., & Pashler, H. (2009). Puzzlingly high correlations in fMRI studies of emotion, personality, and social cognition. *Perspectives on Psychological Science, 4*, 274–290.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, *92*, 548–573.

Wohl, M. J. A., & Branscombe, N. R. (2009). Group threat, collective angst, and in-group forgiveness for the war in Iraq. *Political Psychology, 30*, 193–215.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, *3*, 151–175.