EXAMINING THE EFFECTS OF EMOTION ON DEVIANCE: AN APPRAISAL THEORY APPROACH

by

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A Dissertation Submitted to the Faculty of the

DEPARTMENT OF MANAGEMENT AND ORGANIZATIONS

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

2017
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Abstract

Using the appraisal theory of emotion, I hypothesized a process model that depicts the effects of four negative emotions – boredom, anger, sadness, and anxiety – on two types of deviant behavior, rule-breaking and interpersonal aggression. I predicted that anger and anxiety would increase deviance in comparison to boredom, while sadness would decrease it. In addition, I argued that these effects would be mediated by physiological arousal, sensemaking, and attentional focus. I tested my model across three experiments (total $N = 430$), each of which used a different emotion induction. Overall, there was general support for the findings that anger and anxiety increase, while sadness decreases, deviant behavior. In addition, I found support for the hypothesized effects of emotion on arousal and sensemaking. However, there was no support for predictions regarding attentional focus or any indirect effects. Thus, the most significant finding was that sadness decreased deviant behavior, which emphasizes the importance of differentiating among different negative emotions when examining deviant behavior. Further implications are discussed.
Deviance is defined as “voluntary behavior that violates significant organizational norms, and in doing so, threatens the well-being of the organization and/or its members” (Robinson & Bennett, 1995, p. 556). Deviance has attracted significant attention from researchers due to the negative implications of such behavior for both organizations and employees. Deviant behaviors cost organizations millions of dollars in losses (Aquino, Lewis, & Bradfield, 1999; Dunlop & Lee, 2004; Murphy, 1993), along with lower morale (Filipczak, 1993), damaged reputations (Pearson & Porath, 2005), higher turnover (Griffin & O’Leary-Kelly, 2004), and increased stress (Giacalone, Riordan, & Rosenfeld, 1997) among employees. A number of behaviors fall underneath the umbrella of deviance, such as theft, violence, absenteeism, embezzlement, and interpersonal rudeness (Bennett & Robinson, 2000).

Researchers have examined a number of distal predictors of deviance, including emotional intelligence (Petrides, Frederickson, & Furnham, 2004), ethical climate (Peterson, 2002), supervisory guidance (Dineen, Lewicki, & Tomlinson, 2006), job stressors (Fox, Spector, & Miles, 2001), and ethical ideology (Henle, Giacalone, & Jurkiewicz, 2005). Distal variables are thought to affect dependent variables through more proximal antecedents, or mediating mechanisms, that clarify how the distal variables influence the phenomenon under consideration. In the deviance literature, researchers have typically focused on proximal variables that are motivational in nature. For instance, Bordia, Restubog, and Tang (2008) explored the mediating role of the motivation for revenge in the relationship between psychological contract breach and workplace deviance. In the justice literature, violations of interpersonal, distributive, or procedural justice tend to spark deviance due to the motivation to restore equality (Aquino et al., 1999). Other research has investigated the mediating roles of the motivation to restore self-esteem (Ferris, Spence, Brown, & Heller, 2012), and trust in the leader (Mo & Shi, 2015) in
predicting deviance.

However, proximal predictors of deviance can also be affective in nature (Bordia et al., 2008). Although less popular in the literature, emotion plays a role in determining whether employees engage in deviant behavior (Spector & Fox, 2002). The majority of studies point towards a positive relationship between negative state affect and deviant behavior (e.g., Dalal, Lam, Weiss, Welch, & Hulin, 2009; Fox et al., 2001; Judge, Scott, & Ilies, 2006; Matta, Ekol-Korkmaz, Johnson, & Biçaksız, 2014; Miles, Borman, Spector, & Fox, 2002; Newton, 2010; Rodell & Judge, 2009; Shockley, Ispas, Rossi, & Levine, 2012; Spector & Fox, 2005; Yang & Diefendorff, 2009). For instance, Judge et al. (2006) found a positive relationship between state hostility and workplace deviance. Yang and Diefendorff (2009) found a positive relationship between negative affect and counterproductive work behaviors. Matta et al. (2014) showed how negative emotional reactions led to counterproductive work behaviors, and Miles et al. (2002) found a positive relationship between negative emotion and counterproductive work behaviors. In all these studies negative emotion represented a conglomeration of more specific emotions, which means that different emotions, such as anger, anxiety, and sadness, are combined together to form one general affective construct (Smith & Ellsworth, 1985). For example, the Spector and Fox (2005) stressor-emotion model of counterproductive work behavior asserts that perceived stressors increase negative affect which then increases counterproductive work behaviors. It is important to note that researchers have also examined whether specific negative emotions affect deviant behavior (e.g., anxiety, Kouchaki & Desai, 2015). However, conclusions have largely fallen in line with research on generalized negative affect. For instance, Lee and Allen (2002) found a positive correlation between anger and deviance, but no relationship between deviance and either sadness or anxiety. Recently, Bauer and Spector (2015) examined the cross-sectional
relationship between self-report discrete negative emotions and self-report counterproductive work behaviors. Many negative emotions (e.g., anger, anxiety) had a positive correlation with counterproductive work behaviors.

However, there are two major issues with the present state of the emotion and deviance literature. First, the vast majority of prior research investigating the relationship between emotion and deviance is correlational in nature (e.g., Dalal et al., 2009; Miles et al., 2002; Shockley et al., 2012; Yang & Diefendorff, 2009). This makes it difficult to know which variable is driving the relationship: Is acting deviantly causing negative emotion or is negative emotion causing deviance? For instance, it could easily be that behaving deviantly leads to sadness upon realization that one has hurt another employee. In such a case, subduing the emotion is misguided, as it would not be the most effective path to halting deviance, since sadness is not driving the deviance. The best way to resolve this issue is to employ a research design that allows for establishing direction of causality. By doing so, I can cleanly tease out the singular effects of negative emotion on deviance, and contribute to our understanding of this particular relationship.

The second major issue involves the general assumption that negative emotions increase deviance (Bauer & Spector, 2015; Shockley et al., 2012). I intend to contribute to the literature by challenging this mindset. While I do argue that anger and anxiety increase deviance (consistent with past research), I hypothesize that sadness actually decreases deviance. The dearth of research on sadness and deviance is presumably responsible for this oversight. Drawing on appraisal theory, I plan to refine this broad conclusion by identifying a negative emotion that does not negatively affect deviance. The implications are significant. We could potentially discourage the assumption that all negative emotions are “unhealthy” in the workplace or
discourage the experience of all negative emotions, as sadness might not fall within the category of damaging negative emotions.

In addition to challenging the view that all negative emotions increase deviance and establishing the direction of the effects, I also contribute to the literature by emphasizing that emotions influence deviance through two distinct pathways. That is, emotions that positively influence deviance (anger, anxiety) travel through one path, while those that decrease deviance (sadness) travel through another. Thus, I intend to capture the complexity of emotion by showing that both physiological (arousal) and cognitive (sensemaking) processes differentially affect deviant behavior. In doing so, I not only testify to the multidimensionality of emotion, I also advance past the small pool of previous research that has focused solely on one mediating mechanism in linking emotions and deviance (e.g., Kouchaki & Desai, 2015; Motro, Ordóñez, Pittarello, & Welsh, 2016). For instance, Kouchaki and Desai (2015) proposed that anxiety increases unethical behavior through differences in threat perceptions, while Motro et al. (2016) examined the role of anger and guilt in predicting theft through dual processing. Considering only one mediator at a time could overlook additional variables that could potentially play an explanatory role in deviant behavior or even those that could reverse effects.

In this paper I focus on four negative state emotions – boredom, anger, sadness, and anxiety – that I categorize along two dimensions: certainty and threat. According to the appraisal theory of emotion, certainty is the degree to which an event in the environment is perceived as understandable and clear (Ellsworth, 2013; Ellsworth & Smith, 1988; Smith & Ellsworth, 1985; Tiedens & Linton, 2001). Threat is the degree to which an external event in the environment is perceived as potentially inflicting harm on, or causing danger to, oneself, either physically or psychologically, such as the self-concept (Arthur & Quester, 2004; Bushman &
Baumeister, 1998; Roseman, 2013; Tracy & Robins, 2004). I present evidence that anxiety is low in certainty and high in threat, anger is high in certainty and high in threat, sadness is low in certainty and low in threat, and that boredom is high in certainty and low in threat. While not necessarily equidistant (e.g., the location of sadness in the low certainty, low threat quadrant is not parallel to the location of anger in the high certainty, high threat quadrant), theoretically, this does not pose a significant problem. This is due to the fact that I am interested in one unique emotion within each quadrant, and not two emotions in one quadrant or the comparison of emotions across quadrants, in which case I would need to take the magnitude of the differences into account.

Because these discrete emotions differ in levels of certainty and threat, I argue that the experience of different emotions corresponds with different biological and cognitive processes. Emotions categorized as high in threat (anxiety and anger) are associated with the biological process of arousal, while emotions low in certainty (anxiety and sadness) are associated with the cognitive process of sensemaking. Threat indicates a potential danger to oneself and triggers a physiological response (fight-or-flight) intended to protect the self against the threat. Conversely, low certainty suggests that one’s perception of the environment does not match the actual environment. Sensemaking is intended to reconcile these two views by broadening one’s perspectives. I argue that the engagement of these processes will influence the focus of one’s attention, with arousal narrowing attention and sensemaking broadening attention: Arousal narrows one’s focus solely to the threat, while sensemaking broadens one’s focus, as the individual must consider new ways to construe events in the environment. A narrow attentional focus is expected to increase deviant behavior, while a broad attentional focus is expected to decrease deviant behavior. A narrow frame of mind tends to stimulate self-interested actions,
while a broad frame of mind tends to encourage greater consideration of others. In sum, I propose that deviance can be determined by how the mind and the body react to the experience of specific negative emotions.

Before continuing, I must note one boundary condition of my work: I focus exclusively on negative state emotions rather than on positive state emotions. From an evolutionary perspective, it is more beneficial for humans to distinguish among different emotions within negative affect than within positive affect (Dolan, 2002; Nesse, 1990). Negative affect signals a problem in the environment that requires attention. Different negative emotions provide more detailed information about the type of problem, and prepare the individual for the appropriate response. For instance, anxiety communicates that the problematic event in the environment is unpredictable and threatening, and often leads to “flight”. Anger communicates that the problem in the environment is clear and threatening, and often leads to “fight” (Lerner & Keltner, 2001). Such distinct responses are more tailored to the perceived problem and are meant to provide greater protection for the individual. Conversely, positive affect communicates that the environment is safe and hospitable, and does not merit the same fine-grained differentiation as negative affect. For instance, differentiating between pride and happiness is not as crucial as the distinction between anxiety and anger because personal safety is not at risk (Pratto & John, 1991; Rozin & Fallon, 1987).

**Appraisal Theory of Emotion**

Different theories and constructs, such affective events theory (Weiss & Cropanzano, 1996) and emotional labor (Grandey, 2000), have explicitly acknowledged the role of emotions in organizational behavior. While undoubtedly providing insight into the relationship between emotion and work-based outcomes, theories in the emotion literature, such as appraisal theory,
can be used more effectively as a conceptual framework to differentiate among different negative emotions. I intend to follow in the footsteps of other fields, which have used appraisal theory to show that differentiating among emotions can be insightful. For instance, researchers have shown that differences between emotions can affect decisions regarding risk (e.g., Kugler, Connolly, & Ordóñez, 2010; Lerner & Keltner, 2001). Using appraisal theory, Kugler et al. (2010) found that while both are negative in nature, fear increased risk-averse choices in tasks involving lotteries, while anger increased risk-averse choices in tasks that involve risk-taking with other people.

In appraisal theory, emotions are defined as “adaptive responses which reflect appraisals of features of the environment that are significant for the organism’s well-being” (Moors, Ellsworth, Scherer, & Frijda, 2013, p. 119). Emotions are componential “episodes” or “experiences” that originate in appraisals of a novel environmental stimulus, involve several different changes in bodily functions, and fundamentally serve to protect the individual from harm. Appraisal theory makes several assumptions about emotions, such as the claim that emotion and cognition are deeply intertwined. Emotions reflect changes in our cognitive evaluation of the environment. This evaluation has been coined an appraisal (Lazarus, 1991), and refers to an interactive process that both detects and analyzes an event in relation to one’s goals, needs, attachments, values, and beliefs (Moors et al., 2013). Whether an event satisfies or obstructs a current goal leads to different appraisals and reactions. Perhaps most importantly, appraisal theory actually identifies the specific dimensions upon which individuals evaluate a novel event in the environment, such as certainty, threat, control, and agency. This sets the stage for a more specific conceptualization of appraisal, which is the process by which a value is assigned to one or more appraisal dimensions. It is important to note though that a change in
value is not required for every single cognitive dimension in order for an emotion to arise. Rather, it is the changes in the values assigned to a subset of dimensions (e.g., certainty and control in risk; Lerner & Keltner, 2001) that underscore a particular emotional experience.

Appraisal theorists propose that the changes in our appraisal of an event in the environment accompany other changes in our physiology, cognitions, feelings, and action tendencies. According to appraisal theory, the ideal definition of a particular emotion involves identifying the specific changes in all these systems (Brosch, 2013). Ultimately, these changes serve an adaptive role; they are intended to realign our perceptions of the environment with our personal goals and include adjusting to the demands of the physical and social world.

In determining how different emotions influence deviance, I focus on two specific appraisal dimensions: certainty and threat. As mentioned previously, certainty is the degree to which an event in the environment is perceived as understandable and clear (Ellsworth & Smith, 1988; Lerner & Keltner, 2000; Tiedens & Linton, 2001). When an event is high on certainty it is clear who or what caused the event, how and when the event is happening, and what will likely happen in the future. When an event is low on certainty the effect of the event on the self, and the future progression of the event is unclear. Threat is the degree to which an external event in the environment is perceived as potentially causing danger to oneself, either physically or psychologically (Rosenberg, 1979). Events high in threat compromise an individual’s ability to protect him- or herself from injury or harm. Events low in threat do not pose such danger to the self. I focus specifically on threat appraisals because findings regarding the fight-or-flight response indicate that perceptions of threat involve physiological processes that narrow one’s focus specifically to the event, and that can subsequently increase deviant behavior. I also focus specifically on certainty appraisals because cognitive dissonance theory indicates that a
EMOTIONS AND DEVIANCE

psychological state of low certainty is considerably discomforting in humans (Festinger, 1957) and triggers a broader attentional focus meant to incorporate this uncertain event into a newly understandable framework, which can subsequently reduce deviance.

Four distinct negative emotions can be categorized along these two appraisal dimensions. First, the experience of anxiety involves the appraisal of an external event as low in certainty and high in threat. It is usually unclear how the event was caused, how it will unfold, or how it will affect the individual. The event is also appraised as threatening in that it can inflict harm or danger, be it physical or psychological (Beck & Clark, 1988). Several studies have highlighted the negative relationship between anxiety and certainty (e.g., Weeks, 2015; Zhang & Chan, 2014), and the positive relationship between anxiety and threat (e.g., Rholes, Riskind, & Neville, 1985; Salemink & Wiers, 2011). For instance, an employee is likely to experience anxiety after hearing about a potential layoff, in which the employee might lose his or her job (both an uncertain and threatening prospect). Anxiety ultimately stems from a feeling of low certainty about one’s life and an inability to escape unforeseeable dangers (Kay, Laurin, Fitzsimons, & Landau, 2014; Sullivan, Landau, & Kay, 2012), which can reduce confidence in how to behave and what to expect from the physical and social environment (Van den Bos & Lind, 2002). As humans have an underlying need to perceive certainty over their environment (Higgins, 2011), the state of anxiety is particularly uncomfortable and motivates action meant to reduce that discomfort and avoid harm.

Second, the experience of anger involves the appraisal of an event as high in certainty and high in threat. With anger, it is clear what or who caused the event and how it has or how it will affect the individual. Furthermore, either the body or the ego are threatened, for example, with a demeaning offense, such as an employee being insulted by a fellow coworker or
encountering incivility (Nangle, Erdley, Adrian, & Falls, 2010; Rosen, Koopman, Gabriel, & Johnson, 2016). Anger is thus a response that arises when another person or entity is perceived as responsible for a wrongdoing against the individual (Gibson & Callister, 2010). Angry individuals often react impulsively to the external stimulus because they are motivated to stop the specific behavior seen as threatening, prevent future occurrences of the offending behavior, or balance the scales (Anderson & Bushman, 2002).

Third, the experience of sadness involves the appraisal of an event as low in certainty and low in threat. While in the emotional experience of sadness it is usually discernible what or who initiated the event, the question of why the event occurred is often left unanswered and unclear (Attig, 1996), such as in the loss of a close coworker to an untimely illness. Sadness occurs as a response to a loss or absence (Baars, 1993). The low certainty associated with sadness also leads to seeking the help and comfort of others (Levine, Burgess, & Laney, 2008), which can aid sad individuals in understanding why such an event occurred. For instance, following the death of a child, bereaved parents often search for meaning and ask questions such as “Why did this have to happen?” and “I wonder why God did not answer all those prayers?” (Wheeler, 2001). These findings suggest that sadness is often associated with existential confusion and unpredictability.

In contrast, sadness is not associated with dangerous threats to the body or to the ego to the same extent as anger or anxiety (Wranik, Barrett, & Salovey, 2007), as the external event is not directly capable of harming the focal individual. Indeed, research has indicated a negative relationship between feelings of sadness and perceptions of threat (Wickless & Kirsch, 1988). For example, in a study on the startle eye blink reflex, Kreibig, Wilhelm, Roth, and Gross (2011) used an undergraduate sample of students and found that sadness did not activate the defensive system (e.g., fight-or-flight), which is often activated in the face of threat. That being said, there
certainly are occasions when individuals experience “mixed emotions” (Podoynitsyna, Van der Bij, & Song, 2012), in which sadness is felt equally alongside another emotion such as anxiety, which would certainly prompt very different appraisals of the event in the environment (a phenomena I revisit in the General Discussion). However, for the present studies I focus only on episodes of sadness where certainty expected to be lower, and threat higher, than boredom as an initial exploration of my process model.

Finally, the experience of boredom is high in certainty and low in threat. Boredom is an unpleasant, transient affective state in which the individual feels a pervasive lack of interest in and difficulty concentrating on the current activity (Fisher, 1993). With boredom, it is clear what is causing the unpleasant emotional experience – a task or event that is unstimulating. Boredom is also associated with low threat, meaning that the unstimulating task does not pose any harm to the individual. Employees usually experience boredom at one time or another during work. Characteristics of tasks that induce boredom are simplicity and repetitiveness, such as assembly line tasks (Fisher, 1998). In experimental tasks, investigators instill boredom using low performance goals, such as “do-your-best” goals, and “mindless” tasks, such as simple addition (Locke & Bryan, 1967).

Each of these appraisals of an event can then initiate changes in physiology and cognition meant to neutralize the emotion-inducing event in the environment. These processes, discussed next, have several important implications for attention and deviance. ²

**Threat and Arousal**

Arousal refers to excessive sympathetic branch activity which can lead to increased energy across several bodily functions, such as heart rate and respiration (Siegel, 1999). When threatened, arousal is responsible for improved alertness and attention span, vigilance, and
aggression, and affects nearly every organ in the body in assuring survival. The arousal response originates within the sympathetic nervous system (SNS), one division of the autonomic nervous system, that regulates a broad range of visceral functions. The other division of the autonomic nervous system is the parasympathetic nervous system (PSNS). When individuals do not perceive any external threats or stressors, the PSNS maintains a state of homeostasis, a complex dynamic equilibrium that promotes vegetative and pleasurable functions, such as food intake, sometimes referred to as rest-and-digest (Tsigos & Chrousos, 2002). The appraisal of threat in the environment communicates that one is in danger and the SNS activates an adaptive physiological response, arousal, that is intended to protect the body from harm. With anger, arousal triggers fight behaviors; with anxiety, arousal triggers flight behaviors (Gerard, 1958; Orth & Wieland, 2006). This response is globally regulated by a common set of central command neurons in the brain (pre-ganglionic and post-ganglionic) that innervate sympathetic outflow to the neuroendocrine system (Jansen, Van Nguyen, Karpitskiy, Mettenleiter, & Loewy, 1995).

The neuroendocrine system links the SNS and endocrine system through the transmission activity of neurons. The endocrine system consists of a group of glands located throughout the body that secrete hormones into the blood. These glands include the pituitary gland, thyroid gland, and adrenal gland. More specifically, the hypothalamus, a section of the brain located above the brain stem and adjacent to the thalamus, mediates the activity of the nervous system on the endocrine system through the pituitary gland. The pituitary gland is the ‘master gland’ located below the hypothalamus. When a threat is perceived in the environment, the hypothalamus sends signals to the pituitary gland to either release or inhibit hormone production in other glands. For instance, hormones in the pituitary glands stimulate the production and
release of the hormones epinephrine (also known as adrenaline) norepinephrine (also known as noradrenaline), and adrenocorticotropic hormone (ACTH) in the adrenal glands. These hormones—epinephrine, norepinephrine, and ACTH—serve some of the most important roles in the arousal response. When released into the bloodstream they increase heart rate and blood pressure, divert blood flow to the muscles, inhibit blood flow to the gastrointestinal system, stimulate pupil dilation, and trigger the release of metabolic energy sources, such as glucose, needed for action (Henry, 1986).

The release of energy sources is what provides the body with the ability to actually engage in fight-or-flight behavior. Glucose is a sugar that supplies the body, including the brain and muscular system, with energy through cellular respiration, a type of metabolic conversion process that changes chemical energy into kinetic energy. The hormones epinephrine and norepinephrine trigger this conversion process (Caputo, Mello, & Denadai, 2003). The arousal associated with anger activates a fight mode and triggers behaviors intended to punish the offender as a reaction to a perceived provocation (Anderson & Bushman, 2002). This can include aggression, verbal threats, or fighting. Conversely, the arousal associated with anxiety activates the flight mode, and provides the energy that is intended to escape the potential hazards brought on by the threatening external stimulus, such as searching for an escape, avoiding further risk, or even physically running (Blatz, 1925; LeDoux, 1995).

Research has shown that both anger and anxiety, because they involve the appraisal of a threat in the external environment, are closely linked to physiological arousal. A body of literature has amassed showing how anger and anxiety involve arousal (Axelrod, Mueller, Henry, & Stephens, 1970; Berger & Milkman, 2012; Critchley et al., 2005; Epstein & Coleman, 1970; LeBlanc, McConnell, & Monteiro, 2015; Rydell et al., 2008). For instance, Axelrod et al. (1970)
reported research showing that increased adrenaline and noradrenaline secretion is observed in both anxiety-provoking situations and in states of anger.

In the present study, I follow several past researchers and use average heart rate as a measure of arousal (e.g., Gable & Harmon-Jones, 2013; Herrero-Fernández, 2016; Houston, 1972; Kerimoglu, Neuman, Paul, Stefanov, & Twersky, 2013; Ladouceur, Sevigny, Blaszczynski, O’Connor, & Lavoie, 2003; McFall, Murburg, Roszell, & Veith, 1989; Tod, Iredale, McGuigan, Strange, & Gil, 2005). For example, in a study on patients with post-traumatic stress disorder, McFall et al. (1989) used heart rate as a measure of physiological arousal, and found that patients with the disorder exhibited higher resting heart rates and exhibited significantly greater autonomic arousal when exposed to combat-related stressors.

Moreover, in several areas of research, heart rate is used as an index of emotional responding, with higher heart rates indicating higher levels of arousal (e.g., Appelhans & Lueck, 2006; Anttonen & Surakka, 2005; Blatz, 1925; Codispoti, Bradley, & Lang, 2001; Field & Schorah, 2007; Levenson, 2003; Sloan, 2004). According to Appelhans and Lueck (2006), increased heart rate is characteristic of an emotion-induced state of activation that arises from human interaction with the environment. In a study on emotion regulation and experiential avoidance (i.e., the unwillingness to experience negative feelings and sensations), Sloan (2004) used heart rate as a physiological measure “because of its sensitivity to the arousal component of emotional reactivity” (p. 1261). Research in the field of child psychology found that the average heart rate among children aged 6-9 increased significantly when they were told to approach a box containing a threatening and scary fictional animal (Field & Schorah, 2007). Thus, in line with past research I also plan to use heart rate as a measure of emotion-induced arousal and hypothesize that:
Hypothesis 1. Compared to boredom, (a) anxiety and (b) anger will increase arousal, while (c) sadness will not.

Certainty and Sensemaking

Sensemaking refers to a process through which individuals work to understand and interpret novel, unexpected, or uncertain events in the environment (Maitlis & Christianson, 2014). Sensemaking involves active attempts to construct a situation in a way that the individual can better understand causes and effects, clarify any confusion, and elucidate how different events or factors in the environment relate to one another. The process of sensemaking begins when an event disrupts a previously coherent representation of the environment in such a way that new information cannot be easily integrated into it. The process of “making sense” of this new event involves constructing a new mental representation of the environment that organizes all cues – old and new – into a newly coherent and ordered representation of the world. Oftentimes employees in organizations stumble across moments of ambiguity, such as an unexpected announcement of potential layoffs, and seek to explain the moment in an interpretable, plausible, and comprehensive manner. Doing so involves reexamining a previous understanding of the environment and changing it to accommodate this new information.

The study of sensemaking in organizations dates back to Weick (1995) who originally developed the idea, prompting a long line of empirical research that has investigated the role of sensemaking in several different organizational contexts, including ethics (Elmes, Mendoza-Abarca, & Hersh, 2015), technology (Griffith, 1999), social mediation (Strike & Rerup, 2015), career development (Vough, Bataille, Noh, & Lee, 2015), knowledge (Patriotta, 2003), creativity (Drazin, Glynn, & Kazanjian, 1999), leadership (Combe & Carrington, 2015), and strategic change (Mantere, Schildt, & Sillince, 2012). For instance, Elmes et al. (2015) proposed that
reconstructing the issue of growing hunger and demand for food assistance in the U.S. as an ethical dilemma rather than as an emergency aid problem might be more effective in the long run.

Sensemaking can occur at the individual level, during which individuals tend to reconstruct their previously acceptable schemas using rational thinking, or the use of logical, analytical, or deliberative processes (Weick, Sutcliffe, & Obstfeld, 2005). For instance, Gioia and Chittipeddi (1991) argued that in order to accompany change in the environment, members of an organization, including the CEO, must understand the change in a way that makes sense or fits into a revised schema. Sensemaking is considered a cognitively demanding task. The acknowledgement of change or inconsistencies in the world, which can force the individual to give up a previously acceptable interpretation of the environment and actively create a new one, is time consuming and laborious. Due to the effortful nature of sensemaking, and consistent with Weick’s (1995) description of sensemaking, I do not consider instances when new information is quickly and easily integrated into an existing framework (Ashforth & Kreiner, 2002).

Ultimately, the process of sensemaking can be driven by the human desire to seek consistency between personal beliefs and perceived reality (or what is perceived to be an objective state of the world). This desire is best captured by cognitive dissonance theory, which asserts that inconsistencies between our expectations and reality result in a state of psychological discomfort (Festinger, 1957; Harmon-Jones, Harmon-Jones, & Levy, 2015). Cognitive dissonance theory posits that there are ways to reduce this psychological discomfort by aligning expectations and beliefs with a new reality (Elliot & Devine, 1994). For instance, one could ignore that reality has changed, or work to adjust one’s beliefs to match one’s perceptions of this new reality (sensemaking). Those who engage in sensemaking are more likely to also experience a reduction in the uncomfortable psychological state of mind that is associated with holding two
different cognitions. According to Willingham (2011, p. 1), “we want our beliefs to be accurate – to align with what is really true about the world.” In sum, the fundamental motivation to make sense or reduce psychological discomfort is driven by the desire to feel smart (Brooks, 2012), consistent (Cialdini, Trost, & Newsom, 1995), honest (Mazar, Amir, & Ariely, 2008) and to have a positive coherent sense of self (e.g., “I know who I am, I know what I want, I know what to do, I know what is correct, I practice what I preach”).

In this context, I only consider sensemaking that occurs when the individuals’ perception of the new event is approximately equivalent to the new objective event (i.e., their perceptions are accurate), which is what generally tends to occur in organizations (Gioia & Chittipeddi, 1991; Weick, 1995). For example, if management says that they are cutting staff by 25%, employees are likely to interpret this new event accurately (and probably with subsequent anxiety).

Importantly, negative disruptions are more likely to trigger sensemaking than are positive disruptions. Individuals pay more attention to negative information, as it communicates that something is problematic, and demands more careful, systematic processing. As discussed previously, the experiences of anxiety and sadness involve an appraisal of low certainty in the environment. Sadness is often triggered by an unexpected or unexplainable loss, potentially leading sad individuals to question their established interpretation or understanding of the environment. For instance, an employee who was let go might ask a series of questions such as, “why did this happen to me? I thought I did a good job” or “what does this mean for my future career?” This new event, a layoff, thus causes a once coherent representation of the world to unravel. It likely stimulates the process of sensemaking, which attempts to integrate this new information to create a more accurate and plausible worldview. A similar argument can be made
for anxiety, which also arises when one is not certain about what the outcome of an event will be. For instance, rumors of downsizing could trigger anxiety in individuals who may ask themselves, “what will happen if I am let go?” This new information, which has violated previous expectations, must now be actively accommodated into a new framework, perhaps enabling individuals to make preparations for the possibility that they will no longer be employed. Given that anger is not associated with low perceptions of certainty, I do not expect it to influence sensemaking. Thus, I predict that:

Hypothesis 2. Compared to boredom, (a) anxiety and (b) sadness will increase sensemaking, while (c) anger will not.

Arousal, Sensemaking, and Attentional Focus

Attention, or the concentration of awareness in which one focuses on particular cues to the exclusion of others (Bundesen, Habekost, & Kyllingsbæk, 2005; Pashler & Sutherland, 1998; Treisman & Gelade, 1980), varies along a continuous dimension known as focus (also known as width or breadth), which refers to the number of environmental or mental factors to which attention is allocated. The broader the focus, the greater the simultaneous concentration on multiple factors and the more abstract the thinking. As focus narrows, so does the number of factors that can be considered at one point in time and the more specific the thinking (Essig, Janelle, Borgo, & Koester, 2014). Presently, I propose that arousal narrows one’s attentional focus, and that sensemaking broadens one’s attentional focus.

The arousal response is intended to protect the self from an external threat. Since self-protection is of utmost importance in both human and animal motivation (Griskevicius et al., 2009; Schwartz & Rubel-Lifschitz, 2009), attentional focus will zero-in on the specific threat, and the factors directly related to that threat. By deploying most of one’s attentional resources to
better understand the threat, it should become clear how to neutralize the threat. In other words, in a state of arousal, one’s attention will be captured by the very limited and clear number of factors associated directly with the threat, such as the person or thing responsible. In the most fundamental sense, when our well-being is threatened our body provides a burst of energy intended to overcome this specific hazard and restore personal safety and calm. In such a state of mind, there is no room for a broader analysis of secondary, more abstract factors. Indeed, Kaplan, Van Damme, and Levine (2012, p. 2) note that the “cue-utilization hypothesis states that emotional arousal reduces the number of cues that an organism can process at a time.” For example, consider a subordinate whose manager has just threatened him or her with a layoff. This could surely be considered a harmful threat to the subordinate. The subordinate’s attention is likely to zone in on the limited number of factors directly related to this threat and how to neutralize it, such as who to discuss the issue with, and how to make sure it does not happen. The subordinate will likely ignore secondary factors, such as organizational etiquette, because such factors do not directly or significantly relate to the threat itself.

A different story arises when considering sensemaking. As described in the management literature, the process of sensemaking arises when a novel and unclear piece of information significantly disrupts or challenges one’s existing framework. This information must subsequently be incorporated into a new schemata that restores logic and certainty. During the sensemaking process, individuals must consider several different factors and cues at once in order to figure out how, when, and where this new information fits. New cues must be connected and integrated into newly formed frameworks. Accordingly, this process requires careful deliberation, an abstract point of view, and an open mind (Maitlis, Vogus, & Lawrence, 2013). Consider an employee whose long-time coworker was laid off. Upon being confronted with this
novel, uncertain information (i.e., “How and why did this happen to my good friend?”), the employee engages in a sensemaking process during which he or she reevaluates several other previous assumptions and tries to absorb this new information in a way that ultimately makes sense. He or she is likely to simultaneously reassess previously taken-for-granted factors, such as the goals of the organization (perhaps even the financial status of the company), the supervisor’s underlying motivation, the colleague’s relationships with other coworkers, the quality of the colleague’s work, the change in the employee-colleague personal relationship, and so on. In order to construct a new coherent representation of the world that now includes the lay off of this colleague, one must consider several relevant factors simultaneously, how they intertwine, and how they can be reconstructed in a harmonious way, which is essentially reflecting a broader state of mind. In contrast, sensemaking does not occur when a new, disrupting event can be much more easily integrated into an existing framework (e.g., if a long-time beloved coworker was laid off because the quality of his or her work clearly declined).

Research provides support for the idea that anger results in a narrow focus and sadness results in a broad focus (Gable & Harmon-Jones, 2010; Gable, Poole, & Harmon-Jones, 2015; Harmon-Jones, Gable, & Price, 2012; 2013). Until recently, the research on affect and attention has centered on broad conceptualizations of negative affect and positive affect. Most research converged to suggest that positive affect broadened attentional focus, while negative affect narrowed it (Chajut & Algom, 2003). The underlying rationale suggested that negative affect communicates a threat in the environment that requires undivided attention. Positive affect includes no such threat, so individuals can be more playful, abstract, and creative in their thinking (Fredrickson & Branigan, 2005). However, recent work has brought a more nuanced perspective to the relationship between affect and attention, with a particular focus on discrete
negative emotions. For instance, Gable et al. (2015, p. 165) explicitly state that “anger should cause a narrowing of cognitive scope as individuals shut out irrelevant stimuli, perceptions, and distractions, to approach the anger-evoking object”. Furthermore, emotions like sadness, where no direct threat is apparent, broaden attentional focus (Gable & Harmon-Jones, 2010). Gable and Harmon-Jones (2010) report research that individuals with depression, often conceptualized as a base state of sadness, are more creative than the average individual (Andreasen, 1987). The lack of an immediate distracting threat allows sad individuals to be more open and unfocused, and more prone to considering different possibilities, ideas, and conceptualizations. Anxiety is an interesting emotion in this context. According to the arguments I have presented above, anxiety is associated with both threat and certainty, meaning that it would lead to both arousal and sensemaking. In this framework, anxiety would lead to both a narrowing and broadening of attention. However, this is likely not the case. There is a theoretical reason to propose that these processes do not cancel each other out. In other words, the attentional focus of bored individuals and anxious individuals should differ. I argue that the process of arousal eclipses the process of sensemaking, which suggests that anxious individuals will experience a narrowing of attentional focus. This is consistent with the sizeable literature showing that a basic motivation of humans is to survive (Keltner & Lerner, 2010; Wong, 1998). Given that the purpose of arousal is to protect against a threat to one’s well-being, I expect that it will be a stronger force in predicting focus than will sensemaking. Said otherwise, while the process of sensemaking is likely to occur, it is likely to be a weaker driver of subsequent behavior. Ultimately, the motivation to survive is more important than the motivation to reduce cognitive discomfort. There is also research to suggest that anxiety narrows one’s focus to pay special attention to the perceived threat (Gable & Harmon-Jones, 2010). Supporting this argument, Kouchaki and Desai (2015) found that anxiety
increases unethical behavior through increased perceptions of threat. I add to this research by identifying more specifically how those perceptions of threat increase deviance by incorporating the processes of arousal, sensemaking, and attentional focus. Thus, I hypothesize:

Hypothesis 3. Arousal mediates the narrowing effect of anger on attentional focus.

Hypothesis 4. Arousal mediates the narrowing effect of anxiety on attentional focus.

Hypothesis 5. Sensemaking mediates the broadening effect of sadness on attentional focus.

**Attentional Focus and Deviance**

I propose that a narrow attentional focus increases deviance. A narrow attentional focus limits the number of factors or the amount of information that can be considered simultaneously. Said otherwise, those with a narrow focus will consider a smaller set of factors in making a decision than those with a broad focus. Furthermore, I argue that this smaller set of factors is not random, but instead directly related to one’s self-interest, and that other factors outside this subset relate to the interests of others or to the interests of society as a whole. Those with a broad focus will be more likely to consider other factors in addition to the self-interested subset in making a decision. This self-interested subset refers to factors that can directly benefit the self at the expense, or cost, of others, the organization, or society as a whole (DeCelles, DeRue, Margolis, & Ceranic, 2012).

Research on stress in teams can be used to support my argument that a narrow attentional focus is associated with a stronger focus on the self and one’s self-interest. Stress is a sequence of events that involve “the generation of a response that typically affects the individual’s well-being” (Ellis, 2006, p. 576). Acute stress in teams leads to a narrowing of attentional focus that is associated with a shift from a broad team perspective to a narrow individualistic perspective (Cohen, 1980; Driskell, Salas, & Johnston, 1999; Ellis, 2006). An “information overload”
argument is often used in which stress decreases the ability to process information. This means that the individual must focus on information or cues that are considered a priority, which is often information that directly affects the self, an effect that is largely driven by a primal motivation to protect the self against outside threat (Sherman & Kim, 2005), or to survive in a world with limited resources (e.g., money; Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009; Navrud & Ready, 2002). This motivation for protection and survival urges us to pay special attention to factors that can affect our standing in society, influence the well-being of ourselves, and secure scarce resources. When possible, individuals then act in ways that promote self-interests, often failing to pay sufficient attention to other factors, such as ethical standards or organizational rules. Thus, the motivation to protect the self is deeply ingrained in our psyche (Dawkins, 2006) and acts as the default motivation in ambiguous situations (Mead et al., 2009).

However, as a society it is recognized that if everyone consistently behaved in a self-interested way, the collective world would suffer in the end, a situation sometimes referred to as the “tragedy of the commons” (Hardin, 1968). In a classic example, a group of cow herders share a common acre of land. It is in the best interest of each herder to allow more of his cows to over-graze. However, if each herder behaved in this self-interested manner, then there would be no grass left in the end to the disadvantage of all herders. Thus, cultural norms and moral standards have been developed that discourage exclusively serving one’s own needs in favor of serving the greater good (Mead et al., 2009). I propose that only individuals with a broad attentional focus will be likely to consider these other-interest factors related to the interests of society, in addition to the self-interested factors, in making a decision. For example, factoring in how deviance can hurt the organization in the long run will likely decrease the probability of behaving deviantly. Research supports this claim. For instance, Rosen et al. (2016) showed that
individuals who think abstractly are less likely to act in an incivil manner when lacking self-control. Gino, Schweitzer, Mead, and Ariely (2011) found that being aware of the moral issues in an ethical situation decreased unethical behavior, while DeCelles et al. (2012) found that experienced power was associated with promoting one’s self-interest only when one’s moral identity was weak.

I argue that deviance is one result of a self-interested focus. Support for this comes from the behavioral ethics literature. Unethical behavior is defined as “behavior that has a harmful effect upon others and is either illegal or morally unacceptable to the larger community” (Brass, Butterfield, & Skaggs, 1998, p. 15; Jones, 1991). The vast majority of deviant behaviors (e.g., theft, violence, rudeness) are also considered unethical by individuals, organizations and society at large. Researchers posit that unethical behavior is often manifested as lying, cheating, theft, violence or interpersonal aggression (e.g., Keaveney, 1995; Treviño, Weaver & Reynolds, 2006), which align with several deviant behaviors. A large stream of research has shown that serving one’s self-interest is the automatic or default response in ethical dilemmas (Bazerman & Tenbrunsel, 2011; Bereby-Meyer & Shalvi, 2015; Pittarello, Leib, Gordon-Hecker, & Shalvi, 2015; Shalvi, Handgraaf, & De Dreu, 2011). In such ethical situations, serving one’s self-interest is often manifested as stealing a sum of money that is undeserved. For instance, Christian and Ellis (2011) measured deviance using a theft task in which participants could self-grade a multiple choice test dishonestly in order to earn more money.

Simply from the description of some deviant behaviors, it is obvious that individuals behaving deviantly are not particularly concerned with the potential harm they may bring upon another person or the organization, or concerned with maintaining a positive image of being a good employee. Specific examples of deviant behavior include wasting company resources,
spreading negative rumors about the company, taking excessive breaks, abusing a customer, stealing a coworker’s possessions, sexually harassing an employee, and sabotaging merchandise. In every example, the degree to which the perpetrator considers other factors, such as company ethics and the victim’s reactions, is likely to be miniscule (Robinson & Bennett, 1995). Instead, the perpetrators of deviance are behaving in a way that serves their own interests (e.g., stealing possessions for self-profit) or protects them from any threats (e.g., aggressing against a coworker who spread rumors about them).

In essence, I propose that in a given situation, individuals by default pay attention to the factors that benefit or jeopardize their self-interests. Those with a narrow attentional focus will only consider these factors when making a decision. However, those with a broad attentional focus will also take into consideration factors that involve the interests of others when making a decision, thereby dampening the chance of behaving self-interestedly. Deviance often takes the form of self-interested behavior (DeCelles et al., 2012). For instance, theft is intended to secure limited resources for the self at the expense for the organization. Interpersonal aggression is often associated with making yourself feel better with little thought about how your actions with hurt the other party.

On the basis of this research, I propose a sequential-mediation model. I expect that deviance is predicted by two sequential links from emotion to arousal and sensemaking, to attentional focus to deviance. I predict that arousal and sensemaking mediate the link between emotion and attentional focus, and that attentional focus mediates the link between arousal and sensemaking, and deviance. Attentional focus in turn should mediate the relationship between arousal and sensemaking and deviance such that a narrow attentional focus increases deviance, while a broad attentional focuses decreases deviance (see Figure 1). Thus, I hypothesize that:
Hypothesis 6. The positive effect of anger on deviance is sequentially mediated through arousal and narrowed attentional focus.

Hypothesis 7. The positive effect of anxiety on deviance is sequentially mediated through arousal and narrowed attentional focus.

Hypothesis 8. The negative effect of sadness on deviance is sequentially mediated through sensemaking and broadened attentional focus.

**Overview of Methods**

I conducted three pilot studies and three experiments, which allow for high control, as well as the ability to test the full model. The pilot studies were conducted using the online research sampling tool *Microworkers* (Motro & Ellis, 2017; Nguyen, 2014). In each of the three experiments, participants were University of Arizona students and sessions were run in the Decision Behavior Laboratory. By using three different emotion inductions across three studies (scenarios in Study 1, writing prompts in Study 2, and videos in Study 3), I aimed to provide evidence for causality and demonstrate the robustness of the effects. There was one pilot study that preceded each experiment, the purpose of which was to assess the effectiveness of the emotion induction. The first pilot study and first experiment used scenarios, the second pilot study and second experiment used writing prompts, and the third pilot study and third experiment used videos. Refer to the Appendix for all manipulations and measures used.

**Pilot Study 1 (Scenarios)**

A total of 60 workers (M<sub>age</sub> = 34.73, 47% female) were recruited from *Microworkers.com*. On this website (which is similar to the research platform *Amazon Mechanical Turk*), workers can browse from a list of studies online remotely and complete them for payment. My study was
advertised as one in which workers could complete a series of basic tasks (e.g., reading a scenario and answering questions) for payment ($1.00). Interested workers clicked on the link in the description which directed them to a website that contained all the tasks. Workers were then randomly assigned to one of four conditions: boredom ($n = 14$), anger ($n = 14$), sadness ($n = 16$), or anxiety ($n = 16$). They read the instructions for the task, which asked them to read a scenario, imagine what it would feel like to be the person described in the scenario, and to try and experience the emotion as vividly as possible (cf. Raghunathan & Pham, 1999). All scenarios were between 460 and 490 words, and written in the first person so that participants more easily identified with the individual described. Given that I created the specific scenarios (i.e., they had not been borrowed from past research), it was important to pilot test them to check their effectiveness. I also used the pilot testing of the scenarios as an opportunity to examine the validity of my sensemaking measure.

**Manipulations and Measures**

**Boredom condition.** In the boredom scenario, participants read that they are working on a project with a team of civil engineers: One of the senior engineers has updated several sections of the company’s civil engineering manual, and requested that ‘you’ (i.e., the participant) read it and memorize all the different sections. You see that each section is either very technical or very obvious. You sit down at your desk and read about water installations for buildings and that the most common water sources are potable water from bulk supply pipelines. The manual also notes several intricate details about water installation (e.g., that depending on economy, water quality and site conditions, the use of uPVC pipes is preferred by the company for pipes larger than 75mm diameter and HDPE for pipes equal to and smaller than 75mm diameter). Throughout the scenario are sentences such as “makes you bored beyond belief”, “general
unpleasantness as you read”, “more and more uninterested”, and “you continue to feel incredibly bored, uninterested, and weary”, which are expected to induce boredom. The scenario is not intended to stimulate any significant appraisals of threat or certainty.

**Anger condition.** In the anger scenario, ‘you’ are in the break room hanging out with some work friends from another department. You mention that you are up for a big promotion that you worked really hard for and are very excited about. Your friends wish you luck and head back to their offices, but you stay to grab a cup of coffee. Another colleague walks in and you learn that he is up for the same promotion. You joke around about the supervisor making the decision. You obviously meant it in jest, but your colleague sternly berates you and says that it is “very inappropriate”. He then threatens to tell the supervisor and adds that it will probably ruin your chances of a promotion. You emphasize that it was a joke and how being a tattle-tale is one of the worst things you could be, but your colleague just smirks arrogantly. He says that he will tell the boss and preaches to you about being a better employee. Throughout the scenario are sentences such as “you feel an extreme surge of anger”, “you feel even more intense rage”, “you feel your face getting red and reply in an angry voice”, “you feel yourself getting more and more angry”, and “anger continues to rage through your body and cloud your head with thoughts of aggression, revenge, and retaliation”, which are expected to induce anger. The scenario is intended to stimulate an appraisal of threat (to one’s job prospects), and high certainty (it is clear that your colleague will tell on you to your boss).

**Sadness condition.** In the sadness scenario, ‘you’ are looking forward to spending some time with your family and friends on vacation. Suddenly your roommate enters the room, telling you that you have a phone call from your boss. You hear your boss’s strained voice and know that something is wrong. He mentions that your best friend at work is sick in the hospital and the
doctors do not know what it is. You take a cab to the hospital immediately, feeling confused all along the way. As you enter the hospital room the nurse mentions that the doctors are still running tests to figure out what is wrong. You see your boss and your best friend’s family with pale faces and teary eyes. All of them are huddled around your best friend who is weak and frail and appears to have jaundice. You sit beside your best friend and hold his/her hand who is whimpering in pain. Suddenly, the machines start to beep rapidly, and you hear the nurse’s footsteps running to the room. Throughout the scenario are sentences such as “you feel miserable”, “you feel incredibly sad”, “you feel a surge of intense sadness”, “how heartbroken you would be without your best friend”, and “you feel the world crumbling around you”, which are expected to induce sadness. The scenario is intended to stimulate an appraisal of low certainty (what is and what will happen to my best friend?), though no appraisal of danger or harm to oneself.

**Anxiety condition.** In the anxiety scenario, ‘you’ have not been feeling well lately (e.g., experiencing fatigue all the time). You went to see a doctor who ordered blood tests. A couple of days later, the doctor calls and leaves a voicemail in what appears to be a strained and worried tone, and wants to see you in person to discuss the results of the blood tests. You drive to the medical center where a nurse, who appears to already know the problem, escorts you to the waiting room. Along the walls are posters about blood cancers and types of treatment. A secretary calls out your name and takes you to the doctor’s office. The scenario ends with the secretary’s instruction to wait outside the door as she tells the doctor that you are here. Throughout the scenario are sentences such as “you feel extremely anxious at this point”, “you can’t stop worrying”, “feel a surge of anxiety overwhelm you”, “try to hold back an urge to scream in fear”, and “you turn around, feeling nauseous”, which are expected to induce anxiety.
The scenario is intended to stimulate an appraisal of a threat (to one’s health), and low certainty (do I have cancer?).

**Manipulation checks.** I assessed the effectiveness of the scenarios by having participants rate the degree to which they were currently experiencing 19 emotions on a scale ranging from *(1) do not feel at all to (9) feel stronger than I ever have* (Watson, Clark, & Tellegen, 1988). The survey included three items intended to measure boredom (bored, disinterested, dull; Gasper & Middlewood, 2014), three times intended to measure anger (mad, irritated, angry; Kugler et al., 2010), three items intended to measure sadness (sad, gloomy, upset; Dunn & Schweitzer, 2005), and four items intended to measure anxiety (nervous, anxious, worried, apprehensive; Kouchaki & Desai, 2015). The remaining six items formed a measure of positive affect (cheerful, confident, proud, joyful, delighted, happy; Watson & Clark, 1994), which was used to verify that any changes in behavior across conditions could not be attributed to parallel changes in the experience of positive emotion.

I then checked appraisals of threat and certainty. For appraisals of certainty, participants answered a five-item certainty scale adapted from Bagneux, Bollon, and Dantzer (2012) on a scale from *(1) strongly disagree to (7) strongly agree.* Example questions are “I can predict what is going to happen next” and “I am uncertain about what is happening now” (reverse coded). For appraisals of threat, participants answered an eight-question threat scale taken from the primary and secondary appraisal (PASA) questionnaire (Gaab, Rohleder, Nater, & Ehlert, 2005) and the Stress Appraisal Measures (SAM; Peacock & Wong, 1990) on a scale from *(1) strongly disagree to (7) strongly agree.* Example questions are “This event could be dangerous for me” and “I do not feel worried because the event does not represent any threat for me” (reverse coded).

Internal reliability for all the measures was good: boredom (α = .89), anger (α = .88),
sadness ($\alpha = .80$), anxiety ($\alpha = .88$), positive affect ($\alpha = .92$), certainty ($\alpha = .89$), and threat ($\alpha = .92$).

**Sensemaking.** In my model I position sensemaking as a pivotal mediator. In prior research sensemaking has often been captured qualitatively in specific settings, usually single-case studies (e.g., Christianson, Farkas, Sutcliffe, & Weick, 2009; Gioia & Thomas, 1996; Wainwright & Turner, 2004; Walsh & Bartunek, 2011). For instance, Weick (1993) tracked the progress of firefighters’ sensemaking during the Mann Gulch disaster. However, scholars “encourage sensemaking researchers to draw on a wider range of methods to study sensemaking” (Maitlis & Christianson, 2014, p. 107). One such methodology is self-report scales. For example, Morgeson (2005) devised a three-item sensemaking scale tailored to the specific context of interest (leadership in self-managing teams). While there are several different components of the sensemaking process, I intend to capture the attempt to construct a newer representation of the world (i.e., I am not capturing how the triggering event arose nor the final product of the sensemaking process, nor its dynamic, cyclical properties; Louis, 1980).

To measure sensemaking, I constructed questions based on existing descriptions of this process, where the word “event” refers to the main event described in the scenario (“scary doctor’s appointment” in the anxiety condition, “sad experience at hospital” in the sadness condition, “an angry interaction with a colleague,” in the anger condition, and “a boring work task” in the boredom condition). The first question “This event makes me integrate new information into my view of what is normal” is based on the assumption that sensemaking involves the revision of schemas – the mental representations – that “are expanded and elaborated as they incorporate new information” (Harris, 1994, p. 311). The second question “This event makes me actively rethink my view of what is normal” is based on the notion that
sensemaking is an elaborate process that “goes beyond interpretation and involves the active authoring of events and frameworks for understanding” (Maitlis & Christianson, 2014, p. 58). The third question “This event makes me feel like I have to come up with another way of looking at things” is based on the notion that sensemaking is “understood as invention, and interpretation understood as discovery” (Weick, 1995, p. 15) and that for individuals, sensemaking can “create new meanings and a new understanding of the world and of themselves in that world” (Maitlis, 2009, p. 50). The fourth question “This event makes me consider alternative ways that the world might work” is based on the assumption that sensemaking can cause people to undergo a “retrospective development of plausible accounts that rationalize what has occurred” (Maitlis et al., 2013, p. 226).

As this is a new measure, I followed certain construct validation recommendations of MacKenzie, Podsakoff, and Podsakoff (2011). I have already attempted to establish content validity by pulling the items directly from the literature and quoting expert scholars in the field. Following in the footsteps of other researchers who have devised items specific to their research (e.g., Detert & Edmonson, 2011), I tested convergent and discriminant validity using six extant measures similar to sensemaking. Following past research (e.g., Lewis, 2003), I compared my measure to three scales expected to be positively correlated (need for cognition, intellectual stimulation, openness to experience), and three scales expected to be negatively correlated (resistance to change, traditionalism, personal need for structure) with sensemaking. Need for cognition is the tendency for individuals to engage in and enjoy effortful thought (Cacioppo & Petty, 1982), intellectual stimulation is behavior that challenges one to re-examine one’s assumptions about work and rethink how the work can be performed (Podsakoff, MacKenzie, Moorman, & Fetter, 1990), and openness to experience is the tendency to be imaginative,
noncomforming and unconventional (Costa & McCrae, 2008). In each of these scales, the questions capture the extent to which individuals are willing and able to open their minds to new experiences, possibilities, and world views. Conversely, the scales meant to establish discriminant validity capture the extent to which individuals prefer stability, routines, and tradition. Resistance to change is the tendency to resist or avoid making changes, devalue changes, and to find change aversive across different contexts and situations (Oreg, 2003), traditionalism reflects a tendency to prefer things that are familiar, stable, predictable, and preserve old values (Duckitt, Bizumic, Krauss, & Heled, 2010), and personal need for structure is the desire to perceive the world in simple, unambiguous, clean, familiar, manageable, and routine ways, with the ultimate goal of reducing the expenditure of cognitive resources in devising schemas (Neuberg & Newsom, 1993). I expected the responses on the sensemaking scale to correlate positively with need for cognition, intellectual stimulation, and openness to experience, and negatively with resistance to change, traditionalism, and personal need for structure.

In sum, participants first read a scenario intended to induce one of four emotions, then completed a set of manipulation checks (emotion, appraisals of certainty, appraisals of threat), a measure of sensemaking, and six personality trait scales.

Results

See Table 1 for means and standard deviations. See Table 2 for correlations among study variables.

**Boredom condition.** Participants in the boredom condition reported feeling significantly more bored ($M = 6.62, SD = 1.93$) than participants in the anger condition, sadness condition, and anxiety condition combined ($M = 2.72, SD = 2.03$), $t(56) = 6.70, p < .001$, Cohen’s $d = 1.97$
(a very large effect; Cohen, 1969). In addition, I ran a $4 \times 4$ repeated measures ANOVA with emotion as the between-person factor (boredom condition, anger condition, sadness condition, anxiety condition), and the emotion items as the within-person factor (feelings of boredom, feelings of anger, feelings of sadness, feelings of anxiety). Planned contrasts (which controlled for alpha inflation using a Bonferroni correction) revealed that participants in the boredom condition reported experiencing more boredom than anger ($M = 3.76$, $SD = 1.65$), mean difference (MD) = 2.86, standard error (SE) = .67, $p < .001$; sadness ($M = 4.10$, $SD = 1.85$), MD = 2.52, SE = .62, $p < .001$; and anxiety ($M = 4.34$, $SD = 1.40$), MD = 2.28, SE = .72, $p < .01$.

**Anger condition.** Participants in the anger condition reported feeling significantly more angry ($M = 7.29$, $SD = 2.58$) than participants in the boredom condition, sadness condition, and anxiety condition together ($M = 3.78$, $SD = 1.94$), $t(56) = 5.43$, $p < .001$, Cohen’s $d = 1.54$. Similar to the boredom condition, I ran a $4 \times 4$ repeated measures ANOVA with emotion as the between-person factor (boredom condition, anger condition, sadness condition, anxiety condition), and the emotion items as the within-person factor (feelings of boredom, feelings of anger, feelings of sadness, feelings of anxiety). Planned contrasts (which again control for alpha inflation using a Bonferroni correction) showed that participants in the anger condition reported experiencing more anger than boredom ($M = 2.52$, $SD = 1.86$), MD = 4.76, SE = .67, $p < .001$; sadness ($M = 4.67$, $SD = 2.40$), MD = 2.62, SE = .48, $p < .001$; and anxiety ($M = 5.57$, $SD = 2.49$), MD = 1.71, SE = .54, $p < .01$.

**Sadness condition.** Those assigned to the sadness condition reported feeling significantly more sad ($M = 7.15$, $SD = 1.39$) than participants in the boredom condition, anger condition, and anxiety condition ($M = 4.95$, $SD = 2.02$), $t(56) = 4.32$, $p < .001$, Cohen’s $d = 1.27$. Using the same repeated measures ANOVA strategy as that used in the boredom and anger conditions, I
performed a series of planned contrasts showing that participants in the sadness condition reported experiencing more sadness than boredom ($M = 1.85, SD = 1.10$), $MD = 5.29$, $SE = .58$, $p < .001$; anger ($M = 3.40, SD = 2.16$), $MD = 3.75$, $SE = .45$, $p < .001$; and anxiety ($M = 5.63, SD = 2.60$), $MD = 1.52$, $SE = .41$, $p < .001$.

**Anxiety condition.** Participants in the anxiety condition reported feeling significantly more anxious ($M = 7.61, SD = .81$) than participants in the boredom condition, anger condition, and sadness condition ($M = 5.20, SD = 2.28$), $t(56) = 4.23$, $p < .001$, Cohen’s $d = 1.41$. Using the same repeated measures ANOVA strategy as previously, a set of planned contrasts indicated that participants in the anxiety condition reported experiencing more anxiety than boredom ($M = 3.75, SD = 2.48$), $MD = 3.86$, $SE = .67$, $p < .001$; anger ($M = 4.17, SD = 1.98$), $MD = 3.44$, $SE = .50$, $p < .001$; and sadness ($M = 5.94, SD = 1.39$), $MD = 1.67$, $SE = .41$, $p < .001$. Overall, there was no effect of emotion on positive affect, $F(3, 56) = 1.52$, $ns$.

**Perceptions of certainty and threat.** As expected, perceptions of certainty were significantly lower in the sadness and anxiety conditions combined ($M = 2.72, SD = 1.51$) compared to the boredom and anger conditions combined ($M = 4.86, SD = 1.21$), $t(56) = 5.97$, $p < .001$, Cohen’s $d = 1.56$. As anticipated, there was no significant difference between the boredom and anger conditions, $t(56) = .98$, $ns$, or between the sadness and anxiety conditions, $t(56) = .69$, $ns$.

Also as expected, perceptions of threat were significantly higher in the anger and anxiety conditions ($M = 5.70, SD = 1.07$) compared to the boredom and sadness conditions ($M = 4.29, SD = 1.55$), $t(56) = 4.17$, $p < .001$, Cohen’s $d = 1.06$. No significant difference emerged between the anger and anxiety conditions $t(56) = .22$, $ns$, nor between the boredom and sadness conditions $t(56) = 1.61$, $ns$. 
Sensemaking  In the present model, sensemaking acts as a mediator between sadness and attentional focus. Given that there is no quantitative measure of sensemaking I have worked to create a short four-item version ($\alpha = .89$) based on accounts of sensemaking in the organizational literature. As this is a new measure, I have followed certain construct validity recommendations, such as attempting to establish convergent and discriminant validity by correlating the scale with other established measures (De Vellis & Dancer, 1991; MacKenzie et al., 2011). Participants completed a set of six scales. Three scales were expected to be positively correlated with sensemaking: need for cognition ($\alpha = .93$), intellectual stimulation ($\alpha = .85$), and openness to experience ($\alpha = .91$). Three scales were expected to be negatively correlated with sensemaking: resistance to change ($\alpha = .88$), traditionalism ($\alpha = .91$), and personal need for structure ($\alpha = .91$).

Findings indicated that three of the six scales were significantly correlated with sensemaking in the hypothesized direction: intellectual stimulation ($r = .40, p < .01$), resistance to change ($r = -.28, p < .05$), and personal need for structure ($r = -.27, p < .05$). While not perfect, the fact that three scales (and three separate constructs, and not just multiple measures of the same construct) were correlated in the hypothesized direction (both positive and negative) is not to be dismissed, and serves as grounds for both convergent and discriminant validity (see Table 2 for correlations among all scales). In prior work, many researchers have examined only one or two scales in attempts to establish convergent and discriminant validity (e.g., Lim & Ivey, 2000; Singh & Krishnan, 2007). For example, in developing a scale of transformational leadership in India, Singh and Krishnan (2007) found that only one scale (multifactor leadership questionnaire; Bass, 1985) was correlated with their measure of transformational leadership in the predicted direction. In creating a measure work-family conflict, Carlson, Kacmar, Wayne, and Grzywacz (2006) established convergent validity with one construct (positive work to family industry).
spillover) and discriminant validity with one construct (family-to-work conflict). However, it is important to note that in this paper, discriminant validity was established by a low positive correlation, and not a negative correlation. In addition, researchers who examined a measure of leadership self-efficacy used three existing measures of the same construct (self-perceived leadership capabilities) to establish convergent validity (Paglis & Green, 2002). Thus, I believe that the fact that three separate scales and three separate constructs significantly correlated in the hypothesized direction with the sensemaking measure meets or exceeds existing standards, and serves as adequate support for convergent and discriminant validity.

In order to determine whether sensemaking is a distinct construct, I followed the construct validity guidelines in Lewis (2003). For each scale that significantly correlated with sensemaking (intellectual stimulation, resistance to change, and personal need for structure) I ran two confirmatory factor analyses (CFA). In the first one, I loaded all items (e.g., sensemaking items and resistance to change items) onto one factor. In the second one I loaded all the sensemaking items onto one factor and all the scale items (e.g., all resistance to change items) on another factor. If the second model shows significantly better fit than the first model, then I can conclude that the two scales form their own factors and are distinct from one another.

Results from the first set of CFAs (sensemaking and resistance to change) indicated that the two constructs are distinct. The fit of the first model, where all the items were loaded onto one factor was \( \chi^2(170) = 445.45, p < .001 \), comparative fit index (CFI) = .57, Tucker-Lewis index (TLI) = .52, root-mean-square error of approximation (RMSEA) = .16, standardized root mean square residual (SRMR) = .14, was significantly worse than the fit statistics for the second model, \( \chi^2(169) = 323.88, p < .001 \), CFI = .76, TLI = .73, RMSEA = .12, SRMR = .10, as indicated by a significant chi-square difference test \( \Delta \chi^2(1) = 121.57, p < .001 \). Thus, the second
model, where the two constructs are loaded on separate factors, showed significantly better fit.

A similar analysis was conducted for sensemaking and personal need for structure. The fit for the first model, $\chi^2(104) = 327.34, p < .001$, CFI = .62, TLI = .56, RMSEA = .19, SRMR = .18, was significantly worse than the fit for the second model, $\chi^2(103) = 197.23, p < .001$, CFI = .84, TLI = .81, RMSEA = .12, SRMR = .13, as suggested by a significant chi-square difference test $\Delta\chi^2(1) = 130.12, p < .001$.

A final test examining sensemaking and intellectual stimulation showed that the fit for the first model, where all the items were loaded onto one factor, $\chi^2(20) = 94.52, p < .001$, CFI = .70, TLI = .57, RMSEA = .25, SRMR = .17, was significantly worse than the fit for the second model, where the items were loaded onto two separate factors, $\chi^2(19) = 25.11, ns$, CFI = .98, TLI = .96, RMSEA = .07, SRMR = .06, as indicated by a significant chi-square difference test $\Delta\chi^2(1) = 69.42, p < .001$. In sum, these three sets of analyses suggest that the sensemaking scale is distinct from resistance to change, personal need for structure, and intellectual stimulation. The negative correlation between sensemaking and both resistance to change and personal need for structure is evidence for discriminant validity, while the positive correlation between intellectual stimulation and sensemaking provides evidence for convergent validity.

I also performed a preliminary test of the effects of emotion on sensemaking (Hypothesis 2). As hypothesized, anxiety increased sensemaking in comparison to boredom $t(56) = 1.87, p < .10$, as did sadness $t(56) = 1.87, p < .10$. Anger did not $t(56) = .21, ns$, providing initial support for the hypothesis.

**Pilot 1 Discussion**

This pilot study provided evidence for the effectiveness of the emotion scenarios. For each scenario both between- and within-person analyses confirmed that participants experienced
the intended emotion significantly more than participants did in the other conditions and significantly more than any other emotions. For example, participants who read the anger scenario reported experiencing more anger than boredom, sadness, anxiety, and positive affect. As a group, those who read the anger scenario experienced more anger than those who read the boredom, sadness, and anxiety scenarios. Thus, I plan to use the scenarios as the emotion induction in Study 1. In addition, by following certain recommendations regarding construct validity, such as establishing content validity and convergent/discriminant validity (MacKenzie et al., 2011), I hope to have demonstrated the utility of the sensemaking measure, and I use it in all three studies.

**Study 1**

I recruited a total of 146 undergraduate participants at the University of Arizona using the Decision Behavior Laboratory (DBL) research pool. The study was advertised on the DBL website as consisting of a series of tasks (e.g., reading a scenario and answering a set of questions) that students completed while wearing a heart rate monitor. If they were interested, students signed up for a one-hour time slot at their convenience. After arriving at the lab, students ($M_{age} = 21.61$, 61% female) were randomly assigned to one of four conditions: boredom ($n = 36$), anger ($n = 36$), sadness ($n = 38$), and anxiety ($n = 36$). Upon random assignment to condition, students completed the emotion induction, manipulation checks, a measure of sensemaking and attentional focus, and then two deviance tasks, all while wearing a heart rate monitor to measure arousal. The students completed all tasks online in their own room.

A G*Power analysis (Faul, Erdfelder, Lang, & Buchner, 2007) determined that a sample size of 128 participants total (32 for each of the four experimental cells) would be adequate to obtain 80% power to detect my hypothesized effects at alpha = 0.05. I aimed for a small-medium
effect size of 0.30 (D’Amico, Neilands, & Zambarano, 2001). When possible I tried to increase the sample size to ensure robustness (see also Pittarello et al., 2015), and ended with a total sample size of 146 participants (18 more than what would be considered adequate), decreasing the likelihood of Type II error.

**Manipulations and Measures**

**Emotion.** Participants read one of the emotion scenarios described in the pilot study.

**Manipulation checks.** Participants completed the same set of manipulation checks as in the pilot study, including a measure of boredom ($\alpha = .92$), anger ($\alpha = .88$), sadness ($\alpha = .79$), anxiety ($\alpha = .83$), positive affect ($\alpha = .89$), perceptions of certainty ($\alpha = .84$), and perceptions of threat ($\alpha = .91$).

**Sensemaking.** Participants answered the same four-item sensemaking measure described in the pilot study ($\alpha = .88$)

**Arousal.** To capture arousal, I measured participants’ heart rate. Several researchers have used heart rate as an operationalization of general arousal, including emotion researchers (Gable & Harmon-Jones, 2013; Herrero-Fernández, 2016; Kerimoglu et al., 2013; Ladouceur et al., 2003; Tod et al., 2005). I captured heart rate using an Empatica E4 wristband, which contains a photoplethysmography sensor that records cardiovascular activity with a sampling frequency of 64 Hz. Before starting the study participants were told to keep their hand still for a three minute baseline period that captured participants’ resting heart rate (Diskin & Hodgins, 2003; Van Bockstaele et al., 2011). The wristband contains an event marker which was used to separate the tasks. Right before participants started the emotion induction they clicked the button, and then they clicked the button right after they finished. This allowed me to measure the average heart rate during the emotion induction, and compare the means across conditions to determine
whether there were any significant differences.

**Attentional focus.** I used the 25-item Behavior Identification Form (BIF) to measure attentional focus (Smith & Trope, 2006), which has been used to capture transient differences in focus (Kim, Lee, & Rua, 2015). The BIF lists different behaviors, such as “filling out a personality test”. Participants are then presented with a six-point anchor scale and asked to indicate the point along the scale that best describes how they see that behavior. At one end is one description of the behavior (e.g., “revealing what you’re like), and at the other end is a second description of the behavior (e.g., “answering questions”). The first description in this example is considered more broad, while the second is considered more narrow. In this example, the higher the participants’ response, the narrower their mindset. Additional example items include “paying the rent” (broad focus: “maintaining a place to live”; narrow focus: “writing a check”) and “taking a test” (broad focus: “showing one’s knowledge”; narrow focus: “answering questions”). Selecting the broader description indicates a mindset that considers several cues, functions or characteristics of a behavior together, as opposed to just one specific one. The hallmarks of a broad focus are flexibility of thought (Fredrickson & Branigan, 2005), over-inclusive categorization (Richards & Kinney, 1990), and cognitive expansiveness (Fredrickson, 2001). In contrast, selecting the narrower description indicates a mindset that is more detail-oriented (Harmon-Jones et al., 2013) and cognitively exclusive (Förster, Liberman, & Kuschel, 2008). For example, viewing the filling out of a personality test as revealing what you’re like suggests that it is not strictly answering questions, but could also mean analyzing past behaviors, assessing overall goals, developing verbal skills, and communicating information. The order of the scales was randomized and counterbalanced such that 12 questions presented the “broader” description on the far right side of the scale and the “narrow” description on the far left side of
the scale. The other 13 questions were in the reverse order. Responses on all 25 questions were averaged and coded such that a higher score indicated a broader mindset ($\alpha = .79$).

**Deviance.** I used rule breaking and interpersonal aggression as two measures of deviance. In the deviance literature, breaking the rules is deviant because it violates organizational expectations, such as conforming to policies, and procedures (Bennett & Robinson, 2000). To assess rule breaking, I used the Joker Task (Pittarello, Motro, Rubaltelli, & Pluchino, 2015) where participants have the opportunity to break the rules for profit. All participants started the task with $100. They were then told that upon completion of the study, a lottery would randomly select two participants to win the actual amount of money earned at the end of the task (Cohen, Wolf, Panter, & Insko, 2011; Gunia, Barnes, & Sah, 2014). The virtual deck included 20 cards labeled from one to ten and 20 “J” cards (“Joker”). In a series of forty trials, two cards from the deck were selected and displayed on the screen next to one another. All cards appeared in a predetermined random order, and each participant saw the same cards displayed in the same order. The rules clearly stated that whenever both cards contained a number between one and ten, participants were allowed to keep all of their money. However, whenever a “J” card appeared on either the left or right side of the screen, participants should report that they saw this card and would consequently lose $4 from the initial $100 that they received. On each trial, after seeing the two cards, participants clicked forward to a different page, where they selected one of two options. One option stated that on the previous page there was no “J” card and that no money should be deducted from the total sum. The other option stated that on the previous page there was a “J” card and that $4 should be deducted from the total sum. Here participants wishing to boost their profits could break the rules by reporting that no “J” card was present when indeed one was. After each trial, participants saw the total sum of money they had left. If participants
reported honestly after 40 trials, they should have earned $20 at the end of the task [$100 – (20 “J” cards x $4)]. Any earnings above $20 constituted rule-breaking, as this indicated that participants did not report seeing “J” cards that were actually present. The total amount of money that participants earned at the end of the task determined the extent to which they did not follow the rules.

To measure interpersonal aggression I used an interactive e-mail task adapted from Christian and Ellis (2011) and Evans and Gilliland (2006). In this task, participants were told that the business school is hoping to implement an online mentoring program where senior business students answer questions from undergraduate applicants about the workload, professors, class schedules, etc. Participants were told that the school is pilot-testing the program and asked them to respond to two emails (one from “Raj” and one from “Jessica”) that were worded informally and contained spelling and grammar errors. Two coders, blind to condition and to the ratings of the other reviewer, coded the participants’ responses on a scale from (1) very unaggressive to (7) very aggressive, based on Robinson and Bennett’s (1995) description of interpersonally deviant behaviors (e.g., hurtful statements, harsh tone, insults, cursing, ridiculing, embarrassing or rude remarks), and the severity and frequency of the comments. Raters were told that very aggressive responses often included belittling statements and lacked greetings or signatures. Conversely, unaggressive emails were characterized as kind, polite, friendly, and courteous, and had a warm tone. I followed the same procedure for determining inter-rater agreement as Christian and Ellis (2011). Each of the two emails was rated by the same two reviewers who were blind to condition and to the ratings of the other reviewer. As each email was rated by the same two reviewers randomly selected from the larger population I used ICC(2) as the indicator of inter-rater agreement (Shrout & Fleiss, 1979). The ICC(2) for the email to Raj was .84 and the email to
Jessica was .82, signifying strong agreement (Bliese, 2000; LeBreton & Senter, 2008). Thus, I created a score for each email that equaled the average of the two reviewers’ ratings. As the scores on the two emails were significantly correlated ($r = .46, p < .001$), I averaged the scores of the two emails for each participant to form a composite measure of interpersonal aggression.

**Results**

See Table 3 for means and standard deviations. See Table 4 for correlations among study variables. As in the first pilot study, for each of the emotion manipulation checks I expected that participants would both (1) report feeling that particular emotion significantly more than any other condition (e.g., those in the boredom condition would report experiencing more boredom than those in the anger, anxiety, or sadness condition), and (2) those within each emotion condition would report experiencing that emotion significantly more than any other emotion (e.g., those in the boredom condition would report feeling significantly more bored than angry, sad, anxious or positive affect). In terms of perceptions of certainty, I expected that there would be no significant difference between anger and boredom, but that perceptions would be significantly lower among those in the anxiety and sadness conditions. Regarding perceptions of threat, I expected no significant difference between boredom and sadness. Rather, I expected that perceptions of threat would be significantly higher among participants in the anger and anxiety conditions.

**Boredom condition.** Participants in the boredom condition reported feeling significantly more bored ($M = 7.56, SD = 1.23$) than participants in the anger condition, sadness condition, and anxiety condition together ($M = 2.76, SD = 1.72$), $t(142) = 15.87, p < .001$, Cohen’s $d = 3.21$. Using the same repeated measures ANOVA strategy as in the pilot study, a set of planned contrasts indicated that participants in the boredom condition reported experiencing more
boredom than anger \((M = 3.98, SD = 1.97)\), MD = 3.58, SE = .40, \(p < .001\); sadness \((M = 3.79, SD = 1.77)\), MD = 3.77, SE = .41, \(p < .001\); or anxiety \((M = 3.15, SD = 1.37)\), MD = 4.41, SE = .42, \(p < .001\).

**Anger condition.** Participants in the anger condition reported feeling significantly more angry \((M = 6.17, SD = 2.26)\) than participants in the boredom condition, sadness condition, and anxiety condition overall \((M = 3.05, SD = 1.79)\), \(t(142) = 8.83, p < .001\), Cohen’s \(d = 1.53\). A set of planned contrasts showed that participants within the anger condition reported experiencing more anger than boredom \((M = 3.22, SD = 2.03)\), MD = 2.94, SE = .40, \(p < .001\); sadness \((M = 4.53, SD = 2.10)\), MD = 1.64, SE = .31, \(p < .001\); or anxiety \((M = 5.08, SD = 2.05)\), MD = 1.08, SE = .30, \(p < .001\).

**Sadness condition.** Participants in the sadness condition reported feeling significantly more sad \((M = 5.53, SD = 1.86)\) than participants in the boredom condition, anger condition, and anxiety condition \((M = 4.30, SD = 2.06)\), \(t(142) = 3.26, p < .01\), Cohen’s \(d = .63\). A series of planned contrasts indicated that participants within the sadness condition reported experiencing more sadness than boredom \((M = 2.87, SD = 1.53)\), MD = 2.65, SE = .40, \(p < .001\); anger \((M = 2.41, SD = 1.49)\), MD = 3.11, SE = .30, \(p < .001\); and anxiety \((M = 4.42, SD = 2.00)\), MD = 1.11, SE = .31, \(p < .01\).

**Anxiety condition.** Participants in the anxiety condition reported feeling significantly more anxious \((M = 6.15, SD = 1.73)\) than participants in the boredom condition, anger condition, and sadness condition \((M = 4.22, SD = 1.98)\), \(t(142) = 5.56, p < .001\), Cohen’s \(d = 1.04\). A set of planned contrasts showed that participants within the anxiety condition reported experiencing more anxiety than boredom \((M = 2.16, SD = 1.40)\), MD = 3.98, SE = .42, \(p < .001\); anger \((M = 2.79, SD = 1.53)\), MD = 3.36, SE = .30, \(p < .001\); and sadness \((M = 4.58, SD = 2.22)\), MD = 1.56,
SE = .32, p < .001. Once again, there was no effect of emotion on positive affect, \( F(3, 142) = 1.83, \text{ns} \).

**Perceptions of certainty and threat.** As expected, perceptions of certainty were significantly lower in the sadness and anxiety conditions (\( M = 3.38, SD = 1.44 \)) compared to the boredom and anger conditions (\( M = 4.42, SD = 1.26 \)), \( t(142) = 4.65, p < .001, \text{Cohen’s} \ d = .77 \). As anticipated, there was no significant difference between the boredom and anger conditions, \( t(142) = 1.01, \text{ns} \), or between the sadness and anxiety conditions, \( t(142) = .76, \text{ns} \).

In addition, perceptions of threat were significantly higher in the anger and anxiety conditions (\( M = 5.20, SD = 1.23 \)) compared to the boredom and sadness conditions (\( M = 3.19, SD = 1.21 \)), \( t(142) = 9.96, p < .001, \text{Cohen’s} \ d = 1.65 \). No significant difference was observed between the anger and anxiety conditions \( t(142) = .08, \text{ns} \), nor between the boredom and sadness conditions \( t(142) = 1.47, \text{ns} \).

**Hypothesis Testing**

Prior to testing the formal hypotheses I examined the main effects, which stated that deviance would be significantly higher in the anger and anxiety conditions compared to boredom, and that deviance would be significantly lower in the sadness condition compared to boredom. I computed a series of Fisher’s least significant difference tests (LSD) because prior researchers have “used Fisher’s least significant difference (LSD), as recommended by Howell [1997] for good power in comparing groups without producing alpha inflation” (Levy & Pashler, 2001, p. 864). The tests indicated that rule breaking was higher in the anger condition compared to the boredom condition, mean difference (MD) = 9.22, standard error (SE) = 5.22, \( p < .10, \text{Cohen’s} \ d = .37 \), as was interpersonal aggression between the anger condition and the boredom condition, MD = .34, SE = .19, \( p < .10, \text{Cohen’s} \ d = .42 \). In addition, there was a difference between
anxiety and boredom on rule breaking, MD = 10.89, SE = 5.22, p < .05, Cohen’s d = .44, and on interpersonal aggression, MD = .33, SE = .19, p < .10, Cohen’s d = .43. Furthermore, rule breaking was lower in the sadness condition, MD = 9.50, SE = 5.15, p < .10, Cohen’s d = .61 as was interpersonal aggression, MD = .44, SE = .19, p < .05, Cohen’s d = .54. There was no significant difference in rule breaking between anxiety and anger, MD = 1.67, SE = 5.22, ns or in interpersonal aggression, MD = .01, SE = .19, ns. This provides moderate support for my predictions regarding the main effects of emotion on deviance.

To examine Hypothesis 1, I performed a series of Fisher’s LSD tests with emotion as the independent variable and arousal during the emotion task (as indicated by average heart rate) as the dependent variable. I hypothesized that heart rate would be significantly higher in the anxiety and anger conditions, but not in the sadness condition. In support of Hypothesis 1a, participants in the anxiety condition experienced significantly higher arousal than participants in the boredom condition, MD = 11.84, SE = 2.70 p < .001, Cohen’s d = 1.09. Supporting Hypothesis 1b, participants in the anger condition experienced significantly higher arousal than those in the boredom condition, MD = 11.44, SE = 2.68 p < .001, Cohen’s d = 1.01. In support of Hypothesis 1c, there was no significant difference in arousal between boredom and sadness, MD = 2.57, SE = 2.70, ns. There was no significant difference in arousal between anxiety and anger, MD = .40, SE = 2.74, ns. I also compared participant heart rate during the three minute baseline period to heart rate during the emotion manipulation. I ran a 4 × 2 repeated measures ANOVA with emotion as the between-person factor (boredom condition, anger condition, sadness condition, anxiety condition), and heart rate as the within-person factor (baseline heart rate, heart rate during the emotion induction). Planned contrasts (which controlled for alpha inflation using a Bonferroni correction) revealed that within the anger condition, there was a significant increase
in heart rate between the baseline period and the emotion period, MD = 9.90, SE = 2.52, \( p < .001 \).

A similar jump was also observed in the anxiety condition, MD = 7.43, SE = 2.56, \( p < .01 \). No significant difference was observed in the sadness condition, MD = 2.21, SE = 2.48, \( ns \), or in the boredom condition, MD = 3.49, SE = 2.56, \( ns \).

I conducted a set of Fisher’s LSD tests with emotion as the independent variable and sensemaking as the dependent variable to test Hypothesis 2. I expected sensemaking to be significantly higher in the anxiety and sadness condition, but not in the anger condition. As hypothesized, sensemaking was significantly higher in the anxiety condition compared to the boredom condition, MD = .88, SE = .31, \( p < .01 \), Cohen’s \( d = .64 \), supporting Hypothesis 2a. Sensemaking was also significantly higher in the sadness condition in comparison to the boredom condition, MD = .63, SE = .30, \( p < .05 \), Cohen’s \( d = .46 \), supporting Hypothesis 2b. In support of Hypothesis 2c, there was no significant difference between boredom and anger, MD = .10, SE = .31, \( ns \). There was no difference in sensemaking between the anxiety condition and sadness condition, MD = .25, SE = .30, \( ns \).

Hypothesis 3 predicted mediation, such that arousal would mediate the narrowing effect of anger on attentional focus. First, it is important to note that there was no main effect of anger on attentional focus, \( r(142) = .51, ns \), making it unlikely that any indirect effects will be observed. However, in order to test an indirect effect I conducted a mediation analysis using the PROCESS macro for SPSS (Hayes, 2015) to perform bootstrapping analyses using 20,000 bootstrap resamples (Preacher & Hayes 2008; Shrout & Bolger 2002). Entering emotion as the independent variable (anger versus boredom), attentional focus as the dependent variable and arousal as the mediator, I estimated the indirect effects using unstandardized regression coefficients. The 95% bias-corrected confidence intervals (BCCI) did include zero, \( b = .04, \)
standard error (SE) = .10, CI [-.13, .25], indicating that the indirect effects were not significant at the $p < .05$ level and that mediation was not present (Preacher & Hayes, 2008; Shrout & Bolger 2002), failing to support Hypothesis 3.

Hypothesis 4 also predicted mediation where arousal would mediate the effect of anxiety on attentional focus, which I tested using the same technique as Hypothesis 3. I entered emotion as the independent variable (anxiety versus boredom), attentional focus as the dependent variable and arousal as the mediator, once again estimating the indirect effects using unstandardized regression coefficients. The 95% bias-corrected confidence intervals (BCCI) did include zero, $b = -.02$, $SE = .11$, CI: [-.19, .25], indicating that the indirect effects were not significant at the $p < .05$ level and that mediation was not present, failing to support Hypothesis 4. There was no main effect of anxiety on attentional focus, $t(142) = .32, ns$.

I used the same approach to test Hypothesis 5, which hypothesized an indirect effect of emotion (boredom versus sadness) on attentional focus through sensemaking. The 95% bias-corrected confidence intervals (BCCI) did include zero, $b = .10$, $SE = .07$, CI: [-.01, .31], indicating that the indirect effects were not significant at the $p < .05$ level and that mediation was not present, providing no support for Hypothesis 5. There was no main effect of sadness on attentional focus, $t(142) = .81, ns$. The lack of support for Hypotheses 3-5 indicates that attentional focus is not a significant mediator in this model.

Hypothesis 6 predicted sequential mediation such that the positive effect of anger on deviance is mediated through arousal first and attentional focus second. Given that attentional focus is not a significant predictor it is unlikely that there will be support for sequential mediation with deviance as the outcome. There were two operationalizations of deviance, rule-breaking and interpersonal aggression. Once again using the PROCESS macro I entered emotion
(anger versus boredom) as the independent variable, arousal as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no support for sequential mediation using unstandardized regression coefficients, $b = -.14, SE = .59$, 95% CI: [-2.48, .38], nor was there support for the simple indirect effect of anger on rule breaking through arousal, $b = 1.34, SE = 3.16$, 95% CI: [-5.13, 7.59], or through attentional focus, $b = .48, SE = 1.36$, 95% CI: [-.72, 5.77]. I ran the same analysis using interpersonal aggression as the dependent variable. There was no support for sequential mediation, $b = .00, SE = .02$, 95% CI: [-.03, .05], nor was there support for the simple indirect effect of anger on interpersonal aggression through arousal, $b = .00, SE = .08$, 95% CI: [-.17, .14]. There was also no simple indirect effect of anger on interpersonal aggression through attentional focus, $b = .00, SE = .04$, 95% CI: [-.12, .06]. In sum, there was no support for Hypothesis 6.

Similar to Hypothesis 6, Hypothesis 7 suggested sequential mediation such that the effect of anxiety on deviance is mediated through arousal first and attentional focus second. I entered emotion (anxiety versus boredom) as the independent variable, arousal as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no evidence for sequential mediation using unstandardized regression coefficients, $b = .09, SE = .83$, 95% CI: [-1.45, 1.61]. There was no evidence for a simple indirect effect of anxiety on rule breaking through arousal, $b = 4.57, SE = 3.59$, 95% CI: [-1.04, 13.27], or through attentional focus, $b = -.01, SE = 1.66$, 95% CI: [-2.85, 3.72]. Entering interpersonal aggression as the dependent variable, there was no support for sequential mediation, $b = .00, SE = .03$, 95% CI: [-.07, .06], nor was there evidence for a simple indirect effect of anxiety on interpersonal aggression through arousal, $b = -.04, SE = .10$, 95% CI: [-.27, .14], or through attentional focus, $b = .00, SE = .07$, 95% CI: [-.14, .14], offering no support for Hypothesis 7.
Hypothesis 8 hypothesized sequential mediation such that the effect of sadness on deviance is mediated through sensemaking first and attentional focus second. I entered emotion (sadness versus boredom) as the independent variable, sensemaking as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no evidence for sequential mediation, $b = -.07, SE = .23, 95\% CI: [-.97, .19]$. There was no evidence for a simple indirect effect of sadness on rule breaking through sensemaking, $b = .58, SE = .94, 95\% CI: [-.45, 3.81]$, or through attentional focus, $b = .16, SE = .57, 95\% CI: [-.50, 2.32]$. Entering interpersonal aggression as the dependent variable, there was no support for sequential mediation, $b = -.03, SE = .03, 95\% CI: [-.12, .00]$, nor was there evidence for a simple indirect effect of sadness on interpersonal aggression through sensemaking, $b = -.01, SE = .05, 95\% CI: [-.14, .06]$, or through attentional focus, $b = .08, SE = .07, 95\% CI: [-.02, .26]$, offering no support for Hypothesis 8.

**Study 1 Discussion**

Taken together, there is moderate support for some of the main effects in the model. Both anger and anxiety increased both types of deviance while sadness decreased deviance compared to boredom, as expected (see the Study 1 column of Table 11 for more specific information on the supported hypotheses). However, there was no evidence for mediation, either simple or sequential. It is difficult to pinpoint the exact reasons why there was no mediation present because the manipulation checks indicated that the emotions were successfully induced.

However, one limitation of using the scenarios as an emotion induction is that I explicitly used emotion words and phrases such as “you feel yourself getting more and more angry” in the anger scenario and “you feel extremely anxious at this point” in the anxiety scenario. This may have alerted participants to the purpose of the induction, meaning that they knew the study might
be about emotion. However, I do not believe this would influence the findings for two reasons. First, even if the participants knew, for example, they were supposed to report being angry, the fact that I observed significant effects on objective measures such as physiological arousal and deviant behavior suggests that they were indeed feeling anger, and not just superficially communicating that they felt anger on the manipulation check. Second, even if participants knew the study was about emotion it is unclear how that knowledge would bias their behaviors downstream. There is no research to suggest a lay theory (i.e., a fundamental expectation about different relationships in the environment that changes among individuals; Molden & Dweck, 2006) of emotion, arousal, sensemaking, attentional focus, and deviance that would prime participants to behave in a way based on their previous scientific knowledge about the relationship among these five constructs. Regardless, it could be that with a different emotion induction, different results will be observed. While apparently effective, imagining that one is the person described in a scenario might be less powerful than recalling an event that occurred in one’s own life, which is the induction used in the second pilot study and Study 2. Remembering an emotional event in one’s past is significantly more personal and intimate than a hypothetical scenario, and almost ensures that the individual will feel that particular emotion as it is an event they themselves have deemed emotional. This could potentially expose indirect effects that are absent in Study 1. Before running Study 2, I conducted a second pilot study meant to assess the effectiveness of the writing induction.

Pilot Study 2 (Writing)

To conduct the second pilot study, I recruited 82 participants from Microworkers ($M_{\text{age}} = 32.87$, 56% female) using the same strategy as the first pilot study. Interested workers were randomly assigned to one of four conditions: boredom ($n = 19$), anger ($n = 20$), sadness ($n = 21$),
and anxiety ($n = 22$), and completed the emotion induction and a set of manipulation checks.

**Manipulations and Measures**

**Emotion.** All emotions were experimentally induced by the writing task developed by Strack, Schwarz, and Gschneidinger (1985) and validated in multiple studies since (Dunn and Schweitzer, 2005; Huntsinger, 2013; Kugler et al., 2010; Lerner & Keltner, 2001; Norton & Gino, 2014; Tiedens & Linton, 2001; Todd, Forstmann, Burgmer, Brooks, & Galinsky, 2015). Participants were asked to write in detail (at least two paragraphs) about a time when they vividly experienced either anger, sadness, anxiety, or boredom in the past two years. They were asked to imagine how the specific emotion felt, to describe the experience of the emotion, and to avoid including any other feelings in their descriptions. It was strongly emphasized to participants that they should imagine that they are experiencing the event they just wrote about *right now at this moment.*

**Manipulation checks.** Participants completed the same set of manipulation checks as Study 1, which was comprised of a measure of boredom ($\alpha = .87$), anger ($\alpha = .88$), sadness ($\alpha = .77$), anxiety ($\alpha = .81$), positive affect ($\alpha = .92$), perceptions of certainty ($\alpha = .71$), and perceptions of threat ($\alpha = .91$).

**Results**

See Table 5 for means and standard deviations among study variables.

**Boredom condition.** Participants in the boredom condition reported feeling significantly more bored ($M = 7.00, SD = 2.10$) than participants in the anger condition, sadness condition, and anxiety condition combined ($M = 2.14, SD = 1.25$), $t(78) = 12.47, p < .001$, Cohen’s $d = 2.81$. A set of planned contrasts in a repeated measures ANOVA (see prior studies for analytic strategy) indicated that participants within the boredom condition reported experiencing more
boredom than anger ($M = 4.68, SD = 2.49$), MD = 2.32, SE = .52, $p < .001$; sadness ($M = 4.58, SD = 2.21$), MD = 2.42, SE = .48, $p < .001$; and anxiety ($M = 3.20, SD = 1.71$), MD = 3.80, SE = .52, $p < .001$.

**Anger condition.** Participants in the anger condition reported feeling significantly more angry ($M = 7.53, SD = 1.21$) than participants in the boredom condition, sadness condition, and anxiety condition overall ($M = 4.22, SD = 2.33$), $t(78) = 6.03, p < .001$, Cohen’s $d = 1.78$. Planned contrasts revealed that participants within the anger condition reported experiencing more anger than boredom ($M = 1.85, SD = 1.35$), MD = 5.68, SE = .50, $p < .001$; sadness ($M = 4.83, SD = 2.08$), MD = 2.70, SE = .49, $p < .001$; and anxiety ($M = 3.90, SD = 1.99$), MD = 3.63, SE = .49, $p < .001$.

**Sadness condition.** Participants in the sadness condition reported feeling significantly more sad ($M = 7.21, SD = 1.59$) than participants in the boredom condition, anger condition, and anxiety condition ($M = 4.70, SD = 2.12$), $t(78) = 4.90, p < .001$, Cohen’s $d = 1.34$. A series of planned contrasts showed that participants within the sadness condition reported experiencing significantly more sadness than boredom ($M = 2.25, SD = 1.02$), MD = 4.95, SE = .46, $p < .001$; anger ($M = 4.08, SD = 2.08$), MD = 3.13, SE = .48, $p < .001$; and anxiety ($M = 4.90, SD = 1.95$), MD = 2.30, SE = .42, $p < .001$.

**Anxiety condition.** Participants in the anxiety condition reported feeling significantly more anxious ($M = 6.03, SD = 2.13$) than participants in the boredom condition, anger condition, and sadness condition ($M = 4.03, SD = 1.99$), $t(78) = 4.16, p < .001$, Cohen’s $d = .97$). A set of planned contrasts indicated that participants within the anxiety condition reported experiencing more anxiety than boredom ($M = 2.30, SD = 1.35$), MD = 3.73, SE = .49, $p < .001$; anger ($M = 3.95, SD = 2.45$), MD = 2.08, SE = .47, $p < .001$; and sadness ($M = 4.68, SD = 2.17$), MD = 1.35,
SE = .41, p < .01. Overall, there was no effect of emotion condition on positive affect $F(3, 78)$ = .20, ns.

**Perceptions of certainty and threat.** Contrary to expectations, perceptions of certainty were not significantly lower in the sadness and anxiety conditions ($M = 4.37, SD = 1.06$) compared to the boredom and anger conditions ($M = 4.81, SD = 1.31$), $t(78) = 1.66, ns$. There was no significant difference between the boredom and anger conditions, $t(78) = .46, ns$, or between the sadness and anxiety conditions, $t(78) = .72, ns$.

However, as expected, perceptions of threat were significantly higher in the anger and anxiety conditions ($M = 4.94, SD = 1.51$) compared to the boredom and sadness conditions ($M = 3.12, SD = 1.27$), $t(78) = 5.88, p < .001$, Cohen’s $d = 1.30$. No significant difference emerged between the anger and anxiety conditions $t(78) = 1.52, ns$, nor between the boredom and sadness conditions $t(78) = .43, ns$.

**Pilot 2 Discussion**

The present findings indicate that the writing induction, while effective in inducing the emotion and anticipated perceptions of threat, was not successful in generating the appropriate appraisals of certainty. Even though it was strongly emphasized to participants that they should reimagine experiencing the written event without knowing what the outcome was, it may have been challenging for them to actually do so. In retrospect, it could be that asking participants to think of an event in the past and presume that they would be able to act is if they were uncertain of what was to come was simply not realistic, as the outcome of the event was likely to be at least somewhat known (thereby increasing perceptions of certainty). According to cognitive dissonance theory, perceptions of uncertainty are highly discomforting (Festinger, 1957; Franks, 2004), and participants are likely motivated to take advantage of what tools they have to reduce
uncertainty. Recalling the outcome of the uncertain event that occurred with the past two years (either consciously or subconsciously) is likely an effective method in reducing any cognitive discomfort. Two years is also probably a long enough time period for the outcome of the event to unfold with some degree of certainty. I address this issue in Study 2 by changing the instructions of the task to think of something that currently makes participants experience the emotion (boredom, anger, sadness, anxiety), so that the outcome of the event that the participants write about is significantly less likely to be known and thus associated with lower perceptions of certainty. In short, I have changed the temporal framing of the study from the past tense to the present tense. However, it is nonetheless important to point out that the likelihood that the unsupported prediction regarding uncertainty is a manifestation of a greater flaw in appraisal theory is low, as the scenario tasks and the video tasks were successful in instilling the appropriate levels of certainty and threat perceptions.

**Study 2**

This study was conducted using a sample of 139 undergraduate participants from the University of Arizona using the same recruitment strategy as Study 1 ($M_{age} = 21.04$, 59% female). Participants were randomly assigned to one of the four emotion conditions: boredom ($n = 34$), anger ($n = 34$), sadness ($n = 35$) and anxiety ($n = 36$). The format of the study was exactly the same as Study 1 except for the emotion induction. Upon random assignment to condition, participants completed the writing task, manipulation checks, a measure of sensemaking, a measure of attentional focus, and then two deviance tasks, all while wearing the heart rate monitor. As in Study 1, I conducted a G*Power analysis, which again showed that that a sample size of 128 participants total (32 for each of the four experimental cells) would be adequate to obtain 80% power to detect my hypothesized effects at alpha = 0.05 with a small-medium effect
size of 0.30. As I tried to increase the sample size to increase robustness, I collected a total sample of 139 participants (11 more than what would be considered adequate), lowering the probability of Type II error.

**Manipulations and Measures**

**Emotion.** All emotions were experimentally induced by the writing task developed by Strack et al. (1985). However, this time participants were asked to write in detail about something (in the present) that makes them vividly experience either boredom, anger, sadness, or anxiety. They were asked to imagine how the specific emotion felt, to describe the experience of the emotion, and to avoid including any other feelings in their descriptions. It was strongly emphasized to participants that they should imagine that they are experiencing the event right now.

**Manipulation checks.** Participants completed the same set of manipulation checks as Study 1, including a measure of boredom (α = .73), anger (α = .91), sadness (α = .86), anxiety (α = .83), positive affect (α = .90), perceptions of certainty (α = .82), and perceptions of threat (α = .90).

**Arousal.** The same measure of arousal was used as in Study 1, where participants wore an Empatica E4 wristband that marked when they began the emotion induction and when they ended the emotion induction.

**Sensemaking.** Participants completed the same measure of sensemaking used in Study 1 (α = .89).

**Attentional focus.** Participants completed the same measure of attentional focus used in Study 1 (α = .76).

**Deviance.** Participants completed the same two measures of deviance used in Study 1.
For the measure of interpersonal aggression, I followed the same procedure for determining inter-rater agreement. Each email was rated by the same two reviewers, who were briefed on what an aggressive email looked like, and who were blind to condition and to the ratings of the other reviewer. The ICC(2) for the email to Raj was .71 and the email to Jessica was .81, indicating strong agreement (Bliese, 2000; LeBreton & Senter, 2008). I created a score for each email that equaled the average of the two reviewers’ ratings, and given that the scores on the two emails were significantly correlated ($r = .44$, $p < .001$), I averaged the scores of the two emails to form a composite measure of interpersonal aggression.

**Results**

See Table 6 for means and standard deviations. See Table 7 for correlations among study variables.

**Boredom condition.** Participants in the boredom condition reported feeling significantly more bored ($M = 4.94$, $SD = 1.57$) than participants in the anger condition, sadness condition, and anxiety condition ($M = 3.36$, $SD = 1.79$), $t(135) = 4.57$, $p < .001$, Cohen’s $d = .94$. A set of planned contrasts (see prior studies for analytic strategy) showed that participants within the boredom condition reported experiencing more boredom than anger ($M = 2.66$, $SD = 1.45$), MD = 2.28, SE = .36, $p < .001$; sadness ($M = 2.95$, $SD = 1.80$), MD = 1.99, SE = .42, $p < .001$; and anxiety ($M = 2.77$, $SD = 1.57$), MD = 2.18, SE = .36, $p < .001$.

**Anger condition.** Participants in the anger condition reported feeling significantly more angry ($M = 5.63$, $SD = 2.28$) than participants in the boredom condition, sadness condition, and anxiety condition ($M = 2.75$, $SD = 1.77$), $t(135) = 7.62$, $p < .001$, Cohen’s $d = 1.41$. A series of planned contrasts showed that participants within the anger condition reported experiencing more anger than boredom ($M = 3.37$, $SD = 1.72$), MD = 2.26, SE = .36, $p < .001$; sadness ($M =
4.37, SD = 2.18), MD = 1.26, SE = .35, p < .001; and anxiety (M = 3.68, SD = 1.70), MD = 1.95, SE = .35, p < .001.

**Sadness condition.** Participants in the sadness condition reported feeling significantly more sad (M = 5.42, SD = 2.01) than participants in the boredom condition, anger condition, and anxiety condition combined (M = 3.36, SD = 2.12), t(135) = 5.19, p < .001, Cohen’s d = 1.00. A set of planned contrasts indicated that participants within the sadness condition reported experiencing more sadness than boredom (M = 3.40, SD = 1.87), MD = 2.02, SE = .41, p < .001; anger (M = 2.81, SD = 1.74), MD = 2.61, SE = .34, p < .001; and anxiety (M = 3.51, SD = 1.79), MD = 1.91, SE = .34, p < .001.

**Anxiety condition.** Participants in the anxiety condition reported feeling significantly more anxiety (M = 5.38, SD = 1.49) than participants in the boredom condition, anger condition, and sadness condition (M = 3.32, SD = 1.72), t(135) = 6.48, p < .001, Cohen’s d = 1.28. Planned contrasts indicated that participants within the anxiety condition reported experiencing more anxiety than boredom (M = 3.31, SD = 1.83), MD = 2.07, SE = .35, p < .001; anger (M = 2.77, SD = 2.09), MD = 2.61, SE = .34, p < .001; and sadness (M = 2.80, SD = 2.05), MD = 2.58, SE = .33, p < .001. Overall, there was no effect of emotion condition on positive affect, F(3, 135) = 1.14, ns.

**Perceptions of certainty and threat.** As expected, perceptions of certainty were significantly lower in the sadness and anxiety conditions combined (M = 2.98, SD = .91) compared to the boredom and anger conditions combined (M = 4.25, SD = 1.11), t(135) = 7.42, p < .001, Cohen’s d = 1.25. As anticipated, there was no significant difference between the boredom and anger conditions, t(135) = 1.85, ns, or between the sadness and anxiety conditions, t(135) = .45, ns. Thus, shifting the temporal framing from thinking about an event in the past two
years to thinking about a current event taking place in the present appeared to be successful in
inducing the appropriate perceptions of certainty. This is likely due to the fact that participants
are not entirely certain of what the outcomes of the current event will be in the near future.

Also as expected, perceptions of threat were significantly higher in the anger and anxiety
conditions ($M = 4.95, SD = .93$) compared to the boredom and sadness conditions ($M = 2.84, SD
= 1.17$), $t(135) = 11.92, p < .001$, Cohen’s $d = 2.00$. No significant difference emerged between
the anger and anxiety conditions $t(135) = .77$, $ns$, nor between the boredom and sadness
conditions $t(135) = 1.91$, $ns$.

These results point to the effectiveness of the writing induction and show that changing
the instructions from the past tense to the present tense appeared to solve the issue regarding
appraisals of certainty.

**Hypothesis Testing**

Before examining the formal hypotheses I tested the main effects, which stated that
deviance would be significantly higher in the anger and anxiety conditions compared to boredom,
and that deviance would be significantly lower in the sadness condition compared to boredom. I
used Fisher’s LSD tests to show that rule breaking was significantly higher in the anger
condition compared to the boredom condition, $MD = 11.18$, $SE = 5.53, p < .05$, Cohen’s $d = .42$
as was interpersonal aggression, $MD = .43$, $SE = .20, p < .05$, Cohen’s $d = .48$, as expected. In
addition, rule breaking, $MD = 11.14$, $SE = 5.57, p < .05$, Cohen’s $d = .65$, and interpersonal
aggression, $MD = .44$, $SE = .20, p < .05$, Cohen’s $d = .55$, were significantly lower in the sadness
condition compared to the boredom condition, as expected. However, there was no difference
between anxiety and boredom on rule breaking, $MD = 2.46$, $SE = 5.45$, $ns$, or interpersonal
aggression, $MD = .01$, $SE = .20, ns$. Thus, it is unlikely that any hypotheses examining the
processes underlying anxiety and deviance will be supported.

To test Hypothesis 1, I performed a set of LSD tests with emotion as the independent variable and arousal during the emotion task (as indicated by average heart rate) as the dependent variable. I expected heart rate to be significantly higher in the anxiety and anger conditions, but not in the sadness condition. In partial support of Hypothesis 1a, participants in the anxiety condition experienced marginally higher arousal than participants in the boredom condition, MD = 6.10, SE = 3.28, p < .10, Cohen’s d = .60. Supporting Hypothesis 1b, participants in the anger condition experienced significantly higher arousal than those in the boredom condition, MD = 9.00, SE = 3.36, p < .01, Cohen’s d = .71. In support of Hypothesis 1c, there was no significant difference in arousal between boredom and sadness, MD = 3.73, SE = 3.36, ns. There was no significant difference in arousal between the anxiety and anger conditions, MD = 2.85, SE = 3.26, ns. Furthermore, I ran a repeated measures ANOVA similar to that in Study 1, where I entered emotion as the between-person factor and heart rate as the within-person factor. The planned contrasts, which controlled for alpha inflation through a Bonferroni correction, showed that within the anger condition, there was a significant jump in heart rate from the baseline period to the emotion period, MD = 6.39, SE = 1.97, p < .01. Heart rate similarly significantly increased in the anxiety condition, MD = 3.76, SE = 1.82, p < .05. No significant increased occurred in the sadness condition, MD = .18, SE = 1.94, ns, or in the boredom condition, MD = 2.06, SE = 1.94, ns.

In order to test Hypothesis 2, I conducted a one-way ANOVA with emotion as the independent variable and sensemaking as the dependent variable. I expected sensemaking to be significantly higher in the anxiety and sadness condition, but not the anger condition. Sensemaking was significantly higher in the anxiety condition compared to the boredom
condition, MD = 1.50, SE = .32, \( p < .001 \), Cohen’s \( d = 1.21 \), supporting Hypothesis 2a.

Sensemaking was also significantly higher in the sadness condition in comparison to the boredom condition, MD = 1.77, SE = .32, \( p < .001 \), Cohen’s \( d = 1.32 \), supporting Hypothesis 2b. In support of Hypothesis 2c, there was no significant difference between boredom and anger, MD = .52, SE = .32, \( ns \). A supplemental test showed no difference in sensemaking between the anxiety and sadness conditions, MD = .27, SE = .31, \( ns \).

Hypothesis 3 predicted mediation, such that arousal would mediate the narrowing effect of anger on attentional focus. Contrary to expectations, there was no main effect of anger on attentional focus, \( t(142) = .51, ns \). To test the indirect effect I conducted a mediation analysis using the same strategy as Study 1 (Preacher & Hayes 2008; Shrout & Bolger 2002). Entering emotion as the independent variable (anger versus boredom), attentional focus as the dependent variable and arousal as the mediator, I estimated the indirect effects using unstandardized regression coefficients. The 95% bias-corrected confidence intervals (BCCI) did include zero, \( b = -.05, SE = .10, CI [-.26, .13] \), indicating that the indirect effects were not significant at the \( p < .05 \) level and that mediation was not present, failing to support Hypothesis 3.

Hypothesis 4 also predicted mediation where arousal would mediate the effect of anxiety on attentional focus, which I tested using the same technique as Hypothesis 3. I entered emotion as the independent variable (anxiety versus boredom), attentional focus as the dependent variable and arousal as the mediator. The 95% bias-corrected confidence intervals (BCCI) did include zero, \( b = -.02, SE = .05, CI [-.14, .05] \), indicating that the indirect effects were not significant and that mediation was not present, failing to support Hypothesis 4. In addition, there was no main effect of anxiety on attentional focus, \( t(135) = .56, ns \).

I used the same approach to test Hypothesis 5, which hypothesized an indirect effect of
emotion (boredom versus sadness) on attentional focus through sensemaking. As done previously, I estimated the indirect effects using unstandardized regression coefficients. The 95% bias-corrected confidence intervals (BCCI) did include zero, $b = -.02, SE = .10, CI: [-.22, .18]$, indicating that the indirect effects were not significant at the $p < .05$ level and that mediation was not present, providing no support for Hypothesis 5. There was no main effect of sadness on attentional focus, $t(135) = .21, ns$. The lack of support for Hypotheses 3-5 shows again that attentional focus does not appear to be a significant factor in this model.

Hypothesis 6 suggested sequential mediation such that the positive effect of anger on deviance is mediated through arousal first and attentional focus second. Given that attentional focus is not a significant predictor it is unlikely that there will be support for sequential mediation with deviance as the outcome. There were two operationalizations of deviance. The first one was rule breaking and the second was interpersonal aggression. Using the PROCESS macro I entered emotion (anger versus boredom) as the independent variable, arousal as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no support for sequential mediation using unstandardized regression coefficients, $b = .10, SE = .57, 95\% CI: [-.55, 2.14]$, nor was there support for the simple indirect effect of anger on rule breaking through arousal, $b = -2.48, SE = 2.42, 95\% CI: [-8.67, 1.15]$, or through attentional focus, $b = -.22, SE = 1.13, 95\% CI: [-4.35, 1.06]$. I ran the same analysis using interpersonal aggression as the dependent variable. There was no support for sequential mediation, $b = -.01, SE = .02, 95\% CI: [-.10, .01]$, nor was there support for the simple indirect effect of anger on interpersonal aggression through arousal, $b = .06, SE = .07, 95\% CI: [-.05, .24]$, or through attentional focus, $b = .02, SE = .04, 95\% CI: [-.03, .16]$. In sum, there was no support for Hypothesis 6.
Similar to Hypothesis 6, Hypothesis 7 suggested sequential mediation such that the effect of anxiety on deviance is mediated through arousal first and attentional focus second. Using the PROCESS macro I entered emotion (anxiety versus boredom) as the independent variable, arousal as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no evidence for sequential mediation using unstandardized regression coefficients, $b = .02, SE = .32, 95\% \text{ CI: } [-.37, 1.18]$. There was no evidence for a simple indirect effect of anxiety on rule breaking through arousal, $b = -2.25, SE = 2.06, 95\% \text{ CI: } [-8.13, .40]$, or through attentional focus, $b = -.17, SE = 1.41, 95\% \text{ CI: } [-4.22, 2.02]$. Entering interpersonal aggression as the dependent variable, there was no support for sequential mediation, $b = .00, SE = .01, 95\% \text{ CI: } [-.05, .01]$, nor was there evidence for a simple indirect effect of anxiety on interpersonal aggression through arousal, $b = -.02, SE = .07, 95\% \text{ CI: } [-.18, .11]$, or through attentional focus, $b = .02, SE = .05, 95\% \text{ CI: } [-.04, .20]$, together offering no support for Hypothesis 7.

Hypothesis 8 suggested sequential mediation such that the effect of sadness on deviance is mediated through sensemaking first and attentional focus second. Using the PROCESS macro I entered emotion (sadness versus boredom) as the independent variable, sensemaking as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no evidence for sequential mediation using unstandardized regression coefficients, $b = .00, SE = .35, 95\% \text{ CI: } [-.68, .79]$. There was no evidence for a simple indirect effect of sadness on rule breaking through sensemaking, $b = 2.92, SE = 3.23, 95\% \text{ CI: } [-2.86, 10.09]$, or through attentional focus, $b = .00, SE = .62, 95\% \text{ CI: } [-1.25, 1.44]$. Entering interpersonal aggression as the dependent variable, there was no support for sequential mediation, $b = .00, SE = .02, 95\% \text{ CI: } [-.03, .07]$, nor was there evidence for a simple indirect effect of sadness on
interpersonal aggression through sensemaking, \( b = .03, SE = .13, 95\% \text{ CI: } [-.25, .28] \), or through attentional focus, \( b = .00, SE = .04, 95\% \text{ CI: } [-.07, .08] \), providing no support for Hypothesis 8.

**Study 2 Discussion**

In sum, anger increased deviant behavior, while sadness decreased it (see the Study 2 column of Table 11 for more specific information on supported hypotheses). However, there was no effect of anxiety on deviance and it only had a marginal effect on arousal. This could be partially due issues regarding the writing prompt manipulation. In Study 1, the average feelings of anxiety in the anxiety group as indicated by the manipulation check items was 6.15 (\( SD = 1.73 \)) out of 9. In Study 2, the mean was 5.38 (\( SD = 1.49 \)), which are significantly different, \( t(70) = 2.02, p < .05 \). Thus, part of the null effect could potentially be due to lower feelings of anxiety in the anxiety condition of Study 2, which would probably weaken both physiological responses (arousal) and behaviors (deviance). Even though I edited the writing induction based on feedback from the writing pilot study, it could that the low levels of certainty and high levels of threat associated with anxiety regarding a real life event are ‘too much to bear’ (i.e., not hypothetical scenarios or videos). Thus, participants may subconsciously write about an event in which the outcomes are somewhat known (but are consciously reported as uncertain and threatening) in order to hamper the high discomfort of uncertainty (Franks, 2004; Higgins, 2011). However, it might also be that this type of manipulation (writing about an anxiety-inducing event) is simply not optimal for this research question. In the third study I use a video manipulation, in which participants are significantly less likely to be aware of what the outcome is compared to an event that they wrote about in their own life. In the video there was also no indication that participants should feel any particular emotion. In addition, I employed a different measure of attentional focus in order to determine whether the null effects observed above are methodologically based.
Pilot Study 3 (Videos)

A total of 62 participants (M\text{age} = 34.76, 48\% female) were recruited from the online research sampling tool Microworkers using the same recruitment strategy as that in the previous two pilot studies. Workers were randomly assigned to one of four conditions: boredom (n = 14), anger (n = 14), sadness (n = 16), and anxiety (n = 18). Participants read the instructions for the task, which asked them to watch a short video and to imagine what it would feel like to be the person depicted in the video. Afterwards they completed a set of manipulation checks.

Manipulations and Measures

**Emotion.** Participants watched one of four videos intended to induce the emotion. For anxiety I showed a clip from the film *Vertical Limit* (Brooks & Schweitzer, 2011; Gino, Brooks, & Schweitzer, 2012; Kouchaki & Desai, 2015) about a rock climbing accident in which a rock climber is teetering on the edge of death at the top of a tall mountain. For anger I showed a clip from the film *My Bodyguard* about a boy who is being bullied and beat up by another boy (Gino et al., 2012; Gino & Schweitzer, 2008). For sadness I showed a clip from the film *The Champ* about a son mourning his father’s death after a boxing match (Cougle, Timpano, Sarawgi, Smith, & Fitch, 2013; Puccinelli, Wilcox, & Grewal, 2015). For boredom I showed a clip of an elementary tutorial of an out-of-date version of Microsoft Word, a software which most students already know how to use. Given that unstimulating and uninteresting activities trigger boredom, this clip was appropriate. All clips were between three and four minutes long.

**Manipulation checks.** Participants completed the same manipulation checks on current feelings of boredom (\(\alpha = .89\)), anger (\(\alpha = .90\)), sadness (\(\alpha = .79\)), anxiety (\(\alpha = .92\)), positive affect (\(\alpha = .80\)), appraisals of certainty (\(\alpha = .90\)), and appraisals of threat (\(\alpha = .97\)) as used in Studies 1 and 2.
Results

See Table 8 for means and standard deviations.

**Boredom condition.** Participants in the boredom condition reported feeling significantly more bored ($M = 7.57$, $SD = 1.59$) than participants in the anger condition, sadness condition, and anxiety condition ($M = 2.00$, $SD = 1.38$), $t(58) = 12.89$, $p < .001$, Cohen’s $d = 3.74$. A set of planned contrasts indicated that participants within the boredom condition reported experiencing more boredom than anger ($M = 3.52$, $SD = 1.58$), MD = 4.05, SE = .66, $p < .001$; sadness ($M = 2.45$, $SD = 1.44$), MD = 5.12, SE = .57, $p < .001$; and anxiety ($M = 2.34$, $SD = 1.78$), MD = 5.23, SE = .53, $p < .001$.

**Anger condition.** Participants in the anger condition reported feeling significantly more angry ($M = 7.81$, $SD = 1.95$) than participants in the boredom condition, sadness condition, and anxiety condition ($M = 4.74$, $SD = 2.18$), $t(58) = 5.03$, $p < .001$, Cohen’s $d = 1.48$. A set of planned contrasts indicated that participants within the anger condition reported experiencing more anger than boredom ($M = 2.52$, $SD = 1.48$), MD = 5.29, SE = .66, $p < .001$; sadness ($M = 6.40$, $SD = 2.02$), MD = 1.41, SE = .49, $p < .01$; and anxiety ($M = 5.11$, $SD = 2.24$), MD = 2.70, SE = .59, $p < .001$.

**Sadness condition.** Participants in the sadness condition reported feeling significantly more sad ($M = 7.73$, $SD = .86$) than participants in the boredom condition, anger condition, and anxiety condition ($M = 5.92$, $SD = 2.49$), $t(58) = 5.57$, $p < .001$, Cohen’s $d = .97$. A set of planned contrasts indicated that participants within the sadness condition reported experiencing more sadness than boredom ($M = 1.98$, $SD = 1.66$), MD = 5.75, SE = .53, $p < .001$; anger ($M = 5.38$, $SD = 1.98$), MD = 2.35, SE = .46, $p < .001$; and anxiety ($M = 6.66$, $SD = 1.57$), MD = 1.07, SE = .38, $p < .01$. 
**Anxiety condition.** Participants in the anxiety condition reported feeling significantly more anxiety ($M = 8.17, SD = .82$) than participants in the boredom condition, anger condition, and sadness condition ($M = 4.79, SD = 2.58$), $t(58) = 7.56, p < .001$, Cohen’s $d = 1.77$). A set of planned contrasts indicated that participants within the anxiety condition reported experiencing more anxiety than boredom ($M = 1.61, SD = .87$), MD = 6.56, SE = .47, $p < .001$; anger ($M = 5.11, SD = 2.47$), MD = 3.06, SE = .52, $p < .001$; and sadness ($M = 6.63, SD = 1.80$), MD = 1.54, SE = .35, $p < .001$. Overall, there was no effect of emotion condition on positive affect, $F(3, 58) = 1.41$, $ns$.

**Perceptions of certainty and threat.** As expected, perceptions of certainty were significantly lower in the sadness and anxiety conditions combined ($M = 3.25, SD = 1.71$) compared to the boredom and anger conditions combined ($M = 5.19, SD = 1.37$), $t(58) = 4.85, p < .001$, Cohen’s $d = 1.25$. As anticipated, there was no significant difference between the boredom and anger conditions, $t(58) = 1.45, ns$, or between the sadness and anxiety conditions, $t(58) = .12, ns$.

Also as expected, perceptions of threat were significantly higher in the anger and anxiety conditions ($M = 6.21, SD = 1.14$) compared to the boredom and sadness conditions ($M = 2.70, SD = .87$), $t(58) = 13.62, p < .001$, Cohen’s $d = 3.46$. No significant difference emerged between the anger and anxiety conditions $t(58) = 1.09, ns$, nor between the boredom and sadness conditions $t(58) = 1.45, ns$.

**Pilot 3 Discussion**

In sum, the video manipulations were effective in inducing the intended emotions and the associated dimensions of certainty and threat. More specifically, participants who watched the boredom video reported experiencing more boredom than any other emotion; participants who
watched the anger video reported experiencing anger more than any other emotion and reported greater perceptions of threat but equal levels of certainty as the boredom group; participants who watched the sadness video reported experiencing sadness more than any other emotion and reported lower perceptions of certainty but equal levels of threat as the boredom group; and participants who watched the anxiety video reported experiencing anxiety more than any other emotion and reported lower perceptions of certainty and greater perceptions of threat compared to the boredom group. Thus, I used the video manipulations in Study 3 to induce boredom, anger, sadness, and anxiety.

**Study 3**

A total of 145 undergraduate participants at the University of Arizona ($M_{age} = 21.32$, 54% female) were randomly assigned to one of the four emotion conditions – boredom ($n = 37$), anger ($n = 35$), sadness ($n = 36$), and anxiety ($n = 37$) – using the same recruitment strategies as the previous two studies. They then completed an emotion induction, manipulation checks, a measure sensemaking and attentional focus, and then two deviance tasks, while wearing a heart rate monitor. Similar to Studies 1 and 2, a G*Power analysis indicated that that a sample size of 128 participants total (32 for each of the four experimental cells) would be adequate to obtain 80% power to detect my hypothesized effects at alpha = 0.05 with a small-medium effect size of 0.30. As I tried to increase the sample size to ensure robustness, I collected a total of 145 participants (17 more than what would be considered adequate).

**Manipulations and Measures**

**Emotion.** Participants watched one of the four videos intended to induce the emotion from the pilot study.

**Manipulation checks.** Participants completed the same manipulation checks used in the
prior studies: boredom (α = .78), anger (α = .76), sadness (α = .87), anxiety (α = .89), positive affect (α = .93), appraisals of certainty (α = .72), and appraisals of threat (α = .81).

**Arousal.** I used the same measure of arousal used in Studies 1 and 2.

**Sensemaking.** Participants completed the same measure used in Studies 1 and 2 (α = .92).

**Attentional focus.** To measure attentional focus I used the Navon letters task (Navon, 1977), which has been used extensively in examining attentional focus (e.g., Förster & Higgins, 2005; Gable & Harmon-Jones, 2008, 2010, 2011; Harmon-Jones & Gable, 2009; Kimchi, 1992; Sacchi, Riva, & Aceto, 2016). In this task, a stimulus is presented on the screen by itself, which consists of a large letter made up of little letters, such as an H made out of F’s or an L made out of T’s. Participants are asked to respond to each stimulus “as quickly as possible,” by clicking “T” on the keyboard if the picture contains the letter T, and “H” on the keyboard if the picture contains the letter H. Broad targets are those in which a large T or H is composed of smaller L’s or F’s. Narrow targets are those in which a large L or F is composed of smaller T’s or H’s. Faster responses to the large letters indicate a broad focus, whereas faster responses to the small letters indicate a local narrow focus. For example, an individual in a broad state of mind would click “T” more quickly on the keyboard when a T made out of L’s appears on the screen than when an L made out of T’s appears. As another example, an individual in a narrow state of mind would click “H” more quickly on the keyboard when an F made out of H’s appears on the screen than when an H made out of F’s appears. Overall, one of eight global composite letters was randomly presented and there was only one correct answer per trial. Four of the composite letters included global targets (an H made of L’s, an H made of F’s, a T made of L’s, and a T made of F’s), and four included local targets (an F made out of H’s, an F made out of T’s, an L made out of H’s and an L made out of T’s. There were 32 local trials and 32 global trials presented randomly.
(Gable & Harmon-Jones, 2013).

Following prior research (e.g., Darling, Martin, Hellmann, & Memon, 2009; Gable and Harmon-Jones, 2013; Sligte, De Dreu, & Nijstad, 2011), I averaged the amount of time in seconds that participants spent answering the 32 global trials and the amount of time spent in seconds answering the 32 local trials. With this data three analyses can be conducted. I can examine differences between emotion conditions in global response time. For instance, if sadness broadens attentional focus then time spent answering the global trials should be significantly lower than that in the boredom condition. I can also examine differences in local response time. For example, if anger and anxiety narrow attentional focus then the time spent answering the local trials should be significantly lower than that in the boredom condition. In addition, I can create one score per participant that is the difference between average time spent on the global trials and average time spent on the local trials. If the difference is significant it suggests a meaningful shift in the participant’s attentional focus. For instance, if anger does narrow attentional focus then participants within in the anger condition should spend significantly less time on the local trials compared to the time spent on the global trials (as their narrowed attentional focus should cause them to answer the local trials more quickly).

Overall, participants committed few errors (e.g., selected the letter ‘T’ when the trial showed an H made out of F’s). In total, 121 participants out of 145 answered either 64 trials (no errors) or 63 trials (one error) correctly, which represents 84% of participants (the remaining participants answered more than two trials incorrectly). There was no effect of condition on the number of participants who committed errors, $F(3, 140) = .20, ns$, indicating that the number of participants who committed errors was evenly distributed across conditions.

**Deviance.** I used the same two measures of deviance used in Studies 1 and 2.
Results

See Table 9 for means and standard deviations. See Table 10 for correlations among study variables.

**Boredom condition.** Participants in the boredom condition reported feeling significantly more bored \((M = 5.26, SD = 1.69)\) than participants in the anger condition, sadness condition, and anxiety condition \((M = 2.83, SD = 1.68)\), \(t(141) = 7.57, p < .001\), Cohen’s \(d = 1.44\). A set of planned contrasts using the same analytic strategy as that in previous studies indicated that participants within the boredom condition reported experiencing more boredom than anger \((M = 2.23, SD = 1.30)\), \(MD = 3.03, SE = .39, p < .001\); sadness \((M = 2.34, SD = 1.32)\), \(MD = 2.92, SE = .40, p < .001\); and anxiety \((M = 2.79, SD = 1.71)\), \(MD = 2.47, SE = .41, p < .001\).

**Anger condition.** Participants in the anger condition reported feeling significantly more anger \((M = 5.37, SD = 1.95)\) than participants in the boredom condition, sadness condition, and anxiety condition combined \((M = 2.87, SD = 1.79)\), \(t(141) = 7.16, p < .001\), Cohen’s \(d = 1.34\). A series of planned contrasts indicated that participants within the anger condition reported experiencing more anger than boredom \((M = 3.16, SD = 1.85)\), \(MD = 2.21, SE = .40, p < .001\); sadness \((M = 4.36, SD = 1.77)\), \(MD = 1.00, SE = .25, p < .001\); and anxiety \((M = 4.04, SD = 1.62)\), \(MD = 1.34, SE = .30, p < .001\).

**Sadness condition.** Participants in the sadness condition reported feeling significantly more sad \((M = 5.44, SD = 2.26)\) than participants in the boredom condition, anger condition, and anxiety condition \((M = 3.57, SD = 1.95)\), \(t(141) = 5.11, p < .001\), Cohen’s \(d = .89\). A set of planned contrasts showed that participants within the sadness condition reported experiencing more sadness than boredom \((M = 2.74, SD = 1.64)\), \(MD = 2.70, SE = .41, p < .001\); anger \((M = 3.34, SD = 1.91)\), \(MD = 2.10, SE = .25, p < .001\); and anxiety \((M = 4.42, SD = 2.16)\), \(MD = 1.02,
Anxiety condition. Participants in the anxiety condition reported feeling significantly more anxious ($M = 5.37$, $SD = 1.89$) than participants in the boredom condition, anger condition, and sadness condition ($M = 3.74$, $SD = 1.96$), $t(141) = 4.58$, $p < .001$, Cohen’s $d = .85$. A set of planned contrasts indicated that participants within the anxiety condition reported experiencing more anxiety than boredom ($M = 2.60$, $SD = 1.55$), MD = 2.78, SE = .41, $p < .001$; anger ($M = 3.05$, $SD = 1.96$), MD = 2.33, SE = .29, $p < .001$; and sadness ($M = 4.05$, $SD = 2.09$), MD = 1.33, SE = .23, $p < .001$. Once again, there was no overall effect of emotion condition on positive affect, $F(3, 141) = 1.58$, ns.

Perceptions of certainty and threat. As expected, perceptions of certainty were significantly lower in the sadness and anxiety conditions combined ($M = 3.49$, $SD = 1.12$) compared to the boredom and anger conditions combined ($M = 4.58$ $SD = 1.15$), $t(141) = 5.70$, $p < .001$, Cohen’s $d = .96$. As anticipated, there was no significant difference between the boredom and anger conditions, $t(141) = 1.27$, ns, or between the sadness and anxiety conditions, $t(141) = .71$, ns.

Also as expected, perceptions of threat were significantly higher in the anger and anxiety conditions ($M = 5.56$, $SD = 1.33$) compared to the boredom and sadness conditions ($M = 2.65$, $SD = 1.15$), $t(141) = 14.00$, $p < .001$, Cohen’s $d = 2.34$. No significant difference emerged between the anger and anxiety conditions $t(141) = 1.13$, ns, nor between the boredom and sadness conditions $t(141) = .57$, ns.

Hypothesis Testing

Prior to testing the formal hypotheses I examined the main effects. Once again, I used a set of Fisher’s least significant difference tests (LSD) to test the main effects. Rule breaking was
higher in the anger condition compared to the boredom condition, \(MD = 11.92, SE = 5.86, p < .05\), Cohen’s \(d = .43\), as was interpersonal aggression, \(MD = .44, SE = .23, p < .10\), Cohen’s \(d = .43\). There was also a significant difference between anxiety and boredom on rule breaking, \(MD = 13.41, SE = 5.78, p < .05\), Cohen’s \(d = .48\), and interpersonal aggression, \(MD = .51, SE = .23, p < .05\), Cohen’s \(d = .53\). In addition, rule breaking was significantly lower in the sadness condition \(MD = 11.76, SE = 5.82, p < .05\), Cohen’s \(d = .64\), as was interpersonal aggression, \(MD = .49, SE = .28, p < .05\), Cohen’s \(d = .48\). There was no significant difference in rule breaking between anxiety and anger, \(MD = 1.49, SE = 5.86, ns\) or in interpersonal aggression, \(MD = .08, SE = .23, ns\).

To examine Hypothesis 1, I performed a set of Fisher’s LSD tests with emotion as the independent variable and arousal during the emotion task (as indicated by average heart rate) as the dependent variable. I hypothesized that heart rate would be significantly higher in the anxiety and anger conditions, but not in the sadness condition. In support of Hypothesis 1a, participants in the anxiety condition experienced significantly higher arousal than participants in the boredom condition, \(MD = 15.18, SE = 5.36, p < .01\), Cohen’s \(d = .77\). Supporting Hypothesis 1b, participants in the anger condition experienced significantly higher arousal than those in the boredom condition, \(MD = 11.51, SE = 5.36, p < .01\), Cohen’s \(d = .61\). In support of Hypothesis 1c, there was no significant difference in arousal between boredom and sadness, \(MD = 3.56, SE = 5.26, ns\). There was no significant difference in arousal between anxiety and anger, \(MD = 3.67, SE = 5.58, ns\). Similar to Studies 1 and 2, I also compared participant heart rate during the three minute baseline period to heart rate during the emotion manipulation in a repeated measures ANOVA. Within the anger condition, there was a significant increase in heart rate between the baseline period and the emotion period, \(MD = 6.60, SE = 2.56, p < .05\). A similar increase was
also observed in the anxiety condition, $MD = 8.37$, $SE = 2.56$, $p < .01$. There was no within-
person change in heart rate in the boredom condition, $MD = 1.80$, $SE = 2.36$, $ns$, or the sadness
condition, $MD = 2.14$, $SE = 2.48$, $ns$.

I conducted a one-way ANOVA with emotion as the independent variable and
sensemaking as the dependent variable to test Hypothesis 2. Sensemaking was significantly
higher in the anxiety condition compared to the boredom condition, $MD = 2.26$, $SE = .29$, $p
< .001$, Cohen’s $d = 1.84$, supporting Hypothesis 2a. Sensemaking was also significantly higher
in the sadness condition in comparison to the boredom condition, $MD = 2.57$, $SE = .29$, $p < .001$,
Cohen’s $d = 2.02$. supporting Hypothesis 2b. In support of Hypothesis 2c, there was no
significant difference between boredom and anger, $MD = .44$, $SE = .29$, $ns$. In addition, there
was no significant difference in sensemaking between participants in the sadness and anxiety
conditions, $MD = .30$, $SE = .29$, $ns$.

Hypotheses 3 to 5 hypothesized the effects of emotion on attentional focus through either
arousal or sensemaking. There was no main effect of emotion on average time spent on the
global trials, $F(3, 140) = 1.31$, $ns$, or the local trials, $F(3, 140) = .81$, $ns$. In addition, within
participants there was no significant difference between average time spent on the global trials
and average time spent on the local trials, $t(143) = .19$, $ns$. This indicates once again that
attentional focus is not a meaningful variable in the model and makes it unlikely that mediation
will be observed. I used the within-person difference variable as the mediator as this is by far the
most common conceptualization of attentional focus (see Frederickson & Branigan, 2005; Gable
& Harmon-Jones, 2013, Sligte et al., 2011).

Hypothesis 3 predicted mediation, such that arousal would mediate the narrowing effect
of anger on attentional focus. In order to test the indirect effect I conducted a mediation analysis
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using the PROCESS macro for SPSS (Hayes, 2015), similar to the prior studies, to perform bootstrapping analyses using 20,000 bootstrap samples (Preacher & Hayes 2008). Entering emotion as the independent variable (anger versus boredom), attentional focus as the dependent variable and arousal as the mediator, I estimated the indirect effects using unstandardized regression coefficients. The 95% bias-corrected confidence intervals (BCCI) did include zero, \( b = .01 \), standard error (SE) = .02, CI [-.02, .04], indicating that the indirect effects were not significant and that mediation was not present, failing to support Hypothesis 3.

Hypothesis 4 also predicted mediation where arousal would mediate the effect of anxiety on attentional focus, which I tested using the same technique as Hypothesis 3. I entered emotion as the independent variable (anxiety versus boredom), attentional focus as the dependent variable and arousal as the mediator. The 95% bias-corrected confidence intervals (BCCI) did include zero, \( b = .01 \), SE = .04, CI: [-.10, .07], indicating that the indirect effects were not significant at the \( p < .05 \) level and that mediation was not present, and providing no support for Hypothesis 4.

I used the same approach to test Hypothesis 5, which hypothesized an indirect effect of emotion (boredom versus sadness) on attentional focus through sensemaking. Once again using the PROCESS macro for SPSS, I estimated the indirect effects using unstandardized regression coefficients. The 95% bias-corrected confidence intervals (BCCI) did include zero, \( b = .04 \), SE = .04, CI: [-.04, .13], indicating that the indirect effects were not significant at the \( p < .05 \) level and that mediation was not present, providing no support for Hypothesis 5.

Hypothesis 6 predicted sequential mediation such that the positive effect of anger on deviance is mediated through arousal first and attentional focus second. Given that attentional focus is not a significant predictor it is unlikely that there will be support for sequential mediation with deviance as the outcome. Once again using the PROCESS macro I entered
emotion (anger versus boredom) as the independent variable, arousal as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no support for sequential mediation, $b = -.03, SE = .40, 95\% \text{ CI}: [-1.52, .42]$, nor was there support for the simple indirect effect of anger on rule breaking through arousal, $b = 1.63, SE = 2.71, 95\% \text{ CI}: [-2.75, 8.38]$, or through attentional focus, $b = .28, SE = 1.53, 95\% \text{ CI}: [-1.67, 5.31]$. I ran the same analysis using interpersonal aggression as the dependent variable. There was no support for sequential mediation, $b = .00, SE = .02, 95\% \text{ CI}: [-.01, .07]$, nor was there support for the simple indirect effect of anger on interpersonal aggression through arousal, $b = .11, SE = .08, 95\% \text{ CI}: [.00, .34]$. There was also no simple indirect effect of anger on interpersonal aggression through attentional focus, $b = -.02, SE = .06, 95\% \text{ CI}: [-.23, .04]$. Thus, there was no support for Hypothesis 6.

Hypothesis 7 suggested sequential mediation such that the effect of anxiety on deviance is mediated through arousal first and attentional focus second. I entered emotion (anxiety versus boredom) as the independent variable, arousal as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no evidence for sequential mediation using unstandardized regression coefficients, $b = .04, SE = .90, 95\% \text{ CI}: [-1.22, 2.83]$. There was no evidence for a simple indirect effect of anxiety on rule breaking through arousal, $b = -3.43, SE = 3.21, 95\% \text{ CI}: [-11.81, 1.43]$, or through attentional focus, $b = .25, SE = 1.00, 95\% \text{ CI}: [-.95, 3.57]$. Entering interpersonal aggression as the dependent variable, there was no support for sequential mediation, $b = .00, SE = .03, 95\% \text{ CI}: [-.04, .10]$, nor was there evidence for a simple indirect effect of anxiety on interpersonal aggression through arousal, $b = -.03, SE = .09, 95\% \text{ CI}: [-.22, .16]$, or through attentional focus, $b = .01, SE = .04, 95\% \text{ CI}: [-.04, .12]$, offering no support for Hypothesis 7.
Hypothesis 8 suggested sequential mediation such that the effect of sadness on deviance is mediated through sensemaking first and attentional focus second. I entered emotion (sadness versus boredom) as the independent variable, sensemaking as the first mediator, attentional focus as the second mediator, and rule breaking as the dependent variable. There was no evidence for sequential mediation using unstandardized regression coefficients, $b = -0.40$, $SE = 1.02$, 95% CI: [-4.18, .61]. In addition, there was no evidence for a simple indirect effect of sadness on rule breaking through sensemaking, $b = -3.06$, $SE = 3.81$, 95% CI: [-11.19, 4.01], or through attentional focus, $b = 0.91$, $SE = 1.76$, 95% CI: [-1.23, 6.72]. Entering interpersonal aggression as the dependent variable, there was no support for sequential mediation, $b = 0.03$, $SE = 0.06$, 95% CI: [-0.03, .26], nor was there evidence for a simple indirect effect of sadness on interpersonal aggression through sensemaking, $b = -0.27$, $SE = 0.29$, 95% CI: [-0.82, .32], or through attentional focus, $b = -0.06$, $SE = 0.10$, 95% CI: [-0.40, .06], providing no support for Hypothesis 8.

**Study 3 Discussion**

In this study I was able to replicate certain findings from Studies 1 and 2 using an effective emotion induction. I found that anger and anxiety increased deviance, while sadness decreased deviance. Furthermore, I found support for Hypotheses 1 and 2, which predicted that arousal would be significantly higher in the anger and anxiety conditions, and that sensemaking would be significantly higher in the sadness and anxiety conditions (see the Study 3 column of Table 11 for more detailed information on the supported hypotheses). However, after three studies using two different measures of attentional focus I can be fairly confident that attentional focus is not an influential factor in my model. In addition, the findings indicate that while the direct effects on arousal and sensemaking were observed in the hypothesized direction, they do not mediate the effects of emotion on deviant behavior.
General Discussion

In the present studies, I hypothesized a model that examines the effects of four different emotions – boredom, anger, sadness, and anxiety – on deviant behavior via arousal, sensemaking and attentional focus. Using the appraisal theory of emotion, I argued that the different appraisals associated with each emotion would drive the changes in the mediators and the two types of deviant behavior: rule-breaking and interpersonal aggression. More specifically, I posited that the appraisal of threat underlying anger and anxiety would increase deviant behavior due to an increase an arousal and narrowing of attentional focus. This would cause such individuals to focus on their own self-interests, which can manifest as deviant behavior. Conversely, I argued that the appraisal dimension of uncertainty underlying the experience of sadness would lead to a decrease in deviance due to an increase in sensemaking and a broadening of attentional focus. This was expected to increase the individual’s awareness of others and the well-being of others, which would lead to lower levels of rule-breaking and interpersonal aggression. I tested my hypotheses in three studies, all of which used different emotion inductions that were piloted previously. This was intended to ensure that any findings found in one study could be replicated in a different setting and establish a higher level of confidence in the results. Importantly, some effects were observed across all studies, some were observed across a subset of studies, and others were not observed in any of the three studies. See Table 11 for a comparison of the findings across all three studies. As two measures for attentional focus were used, null effects cannot likely be attributed to methodological artifacts. However, it could be that these two measures, which were behavioral, abstract, and involved high-level cognitive processing were not sensitive enough to capture more nuanced or fine-grained changes in attentional focus. Perhaps a concrete self-report measure could be developed that more clearly taps one’s
attentional focus without also tapping other constructs (e.g., depletion). For example, one item could be “Right now, I feel like I could focus on many things at once”. Such a measure, which is currently absent in the management literature, would probably be more successful in measuring levels of attentional focus due to its transparent and straightforward nature. In addition, there was no evidence of mediation in any of the three studies. More specifically, arousal and sensemaking did not mediate the effects of emotion on attentional focus, and there was no sequential mediation between emotion, arousal, sensemaking, and attentional focus on either of the two deviant behaviors. To summarize, there was evidence for some direct effects, but no indirect effects.

**Implications**

These findings, while limited, make some contributions to the management literature. First and foremost, I challenge the broader notion that many negative states lead to negative behavior (Shockley et al., 2012; Spector, Fox, & Domagalski, 2006). For example, using self-regulation theory, researchers have argued that negative emotions are depleting, which can then prompt deviant behavior (e.g., Christian & Ellis, 2011; Mayer, Thau, Workman, Van Dijke, & De Cremer, 2012). The experience of negative emotion often entails emotion regulation (this is especially true in the customer service industry; Grandey & Gabriel, 2015), which is depleting because it requires the energy to overcome one’s current state and replace it with a different one (Muraven, Tice, & Baumeister, 1998). This use of energy can lead to a state of depletion, which has been consistently associated with deviant behaviors (e.g., Christian & Ellis, 2011; Gino et al., 2011; Mead et al., 2009). However, I was able to show that sadness is one negative emotion that does not increase deviant behavior. Across all three studies, I showed that the experience of sadness decreased rule-breaking and interpersonal aggression.
By using an appraisal theory of emotion, I was able to provide a theoretical foundation for differentiating among four negative emotions. According to this theory, changes in our understanding of an event accompany changes in our thoughts, feelings, and physiology. This theory further identifies specific dimensions, such as threat and certainty, that are used to evaluate the event. This is what provides significant insight into the underlying characteristics of different emotions and lays the groundwork for more finely grained distinctions between them.

While at the same time replicating findings showing that anxiety and anger lead to deviance (Kouchaki & Desai, 2015; Motro et al., 2016), I showed consistently across three different emotion inductions that sadness decreased deviance. Moreover, in the present context, I highlight the importance of threat and certainty. Specifically, I found that emotions high in the dimension of threat (e.g., anger and anxiety) increased deviant behavior, while emotions low in the dimensions of certainty and threat (e.g., sadness) decreased deviant behavior.

The fact that sadness consistently decreased deviant behavior suggests that certain forms of negative affect are not as problematic as it may seem on the surface. Thus, these results should generate interest in the investigation of sadness in organizational research. Very few studies in management have looked exclusively at the experience of sadness by itself. One of the few studies that has examined sadness has considered its role in negotiations (Sinaceur, Kopelman, Vasilijevic, & Hagg, 2015). In three experiments, Sinaceur et al. (2015) found that in certain situations (e.g., when a future interaction was anticipated) expressing sadness during a negotiation could result in higher returns for the expressers because their partners expressed greater concern for them and their well-being. I build on this research by showcasing another context (deviant behavior) in which sadness is not necessarily detrimental to effective workplace functioning. In negotiations, my findings would suggest that sad individuals are less likely to
deceive the other party, such as trying to sell a car part (aluminum hood) to a buyer when the supplier is aware that it will be obsolete in three years (cf. Aquino & Becker, 2005).

There are other areas in which differentiating between anger, anxiety, and sadness could be useful, such as emotional contagion. Emotions high in threat (e.g., anger, anxiety) are likely to be more contagious than those low in threat (e.g., sadness). Given the primal desire to assure one’s safety, individuals are highly attuned to any threats in the environment (Griskevicius et al., 2009). Upon observing another individual’s perceptions of threat, the individual is immediately likely to consider how those threats could affect him or herself (which is also one of the components of “fear mongering” and “anger mongering”; Wetherell, Weisz, Stolier, Beavers, & Sadler, 2013). Ultimately, this could lead to a similar emotional experience (i.e., contagion) if individuals also perceive the threat as a danger to themselves. This suggests that in group settings individuals should be especially aware that expressions of anger or anxiety are likely to spread quickly. In support of this argument, Harinck and Van Kleef (2012, p. 742) state that “anger is contagious – if someone is angry with you, you are likely to become angry with that person too” and Posner (2002, p. 685) posits that “fear is contagious: one person can become fearful upon observing that another person is fearful.” This could certainly lead to negative consequences. For instance, high levels of anger could cause greater interpersonal aggression towards other teammates and stunt effective negotiating.

I also found support for my hypotheses regarding emotion and physiological arousal. More specifically, I found that emotions associated with high threat (anger and anxiety) increase heart rate, which is a testament to the intimate links between feelings, cognition, and physiology. While arousal did not mediate the effects of anger and anxiety on deviance, management researchers should continue to consider the role of physiological mechanisms in future work as
they can clearly be influenced by emotion. For instance, Kouchaki and Wareham (2015) showed that social exclusion leads to greater unethical behavior due to a higher level of physiological arousal experienced during exclusion. They argued that any naturally-occurring high-arousal negative responses that would usually inhibit unethical behavior (e.g., fear of getting caught) but that can be attributed to another factor besides the unethical situation (e.g., social exclusion) is likely to increase unethical behavior. Thus, it could be that the effect of social exclusion on unethical behavior observed in Kouchaki and Wareham (2015) is significantly amplified when the exclusion episode accompanies feelings of anger or anxiety, as both these emotions also increase physiological arousal.

In the present studies, I expanded the nascent literature investigating the role of emotion in the process of sensemaking. As stated by Maitlis et al. (2013), emotion is an understudied aspect of sensemaking, and is actually often viewed as an impediment to constructive sensemaking. Past research has emphasized sensemaking as a cognitive process (e.g., Gioia & Chittipeddi, 1991; Sonenshein & Dholakia, 2012; Weick, 1988), failing to take into account affective components. In response, recent scholars (e.g., Maitlis et al., 2013; Steigenberger, 2015) have developed conceptual accounts for how positive and negative emotions could impact various aspects of the sensemaking process. Given that the human experience is rife with powerful emotional episodes, the time is ripe for researchers to more fully investigate how discrete emotions such as anger, sadness, anxiety, and boredom influence the sensemaking process. I have provided empirical evidence that emotions involving appraisals of uncertainty prompt the process of sensemaking. I hope that by more fully incorporating the role of emotion, I advance beyond previous work to provide a more realistic and comprehensive view of certain aspects of the sensemaking process. More specifically, I believe that emotion can be
incorporated into a serial model that links emotion as an antecedent, sensemaking as a mediator, and different outcomes of sensemaking as the dependent variable in order to show the potential influence of emotion. One such outcome identified by sensemaking researchers at the individual level is a change in one’s identity (Maitlis & Christianson, 2014; Ravasi & Schultz, 2006), which is defined as the possession of a clear understanding of one’s goals, interests, talents, and beliefs (Holland, 2001). My research suggests that an episode of intense sadness could prompt a change in one’s identity. For instance, the premature death of a loved one to cancer could generate a change in one’s goals to include working towards a cure (e.g., donating to the American Cancer Society). The effect of this sadness on a change in one’s identity could be mediated by sensemaking, in which the individual reconsiders alternative ways that the world might work (e.g., “life is short and I must do what I can to help others while I am alive”). While this is clearly just an example, future research should explicitly interweave the experience of emotions and outcomes of the sensemaking process, such as identity transformations.

In addition, I made a methodological contribution to the sensemaking literature by introducing a short quantitative scale that can capture one part of the sensemaking process (i.e., attempts to construct a newer representation of the world). The vast majority of past research has examined sensemaking in qualitative long-term single organizational settings (Maitlis et al., 2013). While undoubtedly insightful, this approach limits the way that sensemaking is investigated and conceptualized. I have tried to show that short-term sensemaking is possible and perhaps merits further examination. The fact that many researchers do not have long-term uninterrupted access to organizations should not stop the expansion of sensemaking’s nomological network. By creating a short measure, and following certain standards of scale validation (content, convergent, and discriminant validity), I encourage its use in other settings,
such as experience sampling studies.

**Practical Implications**

By differentiating between negative emotions and identifying variations between them I can offer a more precise view of the relationship between emotion and deviance. Doing so can also provide supervisors with more refined information that they can use to manage employees feeling down on a particular day. For instance, managers should be especially wary not to assign an employee who is clearly in an anxious or angry mood to tasks where there is an opportunity for deviance (e.g., answering customer emails). Instead, managers might look into the utility of a “cooling off” period (Lee, 2013; Rubin, 1990; Smith & Beckner, 1993), where managers provide angry and anxious employees an opportunity to return to a more balanced emotional state. For instance, Rubin (1990, p. 41) provides librarians with tips on how to “defuse angry patrons at the reference desk” when they become extensively aggressive, one of which is buying “some cooling off time”. However, such a period might not be as useful for sad individuals who are not necessarily at a higher risk for deviant behavior.

Managers and organizations might also benefit by helping employees channel the high energy associated with anger and anxiety by transforming it into something more effective and beneficial. Researchers have argued that the execution of many organizational behaviors, such as promotive and prohibitive voice (Lin & Johnson, 2015), citizenship behaviors (Trougakos, Beal, Cheng, Hideg, & Zweig, 2015), and work performance (Quinn, Spreitzer, & Lam, 2012), require some level of arousal or energy. Managers could encourage the employee to direct the energy associated with anger and anxiety and put it to good use. For example, managers could suggest to an angry employee who is upset about recently being insulted by a coworker to submit a complaint to upper management about incivil treatment in the workplace – a type of prohibitive
voice behavior (Liang, Farh, & Farh, 2012).

**Limitations and Future Directions**

One significant flaw throughout all three studies is the failure to identify processes or mediators responsible for the observed effects of emotion on deviance. Based on empirical findings on arousal and research on sensemaking, I hypothesized that attentional focus would play a role in transmitting the effects of both arousal and sensemaking on deviant behavior. I found no evidence of either sequential or simple mediation (i.e., the effect of emotion on deviance through arousal or the effect of emotion on deviance through sensemaking). Clearly, there are other processes at play. While emotions do significantly influence rule-breaking and interpersonal aggression, my findings do not offer insight into the reason why. There are different possibilities on which I can only speculate.

For instance, it might be that there are multiple other variables that link emotions and deviance independently, and that cannot be connected under one theoretical framework. One possibility is an intuitive versus deliberate frame of mind. According to dual process theory, thinking can occur in two ways: either implicitly, automatically, and rapidly (also known as System 1) or explicitly, deliberatively, and slowly (also known as System 2; Kahneman, 2011; Strack and Deutsch 2004). Research has associated impulsive/intuitive thinking with unethical behavior (Bazerman & Tenbrunsel, 2011), and deliberate/analytical thinking with ethical behavior (Bereby-Meyer & Shalvi, 2015). While anger and anxiety have both been associated with impulsive and intuitive thinking (Fawcett, 2001; Motro et al., 2016), sadness has been associated with an analytical mindset (Bodenhausen, Sheppard, & Kramer, 1994; Schaller & Cialdini, 1990; Visser, Van Knippenberg, Van Kleef, & Wisse, 2013). For example, Bodenhausen et al. (1994) showed that sad individuals were more likely to carefully consider an
argument and all the facts (e.g., should the driving limit be raised from 16 to 18), while angry individuals were more likely to rely on heuristic cues. Moreover, Visser et al. (2013) found that a leader’s displays of sadness enhanced followers’ analytical performance. Thus, given that careful deliberation is associated with more ethical behavior (Shalvi, Eldar, & Bereby-Meyer, 2012), it could be that a more analytical mindset or deliberate way of processing information is responsible for the effects of sadness on deviant behavior.

Another possibility is that the uncertainty associated with sadness fuels behavior that seeks to restore a sense of certainty. Uncertainty is inherently uncomfortable and individuals are often determined to alleviate uncertainty-induced discomfort (Darsaut et al., 2014; De Cremer & Sedikides, 2009; Higgins, 2011; Sullivan, Landau, & Rothschild, 2010). For example, across four experiments, Sullivan et al. (2010) found that individuals with low perceived control over a situation (which is often strongly correlated with low perceived certainty; Motro & Sullivan, 2017) attributed more power to enemy figures because, however unpleasant, at least an enemy could be identified, pinpointed, and understood. In the present study, one way an individual in an uncertain state could restore a sense of certainty is adhering closely to rules. In the Joker task, the instructions were clearly stated and the task was very straightforward. Strictly adhering to the rules could return a greater sense of certainty to the individual (e.g., “I know what I have to do, how to do it, and what the outcomes will be”). Thus, it could be that the decrease in rule-breaking among sad individuals was due to an inherent desire to restore a sense of certainty.

Testing these alternative explanations could also be done in an experiment by using operationalizations of the new constructs in a controlled setting. For instance, one could employ a task designed to capture intuitive versus analytical processing, such as the Cognitive Reflections Test (Frederick, 2005). In this test, the questions have answers that yield automatic
or immediate responses, but are incorrect. Arriving at the correct answer requires greater deliberation. To test the possible role of uncertainty reduction, one could simply use the same measure of certainty used in the present studies, but also administer it after participants complete the deviance tasks.

Another limitation is that the present studies only focus on negative emotion. An interesting direction forward would be to consider the effect of positive emotion on deviant behavior. According to the appraisal theory of emotion and the present findings, an emotion low in certainty and threat (either positive or negative) would decrease deviant behavior. One positive emotion that is considered low in perceptions of certainty and threat is hope (Smith & Ellsworth, 1985). Hope is defined as “an energized mental state involving feelings of uneasiness or uncertainty and characterized by a cognitive, action-oriented expectation that a positive future goal or outcome is possible” (Haase, Britt, Coward, Leidy, & Penn, 1992, p. 143). According to this definition, hope would decrease deviant behavior because it is low in certainty, but not high in threat (i.e., hope does not pose any danger to one’s well-being in the sense that anger and anxiety do). Analyzing a positive emotion such as hope would not only expand our understanding of antecedents to deviance, but it would extend the reach of appraisal theory in deviant behavior by showing that not all influential emotions are negatively valenced.

Another potential issue is that an experimental setting might not be the best context in which to test my model. The artificiality of conducting studies in a laboratory could have made it more difficult for participants to fully engage and experience the emotion. “Forcing” participants to feel anger, sadness, anxiety, and boredom using largely impersonal inductions is likely not as powerful as experiencing an emotion in real-life with real-life consequences. In addition, I used an incidental emotion induction (as opposed to an integral emotion induction), which means that
the causes of the emotion are disconnected from the subsequent decisions and behaviors (Lerner & Keltner, 2000). For instance, the interpersonal aggression task was completely unrelated to any of the emotion inductions (e.g., watching a boring video). While examining incidental emotions allows researchers to separate pure feelings of emotion from other situational factors (Motro, Kugler, & Connolly, 2016), it makes it difficult to detect a relationship between the emotion and dependent variables because the two are intentionally unrelated. On the other hand, integral emotions, in which the experience of the emotion is related to the subsequent behavior (e.g., responding aggressively to an employee who just made you angry), are more likely to generate significant effects due to their greater interdependence. In sum, there remains the possibility that I would observe support for my model in a real-life setting where the emotions experienced have real-life consequences.

Accordingly, an interesting direction would be examining these relationships in a field study using experience sampling methodology (ESM) where emotional events have real-life consequences. ESM studies are invaluable in identifying within-person fluctuations in different organizational behaviors (e.g., Rosen et al., 2016; Trougakos et al., 2015). In such studies, scales are often administered multiple times a day over a certain number of workdays. Doing so allows researchers to identify momentary changes in behaviors that cannot be captured at the between-person level. Much research has identified both positive and negative affect as critical antecedents and consequences in managerial behavior (Koopman, Lanaj, & Scott, 2016; Ouweneel, Le Blanc, Schaufeli, & van Wijhe, 2012; Song, Foo, & Uy, 2008). For instance, in an ESM study using 82 employees across 10 workdays, Koopman et al. (2016) found that positive affect was associated with organizational citizenship behaviors and daily-well being. In order to test my model in the field, I would first distribute a self-report measure of emotion in the
morning (similar to the emotion items used in the present study). Second, I would ask participants to complete self-report measures of sensemaking (similar to the items used in the present study), and arousal (see Kouchaki & Wareham [2015] for an example of self-reported arousal) midday. In addition, I would construct a self-report measure of attentional focus similar to how I constructed the measure of sensemaking, and distribute it at the same time as the measures of sensemaking and arousal (midday). At the end of the workday, I would collect self-report measures of deviance (Bennett & Robinson, 2000). Importantly, the distribution of these measures throughout the day mirrors the temporal arc of my hypotheses (e.g., Gabriel, Diefendorff, & Erickson, 2011), and temporally separates the constructs of interests, which reduces the potential influence of issues related to common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Another direction for future research would be to examine the effects of mixed emotions on deviant behavior. Often, individuals experience more than one emotion at the same time (Podoynitsyna et al., 2012). For instance, it is not uncommon to feel both anger and sadness, or both happiness and hope at the same time. A field of study on mixed emotions examines how experiencing two different feelings simultaneously impacts subsequent judgments and behaviors (Larsen, McGraw & Cacioppo, 2001; Larsen, McGraw, Mellers & Cacioppo, 2004). However, this more complex reality has yet to be fully addressed in the deviance literature. As such, I believe it could be interesting to examine the outcomes of feeling both angry and sad at the same time (e.g., the loss of a loved one to a doctor’s mistake). According to appraisal theory, anger is associated with high perceptions of certainty and threat, while sadness is associated with low perceptions of certainty and threat. Experiencing both emotions at the same times sends conflicting signals, which will likely lead to a meta-state of uncertainty or disorientation (Amting,
Miller, Chow, & Mitchell, 2009). In line with appraisal theory and the present findings, this leads to an interesting conclusion. When experienced by itself, anger increases deviance because it is associated with high perceptions of certainty and threat. However, when experienced alongside another emotion where perceptions of certainty and threat are low (e.g., sadness), angry individuals could experience a grander existential conflict regarding their perceptions of reality, giving rise to an overall state of uncertainty (e.g., “How well do I really understand this event? Is it threatening? Am I certain?”). Thus, the dual experience of anger and sadness together could actually decrease deviance due to contradicting appraisals. As contradicting perceptions are often associated with confusion (Da Graça Moura, 2003; March, 1978), this combination likely instills a state of low certainty, and an ambiguous appraisal regarding threat, which sets the stage for low levels of deviant behavior.

**Conclusion**

The goal of the current investigation was to develop and examine a process-based model linking the effects of negative emotions to deviance (rule-breaking and interpersonal aggression). Using the appraisal theory of emotion as a theoretical framework, I aimed to show that while anger and anxiety increase deviance, sadness is one negative emotion that does not, thereby challenging notions that all negative emotions are bad. I hypothesized that physiological arousal, sensemaking, and attentional focus would act as mediators such that anger and anxiety, compared to boredom would increase deviant behavior via increased arousal and a narrower attentional focus, and that sadness would decrease deviant behavior via increased sensemaking and a broader attentional focus. I found limited support for my model, which I tested across three experiments using three different emotion inductions. More specifically, while I did find main effects in the expected direction of emotion on arousal, sensemaking, and deviance, I did not find
evidence for any indirect effects, indicating that other processes are operating. I offer different potential explanations, such as the possible role of one’s cognitive mindset or the motivation to reduce uncertainty, all of which require further investigation in future research endeavors.
Footnotes

1. In the present context, anxiety is synonymous with fear (see also Kouchaki & Desai, 2015).

2. It is critical to note that I only focus on personal experiences of anger, sadness, anxiety, and boredom which align with these appraisals (e.g., anger that involves high threat and certainty; anxiety that involves high threat and low certainty). For instance, I do not consider episodes of sadness which involve a particularly high degree of perceived certainty.

3. While researchers employ several different measures of arousal (e.g., galvanic skin response, Elkin & Leippe, 1986), they all tend to overlap. For example, in most situations, an increase in heart rate would likely be associated with an increase in galvanic skin response (Haynes & Mooney, 1975; Kouchaki & Wareham, 2015).

4. It is important to note that in this pilot study and in all remaining studies, there are fluctuations in emotions other than the focal emotion of interest. For instance, an anger manipulation might also increase anxiety among participants, and a sadness manipulation might also increase anger. This is due to the inherently complex nature of emotion and the difficulty in eliciting one pure negative emotion without also generating other negative feelings (see also Motro & Sullivan, 2017). However, I do not think this poses a problem in the present context because I am interested in the relative differences between emotions. That is, while a certain emotion manipulation (e.g., anger) might trigger other negative feelings (e.g., anxiety), I base my hypotheses on the fact that the manipulated emotion was experienced significantly more than any other emotion. Accordingly, changes in the dependent variables are very likely due to these stable and reliable
significant changes, and not more minor erratic fluctuations among other negative emotions. Moreover, there were no discernable patterns across the studies in terms of the non-relevant negative emotion fluctuations, further cementing the notion that it is the relative differences between the manipulated emotions that affect the dependent variables of interest.

5. The fit statistics for the second models are not excellent. However, this could potentially be attributed to the small sample size, \( n = 60 \), (Anderson & Gerbing, 1984; Ding, Velicer, & Harlow, 1995; Floyd & Widaman, 1995; Kenny, Kaniskan, & McCoach, 2015; Yu, Hildebrandt, & Lanzieri, 2015). Researchers found that with small sample sizes, fit indices can be biased, and 100 to 150 subjects is the minimum recommended sample size when conducting structural models (Ding et al., 1995). Low sample sizes can sometimes lead to improper model fittings (Anderson & Gerbing, 1984) due to low power and variability (Kim, 2005).
Appendix: Manipulations and Measures

Emotion Scenarios

Instructions: You will now read a short story about an event that is supposed to have happened recently in your life. As you read the story, try to experience the event as vividly as possible by imagining what it would feel like to be in that situation.

[anxiety; word count=479]

You are a senior management consultant for a large consulting firm. It is nearing the end of the work week and lately you have not been feeling well. You even went to see a doctor, who asked you to take a blood test. The Monday two weeks before an important meeting with upper management you are lying in bed, feeling tired from lack of sleep. You constantly look at the alarm clock and give yourself another 10 minutes to get out of bed before falling back into a disturbed sleep. Suddenly the phone rings and you let it go to voicemail. It’s your doctor. The minute you hear your doctor’s strained voice, you know something is wrong. He informs you that the results from your blood test are in. He wants to discuss them with you in person immediately. You feel extremely anxious at this point.

The car ride to the medical center feels long and you can’t stop worrying about what might be wrong with you. You constantly reassure yourself that you are okay and that it cannot be anything serious. You think to yourself that you may have the flu or some similar harmless thing, but you can’t help thinking that it may be something more serious than that…The doctor’s voice definitely sounded serious.

Upon arriving at the medical center, you mention your name at the front desk and tell the secretary that you have been called for an appointment. It seems as though she already knows about your problem and acts sympathetically towards you. You start to feel even more anxious as she personally escorts you to a waiting room where you are asked to sit down. You feel an impulse to ask her what the problem is, but hold yourself back. As you sit down in the waiting room, you feel another surge of anxiety overwhelm you.

Your wait seems endless. After a while, you start noticing the posters in the room. They are all about different kinds of cancer. The poster right across from you is about blood cancers, and discusses the symptoms, the bone marrow transplant treatment, and your chances of survival. It mentions that chances of survival are now better: one in three patients survive. Fear grips your heart and your mind races. Cancer! Could it be possible? It couldn’t be…but why would the doctor have called you so urgently? You start feeling hysterical and hold back an urge to scream in fear. You find it difficult to breathe. You walk towards the window to avoid looking at the poster.

A secretary calls out your name. You turn around, feeling nauseous. She asks you to follow her and leads you towards your doctor’s room. She asks you to wait outside and opens the door to the doctor’s office. You stand outside, desperately hoping that soon, your doctor will inform you that nothing is wrong.

[sadness; word count=483]
EMOTIONS AND DEVIANCE

You are a senior management consultant for a large consulting firm. It is nearing the end of the work week and you are really looking forward to two weeks of vacation. The past weeks have been a little hectic, and you are happy that you will have some time relaxing with your friends and family. The Sunday two weeks before your vacation you are at home and you get up early to catch up on some work. You are at your desk working on an upcoming presentation when your roommate enters the room, telling you that you have a phone call from your boss. The minute you talk to your boss you know by his strained voice that something is wrong. He tells you that your best friend at work is sick in the hospital, and that they don’t know what it is. Without finding out more you say you’ll take a cab there immediately.

The cab to the hospital is confusing, and you feel miserable in trying to come to some understanding of what is happening. You constantly reassure yourself that your best friend is OK and that it is nothing serious. Funnily, it seems as though the cab driver senses your distress and act sympathetically toward you. You feel incredibly sad at the thought that your best friend is very sick.

Upon arrival, a nurse takes you to the hospital room. She mentions that the doctors are still running tests to figure what is wrong. As you enter the room, you see your boss and several of your colleagues and your best friend’s family with pale drained faces and teary eyes along with a sense of uncertainty. They are huddled around your best friend, who looks weakened and frail, with yellowed skin and yellow eyes. You are overwhelmed by how much you love your best friend and begin to cry. You feel a surge of intense sadness as you realize how much your best friend is in pain.

You sit in a chair beside the bed and hold your best friend’s hand. Your best friend flinches from time to time, sometimes whimpering at the pain and trying to hold back tears. Your best friend looks up at you and the rest of the friends and family, seeming to cry and smile at the same time. You are not afraid though, you just realize how heartbroken you would be without your best friend by your side. You don’t understand why this is happening.

You hear one of the machines beep loudly and see the numbers on the screen rapidly change. Then you hear the nurse’s footsteps as she runs into the room. Your best friend asks you “is everything is going to be ok?” Your voice shakes as you reassure your best friend that everything will be ok, but as your best friend’s eyes close you feel the world crumbling around you.

[anger; word count=470]
your colleague says sternly that what you said was “very inappropriate”. Your colleague threatens to tell the supervisor exactly what you said, and adds that it will probably ruin your chances of a promotion.

You feel an extreme surge of anger. You emphasize that it was a joke and that you did not actually insult your supervisor. Your colleague smirks arrogantly and says “I heard what you said and I’m going to tell our supervisor”. You feel even more intense rage as you realize that your colleague could actually ruin your chance of being promoted because of a stupid joke. You feel your face getting red and reply in an angry voice that being a tattle tale is one of the worst things you could be. Your colleague replies with a condescending smile and says that’s what a good employee would do.

Your colleague says that he is going to the supervisor’s office after a meeting to tell him about your poor attitude and bad language. Your colleague adds that there is nothing you can do to stop him. You have the urge to punch your colleague in the face. You feel yourself getting more and more angry as your colleague preaches to you about being a better employee and not insulting upper management.

Your colleague walks out of the break room. You imagine what would happen if you did not get the promotion after all the work that you put into it. You also realize that the colleague is not faking and will probably tell your supervisor as soon as possible. Anger continues to rage through your body and cloud your head with thoughts of aggression, revenge, and retaliation.

You are a senior management consultant for a large consulting firm. It is nearing the end of the work week when your supervisor tells you that you will be working on a project with a team of civil engineers. One of the senior engineers has updated several different sections of the company’s civil engineering manual, and has requested that you read and memorize all the different sections. Most of the changes are either very technical or very obvious. Just the thought of reading and memorizing the manual makes you feel bored beyond belief.

You sit down at your desk and open the manual. The first section involves water installations for buildings. Specifically, it states that potential sources of water, the sustainability thereof and the water quality must first be assessed when planning a water supply scheme for the project. Careful consideration should be taken of water pressure sensitivity of the water supply measured over at least a 24-hour normal workday cycle. The most common water sources are potable water from bulk supply pipelines.

You feel a general unpleasantness as you continue to read about water supply schemes.

The manual notes that the following basic principles must be adhered to when developing a water supply scheme: The presence, quantity and depth of underground water should normally be predicted beforehand with a high degree of accuracy. Attention must be given to pressure requirements, annual average daily flow, peak flows and summer peak flows to design water supply systems. You become more and more uninterested and find it difficult to concentrate.

In addition, the manual explains that depending on economy, water quality and site conditions, the use of uPVC pipes is preferred by the company for pipes larger than 75mm diameter and HDPE for pipes equal to and smaller than 75mm diameter. In dolomitic areas only HDPE pipes may be used underground, unless specifically approved otherwise by the company. There were also changes made regarding subsurface drainage. Specifically, the outside of basement walls should be adequately waterproofed and a drainage system should drain the subsurface water through the basement walls into collector drains inside the building. The water
from these drains should drain into a sump to be pumped into a suitable point of the storm water system around the building.

The manual makes clear that in proposing design changes, particular attention should be paid to the suitability of the site, availability of construction materials, bulk and existing services and the presence of servitudes, or the necessity of acquiring servitudes or extra land as well as problems that may arise from adjoining sites. You spend several additional hours reviewing other changes in the manual, including sewage requirements, traffic impact studies, geotechnical areas, separate contract clauses, and security estimates. You continue to feel incredibly bored, uninterested, and weary.
Emotion Writing Task
Strack et al. (1985)

Remembering an experience in your life.

Please try to remember an experience in the past 2 years that left you feeling extremely angry/sad/anxious/bored. Try to pick a situation in which you felt more angry/sad/anxious/bored than any other emotion. Try not to pick a situation in which you felt an emotion other than anger/sadness/anxiety/boredom, or in which you felt mixed emotions.

Try to imagine yourself back in that situation and try to recall as vividly as you can just what being so angry/sad/anxious/bored felt like. Don’t just think about being so angry/sad/anxious/bored; try to actually feel the anger/sadness/anxiety/boredom, as though you were experiencing it right now; this will help you write a more realistic account. Try to focus on the experience of anger/sadness/anxiety/boredom itself, what it felt like at the time, not on what came before or after.

Now try to describe that feeling to a best friend or relative. It is very important that your friend understands exactly how you felt during the incident and why you felt that way.

Please write what you would tell your friend or relative. Include as much detail as possible. As a guide, we expect that your story be at least three paragraphs – but please feel free to write more.

Remember: Your reply is completely anonymous.
**Emotion Items**
(Dunn & Schweitzer, 2005; Gasper & Middlewood, 2014; Kouchaki & Desai, 2015; Kugler et al., 2010; Watson & Clark, 1994; Watson et al., 1988)

*Instructions:* Please answer the following questions on a scale from (1) do not feel at all to (9) feel stronger than I ever have about how you feel **right now.**

1. Cheerful
2. Nervous
3. Proud
4. Joyful
5. Mad
6. Dull
7. Anxious
8. Confident
9. Irritated
10. Delighted
11. Angry
12. Worried
13. Sad
14. Happy
15. Gloomy
16. Disinterested
17. Upset
18. Apprehensive
19. Bored
Certainty and Threat Items
(Bagneux et al., 2012; Gaab et al., 2005; Peacock & Wong, 1990)

Instructions: Please answer the following questions on a scale from (1) strongly agree to (7) strongly disagree about how you feel right now.

1. I am uncertain about what is happening now.
2. I can predict what is going to happen next.
3. I know what is happening right now.
4. I feel like I understand what is happening now.
5. I understand why this is happening now.
6. I do not feel threatened by this event.
7. I find this event very unpleasant.
8. I do not feel worried because the event does not represent any threat for me.
9. This event scares me.
10. This event could result in a negative outcome for me.
11. This event could have a negative impact on me.
12. This event could harm me.
13. This event could be dangerous for me.
Sensemaking

*Instructions:* Please answer the following questions on a scale from *(1) strongly agree* to *(7) strongly disagree* about how you feel *right now*.

1. This event makes me integrate new information into my view of what is normal.
2. This event makes me actively rethink my view of what is normal.
3. This event makes me feel like I have to come up with another way of looking at things.
4. This event makes me consider alternative ways that the world might work.
Need for Cognition  
(Cacioppo & Petty, 1982)

Instructions: Please answer the following questions on a scale from (1) strongly agree to (7) strongly disagree.

1. I would prefer complex to simple problems.
2. I like to have the responsibility of handling a situation that requires a lot of thinking.
3. Thinking is not my idea of fun.
4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.
5. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something.
6. I find satisfaction in deliberating hard and for long hours.
7. I only think as hard as I have to.
8. I prefer to think about small, daily projects to long-term ones.
9. I like tasks that require little thought once I’ve learned them.
10. The idea of relying on thought to make my way to the top appeals to me.
11. I really enjoy a task that involves coming up with new solutions to problems.
12. Learning new ways to think doesn’t excite me very much.
13. I prefer my life to be filled with puzzles that I must solve.
14. The notion of thinking abstractly is appealing to me.
15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.
17. It’s enough for me that something gets the job done, I don’t care how or why it works.
18. I usually end up deliberating about issues even when they do not affect me personally.
**Intellectual Stimulation**  
(Podsakoff, MacKenzie, Moorman, & Fetter, 1990)

*Instructions:* Please answer the following questions on a scale from (1) *strongly agree* to (7) *strongly disagree.*

1. I often challenge myself to think about old problems in new ways.
2. I often ask myself questions that prompt me to think.
3. I often stimulate myself to rethink the way I do things.
4. I often have ideas that challenge me to reexamine some of the basic assumptions about my life.
NEO-PI-R: Openness to Experience
(Costa & McCrae, 2008)

Instructions: Please answer the following questions on a scale from (1) strongly agree to (7) strongly disagree.

1. I’m pretty set in my ways.
2. I think it’s interesting to learn and develop new hobbies.
3. Once I find the right way to do something, I stick to it.
4. I often try new and foreign foods.
5. I prefer to spend my time in familiar surroundings.
6. Sometimes I make changes around the house just to try something different.
7. On a vacation, I prefer going back to a tried and true spot.
8. I follow the same route when I go someplace.
9. I often enjoy playing with theories or abstract ideas.
10. I find philosophical arguments boring.
11. I enjoy solving problems or puzzles.
12. I sometimes lose interest when people talk about very abstract, theoretical matters.
13. I enjoy working on “mind-twister”-type puzzles.
14. I have little interest in speculating on the nature of the universe or the human condition.
15. I have a lot of intellectual curiosity.
16. I have a wide range of intellectual interests.
17. I believe letting students hear controversial speakers can only confuse and mislead them.
18. I believe that laws and social policies should change to reflect the needs of a changing world.
19. I believe we should look to our religious authorities for decisions on moral issues.
20. I believe that the different ideas of right and wrong that people in other societies have may be valid for them.
21. I believe that loyalty to one’s ideals and principles is more important than “open-mindedness”.
22. I consider myself broad-minded and tolerant of other people’s lifestyles.
23. I think that if people don’t know what they believe in by the time they’re 25, there’s something wrong with them.
24. I believe that the “new morality” of permissiveness is no morality at all.
Resistance to Change
(Oreg, 2003)

*Instructions:* Please answer the following questions on a scale from (1) *strongly agree* to (6) *strongly disagree.*

1. I generally consider changes to be a negative thing.
2. I’ll take a routine day over a day full of unexpected events any time.
3. I like to do the same old things rather than try new and different ones.
4. Whenever my life forms a stable routine, I look for ways to change it.
5. I’d rather be bored than surprised.
6. If I were to be informed that there’s going to be a significant change regarding the way things are done at work, I would probably feel stressed.
7. When I am informed of a change of plans, I tense up a bit.
8. When things don’t go according to plans, it stresses me out.
9. If one of my professors changed the grading criteria, it would probably make me feel uncomfortable even if I thought I'd do just as well without having to do extra work.
10. Changing plans seems like a real hassle to me.
11. Often, I feel a bit uncomfortable even about changes that may potentially improve my life.
12. When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.
13. I sometimes find myself avoiding changes that I know will be good for me.
15. I don’t change my mind easily.
16. Once I’ve come to a conclusion, I’m not likely to change my mind.
17. My views are very consistent over time.
**Traditionalism**

(Duckitt, Bizumic, Krauss, & Heled, 2010)

*Instructions:* Please answer the following questions on a scale from (1) *strongly agree* to (7) *strongly disagree.*

1. Nobody should stick to the “straight and narrow.” Instead people should break loose and try out lots of different ideas and experiences.
2. The “old-fashioned ways” and “old-fashioned values” still show the best way to live.
3. God’s laws about abortion, pornography, and marriage must be strictly followed before it is too late.
4. There is absolutely nothing wrong with nudist camps.
5. This country will flourish if young people stop experimenting with drugs, alcohol, and sex, and pay more attention to family values.
6. There is nothing wrong with premarital sexual intercourse.
7. Traditional values, customs, and morality have a lot wrong with them.
8. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.
9. The radical and sinful new ways of living and behaving of many young people may one day destroy our society.
10. Trashy magazines and radical literature in our communities are poisoning the minds of our young people.
11. It is important that we preserve our traditional values and moral standards.
12. People should pay less attention to the bible and the other old-fashioned forms of religious guidance, and instead develop their own personal standards of what is moral and immoral.
Personal Need for Structure
(Neuberg & Newsom, 1993)

Instructions: Please answer the following questions on a scale from (1) strongly agree to (7) strongly disagree.

1. It upsets me to go into a situation without knowing what I can expect from it.
2. I’m not bothered by things that interrupt my daily routine.
3. I enjoy having a clear andstructured mode of life.
4. I like to have a place for everything and everything in its place.
5. I enjoy being spontaneous.
6. I find that a well-ordered life with regular hours makes my life tedious.
7. I don’t like situations that are uncertain.
8. I hate to change my plans at the last minute.
9. I hate to be with people who are unpredictable.
10. I find that a consistent routine enables me to enjoy life more.
11. I enjoy the exhilaration of being in unpredictable situations.
12. I become uncomfortable when the rules in a situation are not clear.
Behavioral Identification Scale
(Smith & Trope, 2006)

Instructions: Please indicate the point along the scale that best describes how you see that activity.

1. Making a list
1 (writing things down) 2 3 4 5 6 (getting organized)

2. Reading
1 (following lines of print) 2 3 4 5 6 (gaining knowledge)

3. Joining the Army
1 (signing up) 2 3 4 5 6 (helping Nation’s defense)

4. Washing clothes
1 (clothes into machine) 2 3 4 5 6 (removing odors)

5. Picking an apple
1 (pulling apple off branch) 2 3 4 5 6 (getting something to eat)

6. Chopping down a tree
1 (wielding an ax) 2 3 4 5 6 (getting firewood)

7. Measuring a room for carpeting
1 (using yardstick) 2 3 4 5 6 (getting ready to remodel)

8. Cleaning the house
1 (vacuuming floor) 2 3 4 5 6 (showing cleanliness)

9. Painting a room
1 (brush strokes) 2 3 4 5 6 (making room look fresh)

10. Paying the rent
1 (writing check) 2 3 4 5 6 (maintaining place to live)
11. Caring for houseplants
1 (watering plants) 2 3 4 5 6 (making room look nice)

12. Locking a door
1 (putting key into lock) 2 3 4 5 6 (securing the house)

13. Voting
1 (marking ballot) 2 3 4 5 6 (influencing election)

14. Climbing a tree
1 (holding on to branches) 2 3 4 5 6 (getting a good view)

15. Filling out a personality test
1 (answering questions) 2 3 4 5 6 (revealing what you’re like)

16. Brushing teeth
1 (moving brush around) 2 3 4 5 6 (preventing tooth decay)

17. Taking a test
1 (answering questions) 2 3 4 5 6 (showing your knowledge)

18. Greeting someone
1 (saying hello) 2 3 4 5 6 (showing friendliness)

19. Resisting temptation
1 (saying “no”) 2 3 4 5 6 (showing moral courage)

20. Eating
1 (chew and swallow) 2 3 4 5 6 (getting nutrition)

21. Growing a garden
1 (planting seeds) 2 3 4 5 6 (getting fresh vegetables)

22. Traveling by car
1 (following a map) 2 3 4 5 6 (seeing the countryside)
23. Having a cavity filled

1 (going to dentist) 2 3 4 5 6 (protecting your teeth)

24. Talking to a child

1 (using simple words) 2 3 4 5 6 (teaching a child something)

25. Pushing a doorbell

1 (moving a finger) 2 3 4 5 6 (seeing if someone’s home)
Navon Task
(Navon, 1977)

Instructions: If the picture contains the letter T please click “T”. If the picture contains the letter H please click “H”. Please respond as quickly as possible. (Only one of the eight letters will be shown at once.)
**Joker Task**  
(Pittarello et al., 2015)

*Instructions*: In the deck there are several cards labeled from 1 to 10 and “J” cards (stands for “JOKER”). In each trial, two random cards selected from the deck will be displayed on the screen. Whenever both cards contain a number from 1-10, you are allowed to keep all your money. Whenever you see a “J” card, either on the left or on the right, you should report that you saw a “J” card and lose $4.00 from the original $100 you received. You will start the game with $100. Depending upon the cards that are randomly drawn from the deck, you can end the game with $100 or less. At the end of the study, 2 participants will be chosen randomly to receive the amount they earned at the end of their session. Your identity will remain completely anonymous.

Two examples (there are a total of 40 slides, 20 with a “J”, and 20 without a “J”):

1  
J

Yes, there was a joker  
(lose $4.00)

No, there was not a joker  
(lose no money)

[page break]

9  
2

Yes, there was a joker  
(lose $4.00)

No, there was not a joker  
(lose no money)
Email Task
(Christian & Ellis, 2011; Evans & Gilliland, 2006)

The Eller College of Management is developing an online mentoring program for prospective applicants to ask upper-level business students questions about the school and its programs. You will be pilot-testing this resource by accessing a temporary e-mail account that contains two messages from prospective students. Your role as a mentor would be to represent the business school by answering questions from these potential applicants. Please respond to the emails. Your answers will be completely anonymous.

Email 1: Dear Eller Mentor, I am just curious about the classes they offer. I am planning on paying my own way through college and I am wondering if there are any classes that are a waste of my time and money there and if so why? Thanx—Raj

Email 2: Are the Eller students stuck up like it seems or are the some nice ones? Not to be rude, but I don’t really care much about getting in there anyway and so I am not even sure why I’m here.—jess
Table 1. *Means and standard deviations for variables by condition in Pilot Study 1 (Scenarios).*

<table>
<thead>
<tr>
<th></th>
<th>Bored</th>
<th>Angry</th>
<th>Sad</th>
<th>Anxious</th>
<th>PA</th>
<th>Certainty</th>
<th>Threat</th>
<th>Sensemaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bored</td>
<td>6.62 (1.93)</td>
<td>3.76 (1.65)</td>
<td>4.10 (1.85)</td>
<td>4.34 (1.40)</td>
<td>2.85 (1.21)</td>
<td>4.60 (1.20)</td>
<td>3.88 (1.62)</td>
<td>3.98 (1.53)</td>
</tr>
<tr>
<td>Anger</td>
<td>2.52 (1.86)</td>
<td>7.29 (2.58)</td>
<td>4.67 (2.40)</td>
<td>5.57 (2.49)</td>
<td>2.19 (1.82)</td>
<td>5.11 (1.20)</td>
<td>5.64 (1.29)</td>
<td>3.88 (1.72)</td>
</tr>
<tr>
<td>Sadness</td>
<td>1.85 (1.10)</td>
<td>3.40 (2.16)</td>
<td>7.15 (1.39)</td>
<td>5.63 (2.60)</td>
<td>1.76 (1.34)</td>
<td>2.55 (1.38)</td>
<td>4.66 (1.45)</td>
<td>4.91 (1.13)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.75 (2.48)</td>
<td>4.17 (1.98)</td>
<td>5.94 (1.39)</td>
<td>7.61 (0.81)</td>
<td>1.88 (1.61)</td>
<td>2.89 (1.66)</td>
<td>5.75 (0.89)</td>
<td>4.91 (0.98)</td>
</tr>
</tbody>
</table>

*Note. N=60. SDs are in parentheses. PA=positive affect. All emotion variables were measured on a scale from 1-9. Certainty, threat, and sensemaking were measured on a scale from 1-7.*
Table 2. Means, standard deviations, and correlations for sensemaking scale and trait measures in Pilot Study 1 (Scenarios).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SM</td>
<td>4.45</td>
<td>1.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. IS</td>
<td>4.69</td>
<td>1.31</td>
<td>.40**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. NFC</td>
<td>4.14</td>
<td>1.18</td>
<td></td>
<td>.01</td>
<td>.19</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. OTE</td>
<td>4.40</td>
<td>0.98</td>
<td>.01</td>
<td>.08</td>
<td>.61**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. RTC</td>
<td>3.96</td>
<td>0.99</td>
<td>-.28*</td>
<td>-.07</td>
<td>-.03</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. PNS</td>
<td>4.72</td>
<td>1.17</td>
<td>-.27*</td>
<td>-.04</td>
<td>-.52**</td>
<td>-.41**</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. TRAD</td>
<td>3.78</td>
<td>1.33</td>
<td>.02</td>
<td>.21</td>
<td>-.22</td>
<td>-.58**</td>
<td>.08</td>
<td>.19</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 60. SM=sensemaking, IS=intellectual stimulation, NFC=need for cognition, OTE=openness to experience, RTC=resistance to change, PNS=personal need for structure, TRAD=traditionalism. SM, IS, NFC, OTE, PNS, and TRAD were measured on a scale from 1-7. RTC was measured on a scale from 1-6.

*p < .05

**p < .01
Table 3. *Means and standard deviations for variables by condition in Study 1.*

<table>
<thead>
<tr>
<th></th>
<th>Bored</th>
<th>Angry</th>
<th>Sad</th>
<th>Anxious</th>
<th>PA</th>
<th>Certainty</th>
<th>Threat</th>
<th>Arousal</th>
<th>SM</th>
<th>AF</th>
<th>RB</th>
<th>IA</th>
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<tr>
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<td>3.79</td>
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<td>3.93</td>
<td>4.17</td>
<td>30.44</td>
<td>3.44</td>
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<tr>
<td></td>
<td>(1.23)</td>
<td>(1.97)</td>
<td>(1.77)</td>
<td>(1.37)</td>
<td>(0.86)</td>
<td>(1.34)</td>
<td>(1.11)</td>
<td>(10.10)</td>
<td>(1.51)</td>
<td>(0.73)</td>
<td>(21.94)</td>
<td>(0.83)</td>
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<td>Anger</td>
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<td>6.17</td>
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<td>5.08</td>
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<td>4.58</td>
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<td>83.81</td>
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<td>3.79</td>
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<tr>
<td></td>
<td>(2.03)</td>
<td>(2.26)</td>
<td>(2.10)</td>
<td>(2.05)</td>
<td>(1.14)</td>
<td>(1.18)</td>
<td>(1.24)</td>
<td>(12.33)</td>
<td>(1.26)</td>
<td>(0.62)</td>
<td>(27.77)</td>
<td>(0.85)</td>
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<tr>
<td>Sadness</td>
<td>2.87</td>
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<td></td>
<td>(1.53)</td>
<td>(1.49)</td>
<td>(1.86)</td>
<td>(2.00)</td>
<td>(0.94)</td>
<td>(1.60)</td>
<td>(1.28)</td>
<td>(10.77)</td>
<td>(1.19)</td>
<td>(0.77)</td>
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<td>(0.80)</td>
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<td>Anxiety</td>
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<td>2.79</td>
<td>4.58</td>
<td>6.15</td>
<td>1.71</td>
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<td></td>
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<td>(1.53)</td>
<td>(2.22)</td>
<td>(1.73)</td>
<td>(1.14)</td>
<td>(1.27)</td>
<td>(1.24)</td>
<td>(11.63)</td>
<td>(1.21)</td>
<td>(0.79)</td>
<td>(27.01)</td>
<td>(0.69)</td>
</tr>
</tbody>
</table>

Note. N=146. SDs are in parentheses. PA=positive affect, SM=sensemaking, AF=attentional focus, RB=rule breaking, IA=interpersonal aggression. All emotion variables were measured on a scale from 1-9. Certainty, threat, sensemaking and aggression were measured on a scale from 1-7. Attentional focus was measured on a scale from 1-6. Rule breaking was measured on a scale from 20 (no rule breaking) to 100 (maximum rule breaking). Arousal is heart rate expressed in beats/minute.
Table 4. Means, standard deviations, and correlations for variables in Study 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
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<td>1. Anger</td>
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<td>2. Sadness</td>
<td>.26</td>
<td>.44</td>
<td>--</td>
<td>--</td>
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<td>3. Anxiety</td>
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<td>.43</td>
<td>--</td>
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<tr>
<td>4. Arousal</td>
<td>78.65</td>
<td>12.28</td>
<td>.24**</td>
<td>-.18*</td>
<td>.25**</td>
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<tr>
<td>5. SM</td>
<td>4.34</td>
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<td>6. AF</td>
<td>4.10</td>
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<td>-.01</td>
<td>-.06</td>
<td>.01</td>
<td>.09</td>
<td>.18*</td>
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<td>7. RB</td>
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<td>-.31**</td>
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<td>-.13</td>
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<td></td>
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<td>8. IA</td>
<td>3.49</td>
<td>.85</td>
<td>.20*</td>
<td>-.35**</td>
<td>.19*</td>
<td>.12</td>
<td>-.06</td>
<td>-.11</td>
<td>.12</td>
<td></td>
</tr>
</tbody>
</table>

Note. N=146. Anger is coded as 0=not anger (i.e., boredom, sadness, or anxiety), 1=anger; Anxiety is coded as 0=not anxiety, 1=anxiety. Sadness is coded as 0=not sadness, 1=sadness. SM=sensemaking, AF=attentional focus, RB=rule breaking, IA=interpersonal aggression.

*p < .05  
**p < .01
Table 5. Means and standard deviations for variables by condition in Pilot Study 2 (Writing).

<table>
<thead>
<tr>
<th></th>
<th>Bored</th>
<th>Angry</th>
<th>Sad</th>
<th>Anxious</th>
<th>PA</th>
<th>Certainty</th>
<th>Threat</th>
</tr>
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<td>2.02 (1.53)</td>
<td>4.90 (1.39)</td>
<td>3.02 (1.25)</td>
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<td>4.83 (2.08)</td>
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<td>2.03 (1.36)</td>
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Note. N = 82. SDs are in parentheses. PA=positive affect. All emotion variables were measured on a scale from 1-9. Certainty and threat were measured on a scale from 1-7.
Table 6. Means and standard deviations for variables by condition in Study 2

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<th>Anxious</th>
<th>PA</th>
<th>Certainty</th>
<th>Threat</th>
<th>Arousal</th>
<th>SM</th>
<th>AF</th>
<th>RB</th>
<th>IA</th>
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<td>2.95</td>
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<td>(1.57)</td>
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<td>(1.39)</td>
<td>(0.59)</td>
<td>(24.12)</td>
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<td>(14.03)</td>
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<td>(0.70)</td>
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<td>(0.64)</td>
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<td>3.38</td>
<td>2.93</td>
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<td>4.12</td>
<td>29.78</td>
<td>3.77</td>
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<td>(2.09)</td>
<td>(2.05)</td>
<td>(1.49)</td>
<td>(1.58)</td>
<td>(0.99)</td>
<td>(0.71)</td>
<td>(12.89)</td>
<td>(1.08)</td>
<td>(0.65)</td>
<td>(24.76)</td>
<td>(0.87)</td>
</tr>
</tbody>
</table>

Note. N=139. SDs are in parentheses. PA=positive affect, SM=sensemaking, AF=attentional focus, RB=rule breaking, IA=interpersonal aggression. All emotion variables were measured on a scale from 1-9. Certainty, threat, sensemaking and aggression were measured on a scale from 1-7. Attentional focus was measured on a scale from 1-6. Rule breaking was measured on a scale from 20 (no rule breaking) to 100 (maximum rule breaking). Arousal is heart rate expressed in beats/minute.
Table 7. Means, standard deviations, and correlations for variables in Study 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
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<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
</tr>
<tr>
<td>2. Sadness</td>
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<td>.44</td>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>.06</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. SM</td>
<td>4.51</td>
<td>1.49</td>
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<td>.31**</td>
<td>.22*</td>
<td>.10</td>
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<td></td>
<td></td>
</tr>
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<td>.00</td>
<td>-.05</td>
<td>.06</td>
<td>-.09</td>
<td>-.03</td>
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<td></td>
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<tr>
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<td>-.25**</td>
<td>-.05</td>
<td>-.04</td>
<td>.00</td>
<td>-.01</td>
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<td>.01</td>
<td>.00</td>
<td>-.09</td>
<td>-.04</td>
<td>.11</td>
<td></td>
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</tbody>
</table>

Note. N=139. SM=sensemaking, AF=attentional focus, RB=rule breaking, IA=interpersonal aggression. Anger is coded as 0=not anger (i.e., boredom, sadness, or anxiety), 1=anger; Anxiety is coded as 0=not anxiety, 1=anxiety. Sadness is coded as 0=not sadness, 1=sadness.

*p < .05
**p < .01
Table 8. Means and standard deviations for variables by condition in Pilot Study 3 (Videos).

<table>
<thead>
<tr>
<th></th>
<th>Bored</th>
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<th>Sad</th>
<th>Anxious</th>
<th>PA</th>
<th>Certainty</th>
<th>Threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bored</td>
<td>7.57 (1.59)</td>
<td>3.52 (1.58)</td>
<td>2.45 (1.44)</td>
<td>2.34 (1.78)</td>
<td>2.04 (0.77)</td>
<td>5.61 (1.27)</td>
<td>2.42 (0.58)</td>
</tr>
<tr>
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<td>6.40 (2.02)</td>
<td>5.11 (2.24)</td>
<td>1.33 (0.41)</td>
<td>4.76 (1.38)</td>
<td>5.99 (1.42)</td>
</tr>
<tr>
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<td>6.66 (1.57)</td>
<td>1.53 (1.20)</td>
<td>3.21 (1.68)</td>
<td>2.95 (1.01)</td>
</tr>
<tr>
<td>Anxiety</td>
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<td>6.63 (1.80)</td>
<td>8.17 (0.82)</td>
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<td>3.28 (1.79)</td>
<td>6.38 (0.87)</td>
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</table>

Note. N=62. SDs are in parentheses. PA=positive affect. All emotion variables were measured on a scale from 1-9. Certainty and threat were measured on a scale from 1-7.
Table 9. Means and standard deviations for variables by condition in Study 3.

<table>
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<th>Angry</th>
<th>Sad</th>
<th>Anxious</th>
<th>PA</th>
<th>Certainty</th>
<th>Threat</th>
<th>Arousal</th>
<th>SM</th>
<th>AF</th>
<th>RB</th>
<th>IA</th>
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<td>(1.32)</td>
<td>(1.71)</td>
<td>(1.04)</td>
<td>(1.05)</td>
<td>(1.36)</td>
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<td>(1.25)</td>
<td>(1.05)</td>
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<td>(2.16)</td>
<td>(1.39)</td>
<td>(1.13)</td>
<td>(0.91)</td>
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<td>(1.22)</td>
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<td>(1.12)</td>
<td>(1.54)</td>
<td>(23.96)</td>
<td>(1.14)</td>
<td>(.28)</td>
<td>(30.03)</td>
<td>(0.81)</td>
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</table>

Note. N=145. SDs are in parentheses. PA=positive affect, SM=sensemaking, AF=attentional focus (average global time minus average local time in seconds), RB=rule breaking, IA=interpersonal aggression. All emotion variables were measured on a scale from 1-9. Certainty, threat, sensemaking and aggression were measured on a scale from 1-7. Rule breaking was measured on a scale from 20 (no rule breaking) to 100 (maximum rule breaking). Arousal is heart rate expressed in beats/minute.
Table 10. Means, standard deviations, and correlations for variables in Study 3.

<table>
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<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
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<th>7.</th>
<th>8.</th>
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<td>.43</td>
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<td>3. Anxiety</td>
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<td>.44</td>
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Note. N=145. SM=sensemaking, AF=attentional focus, RB=rule breaking, IA=interpersonal aggression. Anger is coded as 0=not anger (i.e., boredom, sadness, or anxiety), 1=anger; Anxiety is coded as 0=not anxiety, 1=anxiety. Sadness is coded as 0=not sadness, 1=sadness.

*p < .05  
**p < .01
Table 11. *Comparison of results across the three studies.*

<table>
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<tr>
<th>Predictions</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
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<tbody>
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<td>Partially Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Anger → Arousal (H1b)</td>
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<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Sadness → Arousal (H1c)</td>
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<td>Supported</td>
<td>Supported</td>
</tr>
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<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Sadness → Sensemaking (H2b)</td>
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<td>Supported</td>
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</tr>
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<td>Supported</td>
</tr>
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<td>Supported</td>
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<td>Partially Supported</td>
<td>Supported</td>
<td>Supported</td>
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<td>Supported</td>
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<td>Supported</td>
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*Note. N = 430. Hypothesis 3-8 were not supported in any study. ‘Supported’ means p < .05; ‘Partially Supported’ means p < .10.*
Figure 1. Hypothesized model.
References


Bagneux, V., Bollon, T., & Dantzer, C. (2012). Do (un)certainty appraisal tendencies reverse the influence of emotions on risk taking in sequential tasks? *Cognition & Emotion, 26*, 568-


EMOTIONS AND DEVIANCE


