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AFFECT, EMOTION REGULATION, AND LEADER EFFECTIVENESS: EXAMINING THE ROLE OF TRAIT AFFECT AND EMOTION REGULATION ON LEADER PROBLEM SOLVING PERFORMANCE

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AFFECT, EMOTION REGULATION, AND LEADER EFFECTIVENESS: EXAMINING THE ROLE OF TRAIT AFFECT AND EMOTION REGULATION ON LEADER PROBLEM SOLVING PERFORMANCE

A THESIS APPROVED FOR THE
DEPARTMENT OF PSYCHOLOGY

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Abstract

Emotion-related constructs, such as affect and emotion regulation, have been identified as being critical to effective leadership. Prior research in both of these areas has tended to examine the role of these constructs in terms of their impact on follower outcomes and leadership styles. However, as affect and emotion regulation are likely to play an integral role in cognition, the present study investigated the role of individual differences in affect, affect intensity, and emotion regulation on problem solving performance in leadership domains. Additionally, the study examined the relationship between these emotion-related constructs. Findings suggest that positive and negative affect are differentially related to problem solving performance. Further, cognitive-focused emotion regulation strategies appear to be more beneficial to leader problem solving than emotion-avoidant strategies. Finally, as differences in affect are associated with differences in use of emotion regulation strategies, mediation analyses were conducted examining their relationship with leader outcomes. Implications and future directions are also discussed.

Keywords: leader affect, emotion regulation, leader performance, leader problem solving

Introduction

It is no surprise to hear that worklife is loaded with affective events. Emotions can arise from a number of situations including conflicts with other workers, the mounting pressure from an impending deadline, or celebrating in the success of a project. Emotions and general affect influence a number of processes and behaviors that are key to organizational functioning (Barsade & Gibson, 2007). Due to the position of influence held by organizational leaders, research on affect in the workplace has placed an emphasis on understanding its implications for effective leadership (e.g. Damen, Van Knippenberg, & Van Knippenberg, 2007; Newcombe & Ashkanasy, 2002; Sy, Côté, & Saaevdra, 2005; Bono & Ilies, 2006)

Despite the fact that affect plays a substantial role in certain leadership processes (Humphrey, 2008), there are still a number of complexities that require additional study. Leadership is a process that is grounded in social interactions and, as such, can involve emotional processes (Dasborough & Ashkanasy, 2002). Therefore, several domains of leadership behavior are emotionally laden such as conflict resolution, motivation, feedback, ethical decision making, etc. (Connelly et al., 2013). Leaders operating within contexts such as these not only have to deal with their own emotions, but the emotions being experienced and expressed by those involved in the situation.

These types of situations call not only for effective interpersonal skills, but social cognitive skills as well (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000c). This form of skilled performance requires leaders to accurately identify the present problem and apply their problem solution within the given social context in a way that addresses the needs and intricacies of the particular social system (Mumford et

al., 2000c). These complex, ill-defined contexts in which leaders must perform are likely to be filled with affect-evoking features. Given the relationships of positive and negative affect to creativity (e.g. Amabile, Barsade, Mueller, & Staw, 2005), problem solving (e.g. Isen, Rosenzweig, & Young, 1991), and decision making (e.g. Seo & Barrett, 2007), it may be important to examine the role of affect in leaders' ability to solve complex social problems.

Individuals, including leaders, often act in ways that allow them to control for affective states and reactions (Gross, 2015). Accordingly, generalized affect is likely to work in tandem with other emotional processes, such as emotion regulation, to influence leadership. As the regulation of affect can occur consciously and subconsciously (Gross, 2008), it may be that the influence of positive and negative affect on leadership may operate through emotion regulation strategies. Due to their initial affective reactions, leaders may have to amplify, subdue, or change their affect to influence followers. As a result, understanding the interplay between affect and emotion regulation within the context of leadership may help clarify the intricacies of how affective processes impact leadership.

The purpose of the present paper is to examine the effects of both affect and emotion regulation on leader problem solving performance and problem solutions. Furthermore, the current study contributes to the leadership literature in a number of additional ways. First, the present study examines if the frequency and intensity of leader trait affect differentially influence leadership. Relatively little is known about how affect intensity influences leadership, even though it has been identified as a separate aspect of one's emotional experience (Schimmack & Diener, 1997). Second,

this study assesses the relationship of emotion regulation strategies identified by Gross (1998) to leader problem solving in complex social domains. Thirdly, this study will identify potential adaptive and maladaptive emotion regulation strategies for the leadership context studied here. As situations can influence the adaptiveness of regulation strategies, it may be that the context of leadership calls for the use of certain strategies. Finally, the present study examines the relationships of trait affect and trait affect intensity to the use of emotion regulation strategies and if the influence of affect on leader performance is mediated through emotion regulation.

Leadership Skills and Performance

In order to argue for the worth of affect and emotion regulation within the context of leadership, it is necessary to describe what guides the evaluation of effective leadership. One such framework developed by Mumford and colleagues (Mumford et al., 2000c; Mumford, Zaccaro, Connelly, & Marks, 2000b; Mumford, Marks, Connelly, Zaccaro, & Reiter-Palmon, 2000a; Connelly et al., 2000; Zaccaro, Mumford, Connelly, Marks, & Gilbert, 2000) suggests effective leadership is comprised of a series of skills that enable a leader to solve social and organizational problems. The capabilities of a leader, namely their problem solving skills and social judgment skills, have a direct influence on their ability to appropriately address organizational issues in turn affecting subsequent performance.

This social-cognitive approach to leadership and leader performance provides an interesting opportunity for further uncovering the potentially influential role of various affective processes, specifically trait affect and emotion regulation, within the area of leadership. By addressing the role of these constructs within the skills-based approach

to leadership (Mumford et al., 2000c), we may further our understanding of what makes an effective leader.

Leader Trait Affect Frequency

The increased emphasis on affect in the workplace has led to a surge of affect-related research within the leadership domain (Gooty, Connelly, Griffith, & Gupta, 2010; Rajah, Song, & Arvey, 2011). The increased attention given to affective processes within the realm of leadership underscores the increasingly accepted idea that affect is an integral part of leadership. However, due the complexity with which affect is likely to operate within individual leaders and organizational dilemmas, further study is required.

Trait affect can be understood as one's tendency to feel positive or negative emotions (Barsade & Gibson, 2007). Positive and negative affect reflect two unipolar dimensions, where positive affect is characterized by feelings of excitement, alertness, and activeness and negative affect is characterized by feelings of fear, distress, and anger (Watson, Clark, & Tellegen, 1988). As one's trait affect represents their disposition to feel a particular way, affect is likely to produce a stable influence on leadership (Joseph, Dhannai, Shen, McHugh, & McCord, 2015). Therefore, gaining a better understanding of how affect influences leader outcomes can help us to understand the various ways in which leader affect manifests within the workplace.

A recent meta-analysis by Joseph et al. (2015) highlights the current status of the research involving leader trait affect and leadership. Their results indicate that leader affect relates to leader outcomes beyond the personality traits of extraversion and neuroticism. More specifically, leader trait positive affect exhibited positive

relationships with leader effectiveness (e.g. ratings, group performance) (ρ = .33), leader emergence (ρ = .28), transformational leadership (ρ = .45), and transactional leadership (ρ = .09). On the other hand, leader trait negative affect displayed negative relationships with leader effectiveness (ρ = -.24), leadership emergence (ρ = -.13), and transformational leadership (ρ = -.18).

However, as evidenced by empirical reviews (e.g. Gooty et al., 2010) and the Joseph et al. (2015) meta-analysis, a significant amount of research has examined the impact of leader affect on follower outcomes and leadership styles/behaviors. Unfortunately, less attention has been given to understanding how a leader's affective tendencies impact their problem solving performance. Additionally, most research on positive and negative affect only considers the frequency, and not the intensity, of leader affect. As cognition is not only guided by logic, but one's affective reactions to a situation (Forgas, 2008), understanding how leader affect influences their problem solving performance will provide valuable insights into the performance and effectiveness of leaders.

Given that affect influences a variety of social judgments (Forgas, 1995), one's trait affect may additionally serve to influence leader judgment. However, the difficulty comes with identifying how positive and negative affect may assist, or hamper, the performance of the leader. Following the broaden-and-build theory of positive emotions (Fredrickson, 2011), positive affect may cause leaders to broaden their awareness of a situation as well as think about potential problem causes and solutions in a variety of ways. In complex social contexts that call for a thorough understanding of the problem at-hand as well as appropriate solutions, following the logic of Fredrickson (2001),

positive affect would enhance leader cognition by allowing them to be more adept at identifying the source of the problem and developing quality solutions. In line with this theory, Amabile, Barsade, Mueller, and Staw (2005) found that positive affect was linked to creative thoughts and creativity in organizations. Further, Staw and Barsade (1993) found that those high in positive affect were more likely to seek out additional task-relevant information and more likely to recognize the situational contingencies associated with decisions.

Despite the evidence above, the relationship between positive affect and leader problem solving performance may not be so clear-cut. Prior research has revealed a linkage between positive affect and decision biases that may be detrimental for effective leadership. For example, Isen and Patrick (1983) demonstrated that under conditions of risk, positive affect was associated with less risky behaviors. In addition to the findings associating positive affect with more risk aversive behaviors (e.g. Isen, Nygren, & Ashby, 1988; Nygren, Isen, Taylor, & Dulen, 1996), positive affect also has been found to relate to self-serving biases (Alloy, Abramson, & Viscusi, 1981). Therefore, in addition to the results above indicating a positive relationship between positive affect and decision making, ample evidence of the contrary exists as well. As such, of important note is the idea that the effect of positive affect on decision making is often task-dependent (Isen & Patrick, 1983).

Even though conflicting evidence exists in regard to the relationship between positive affect and problem solving, Isen (2001) argues that in situations characterized by complexity positive affect is likely to influence decision making in terms of both cognitive (e.g. divergent thinking, information integration) and social (e.g. helpfulness,

interpersonal understanding) outcomes. As the nature of leadership performance frequently involves complex, interpersonal situations, positive affect may serve to facilitate the problem solving process in leaders. For example, in complex social environments, positive affect may not only serve to help a leader identify an appropriate problem solution, but also enhance their awareness of others in the situation. Therefore, we expect positive affect to relate positively to leader problem solving performance as positive affect can broaden the cognitive and social resources (e.g. Fredrickson & Cohn, 2008) needed for effective leadership

Hypothesis 1: Trait positive affect frequency will be positively related to leadership problem solving performance.

Similar to the discussion above outlining the influence of positive affect on problem solving, the relationship between negative affect and effective problem solving is similarly complex. Negative affect has been shown to increase one's analytical thinking in turn narrowing attention on a specific source (Fredrickson, 2001). Schwarz and Bless (1991) argue that negative moods causes individuals to engage in more concentrated, detailed processing as a way to decrease their negative feelings. Along these lines, Martin, Ward, Achee, and Wyer (1993) found that negative affect results in more effortful processing. While these characteristics associated with negative affect appear to be beneficial, prior research has demonstrated that the ability for negative affect to facilitate, or hinder, decision making often depends on task and situational factors (e.g. Mittal & Ross, 1998; Raghunathan & Pham, 1999).

Echoing the statements made earlier, organizational situations frequently present leaders with complex, ill-defined problems that require effectively identifying relevant

information, formulating ideas, and implementing solutions within the context (Mumford et al., 2000b). While positive affect appears to increase the scope of one's thinking (Barsade & Gibson, 2007), the analytical focus associated with negative affect could hinder a leader's consideration of viable solution alternatives as it produces a considerably narrower attentional focus. As ill-defined social contexts are likely to be impact by a variety of causes, narrowing one's cognitive processing could be unfavorable, particularly if the wrong source is identified.

Negative affect could also hinder the social and interpersonal aspects of leader performance. Leaders need to implement their problem solutions within a social context in a way that meets the needs of other organizational members. The display of negative affect could negatively impact the reactions of followers (Sy et al., 2005) in turn decreasing the relative usefulness of the given solution. As negative affect appears to be associated with decision making biases and interpersonal outcomes that are detrimental to leader effectiveness, we expect a negative relationship between negative affect and leader problem solving performance.

*Hypothesis 2**:** Trait negative affect frequency will be negatively related to leadership problem solving performance.*

Leader Trait Affect Intensity

The definitions used to conceptualize trait affect often focus more on the valence of the emotion rather than the associated arousal levels (Gooty et al., 2010). As such, the treatment of affect in the context of leadership has tended to neglect, or failed, to discriminate between the potential differences that could arise from affective valence and affect intensity. However, prior emotion research (e.g. Schimmack & Diener, 1997;

Larsen & Diener, 1987) has demonstrated that affective experiences are categorized in terms of both frequency and intensity. Therefore, adding intensity into the affective equation may serve to further our understanding of the ways in which affect influences leadership.

Research has demonstrated that the relationship between valence and arousal often depends on the individual (Kuppens, Tuerlinck, Russell, & Barrett, 2013). Therefore, Kuppens et al. (2013) argue against researchers assessing one of the constructs (i.e. valence or arousal), while ignoring the other. Further, assuming the two are independent may be inappropriate. However, neglecting the influence of intensity all together is likely to paint an inaccurate picture of leader affect. As mean levels of valence and arousal are differentially related to personal adjustment outcomes (Kuppens, Van Mechelen, Nezlek, Dossche, & Timmermans, 2007), understanding how intensity impacts leader performance may be fruitful.

Trait affect intensity refers to a stable individual characteristic that reflects the strength of one's affective responsiveness (Larsen & Diener, 1987). A leader's affective intensity in a situation is likely to be of importance not only to others within the situation, as the intensity can serve as an informational signal, but for the problem solving capabilities of the leader. Prior research has demonstrated that emotional intensity, or arousal, is related to both follower and leader outcomes. Waples and Connelly (2008) found that active, externally directed emotions displayed by leaders facilitated greater follower performance. Additionally, Connelly and Ruark (2010) found that emotional arousal levels moderated follower satisfaction and follower

perceptions of the leader. However, little research in the leadership domain has addressed this from a trait approach and within the context of leadership skills.

Important differences related to decision making have been found in studies on affect intensity and emotion valence that are likely highly relevant to leader problem solving. Larsen, Diener, and Cropanzano (1987) found those high in affect intensity tend to personalize situations, focus their attention on the emotional aspects of situations, and generalize situational events more than those low in affect intensity. This finding is pertinent to leader problem solving as leaders who are high in affect intensity, regardless of the valence, may be more drawn to the affective aspects of the situation. For better or for worse, the source that a leader decides to dedicate their attention to is likely to influence their subsequent judgment processes and problem solutions.

Furthermore, extrapolating from research on cognitive-appraisal theories, generalizations about the cognitive tendencies associated with various emotions with different arousal levels can inform our thinking about how affect intensity might influence leader problem solving. For example, anger, a high arousal negative emotion, is associated with higher perceptions of certainty, higher levels of situational control, and that others are responsible for the situation; whereas, pride, a high arousal positive emotion, is associated with moderate levels of certainty and control as well as the belief that situation was caused by oneself (Lerner & Keltner, 2000). Furthermore, Connelly, Helton-Fauth, and Mumford (2004) demonstrated that more active emotions displayed stronger relationships with managerial ethical decision making than passive emotions. As leaders need not only to understand the nature of a given problem, but be able to act and implement their constructed solution, a leader's affective intensity in a situation

may impact their ability to effectively address the problem at hand since a leader's arousal level may alter their subsequent judgments.

Affect intensity appears to have the ability to contribute uniquely to the leader problem solving. Yet, affect intensity has the potential to display both positive and negative relationships. Both positive and negative affect intensity could positively contribute to leader social problem solving if the intensity enhances a leader's sense of control and certainty within the situation. Additionally, if the emotional aspects of the situation are key to effective problem solving, higher levels of positive and negative affect intensity could facilitate effective leadership as higher levels of affect intensity relate to greater focus on emotional stimuli (Larsen et al., 1987). However, positive and negative affect intensity could also hinder leader problem solving performance. As discussed by Connelly et al. (2004), high arousal does not necessarily necessitate higher activation. High levels of positive and negative affect intensity may also decrease perceptions of control and certainty (Lerner & Keltner, 2000) hindering a leader's ability to act appropriately and effectively. In general, affect intensity appears to have the ability to influence leader problem solving. Therefore, we expect that both trait positive and negative affect intensity will account for variance in leader problem solving performance beyond trait affect frequency.

Hypothesis 3a: Trait positive affect intensity will account for variance in leader problem solving performance beyond trait positive affective frequency.

Hypothesis 3b: Trait negative affect intensity will account for variance in leader problem solving performance beyond trait negative affective frequency.

Leader Emotion Regulation

Emotion regulation refers to the cognitive and behavioral strategies that individuals use to influence what emotions they have, when they have them, and how they express/experience those emotions (Gross, 1998). Within the context of leadership, emotion management has typically been addressed through the conceptualizations of emotional labor (e.g. Humphrey, 2012) and emotional intelligence (e.g. George, 2000). While these avenues of research have been substantially beneficial to our understanding of emotional regulation in leadership, we think that the application of the emotion regulation framework outlined by Gross and colleagues (Gross, 1998; Gross & John, 2003; John & Gross, 2004; Gross, 2015) will further aid our understanding of emotion regulation as performed by leaders.

Research on emotion regulation has identified five groups of strategies that people use to alter their emotional experiences: situation selection, situation modification, attentional deployment, cognitive change, and response modulation (Gross, 2015). Each of these strategies has been linked to certain outcomes and tendencies likely to be of consequence to leader performance and effectiveness. However, as argued by Gross (2015), the effectiveness of a given strategy likely depends on two things: 1) the individual and 2) their environment. Given that the role of leadership is embedded within a social context that calls for the use of effective cognitive and interpersonal skills (Mumford et al., 2000b), certain emotion regulation strategies may be more adaptive, cognitively and socially, for leaders.

Adaptive and Maladaptive Regulation Strategies

Emotion regulation strategies are not all equally effective in their ability to produce the desired outcome of an individual. However, individuals are more likely to use certain strategies over others reflecting emotion regulation preferences (e.g. Gross & John, 2003; Davis, Griffith, Thiel, & Connelly, 2015). Furthermore, distinct behavioral and cognitive tendencies are associated with such strategies (e.g. Heilman, Crisan, Houser, Miclea, & Miu, 2010; Miu & Crisam, 2011; Butler et al., 2003; John & Gross, 2004). As such, the identification of potentially adaptive, as well as maladaptive, strategies may not only allow us to understand how these differentially impact leader effectiveness, but may serve other areas such as leadership development.

Potentially adaptive emotion regulation strategies are likely to be those that permit a leader to operate within the social/organizational context, while simultaneously allowing them to reinterpret the emotional aspects of the situation or direct their attention to other features of the situation. As such, we believe that emotion regulation strategies that employ a more cognitive approach to regulating emotional experiences will be more effective for leaders because they enable leaders to alter their interpretation of the situation (Gross, 2008).

Two emotion regulation strategies that fit this description include cognitive reappraisal and attentional deployment. Cognitive reappraisal involves modifying the way one thinks about a situation in order to alter its emotional significance or to change how one feels about the situation (John & Gross, 2004). This form of emotion regulation has been linked to outcomes that are important for effective leader behavior. Cognitive reappraisal has proven to be an effective way to regulate emotions and is

associated with better social functioning (Gross & John, 2003). In terms of decision making, the use of cognitive reappraisal reduces risk aversion, decreases an individual's susceptibility to framing effects, and increases one's performance on decision making tasks (e.g. Heilman et al., 2010; Miu & Crisan, 2011; Panno, Lauriola, & Figner, 2012).

Since cognitive reappraisal involves considering alternative perspectives and causes of emotion-inducing situations (Gross, 2015), this action, if taken by a leader, could facilitate social problem solving by enhancing situational understanding. Further, the decision making characteristics associated with this regulation strategy could facilitate the problem solving skills needed as effective leadership involves understanding the needs, problems, and demands of organizational constituents (Mumford et al., 2000a). Therefore, if the use of cognitive reappraisal allows for a deeper situational understanding it will likely be an adaptive tool for leaders.

Attentional deployment involves the redirection of one's attention in hopes of influencing their potential, or current, emotional response (Gross, 2015). This form of emotion regulation has been described as an internal version of situation selection as it allows an individual to focus on, or selectively attend to, particular aspects of a situation (Gross, 2008). The most commonly employed attentional deployment strategy comes in the form of distraction. Distraction has proven to be an effective strategy, particularly in the context of negative emotional events (Bennett, Phelps, Brain, Hood, & Gray, 2007).

Due to the complex social environments in which leaders perform, directing attention away from one's emotional response may be particularly useful when resources are low and time is short. Further, as affect can influence decisions (e.g. Damasio, 1994), this strategy may allow for a leader to keep a clear mind when working

in an environment that is eliciting strong emotion. Importantly, some forms of attentional deployment (e.g. rumination) may be particularly maladaptive if they result in sustaining an emotional experience (Gross, 2008). However, attentional deployment, if used in the form of distraction, appears to be another adaptive strategy for the leadership context. As such, we believe that cognitively focused emotion regulation strategies, such as cognitive reappraisal and attentional deployment, will be positively related to effective leadership problem solving.

Hypothesis 4: Cognitive emotion regulation strategies (e.g. cognitive reappraisal and attentional deployment) will be positively related to leader problem solving performance.

On the contrary, potentially maladaptive emotion regulation strategies are those that may either cause the leader to avoid emotional situations or are ineffective in their ability to deal with emotional stimuli. As such, emotion regulation strategies that result in leaders avoiding emotions may be more detrimental to effective leadership compared to the cognitive regulation strategies outlined above due to their likely negative impact on problem solving. Affect and emotions have been identified as integral parts of the decision making process (e.g. Lowenstein et al., 2001; Slovic, Finucane, Peters, & MacGregor, 2002) because they can serve as sources of information and a guide decisions comparisons (Peters, Västfjäll, Gärling, & Slovic, 2006). Decisions made by leaders frequently call for the integration of large amounts of information and the comparison of multiple potential solutions. Leaders who use emotion regulation strategies that cause them to avoid emotions may hinder their problem solving as it effectively results in them ignoring pertinent situational information.

Two emotion regulation strategies that may hinder leader problem solving include situation selection and response modulation (Gross, 2015; Gross, 1998). Strategies incorporating situational selection involve taking action (e.g. approach or avoidance) to increase or decrease the likelihood that a situation elicits a certain emotion. The use of situation selection strategies has proven useful for increasing positive affective states (Jacobson, Martell, & Dimidjian, 2001) as well as decreasing exposure to negative situations (Kober & Bolling, 2014). However, within the context of the workplace, leaders do not always have the option of choosing which situations they opt in or out of. Furthermore, the highly stressful environments in which leaders must perform are often constrained in ways that do not permit avoidance. As such, leaders often have to perform in the current context as is. Due to these reasons, it does not appear as though situation selection would be an adaptive regulation tool for leaders as it would cause them to avoid potentially impactful situations.

Response modulation, which is typically performed via expressive suppression, refers to actions taken by an individual to inhibit their emotional response and displays (Gross, 1998). Suppression has been associated with a variety of negative outcomes, including being ineffective in decreasing one's negative emotional experiences (Gross, 1998), exhibiting negative effects on social interactions (Butler et al., 2003), and negatively impacting cognitive and memory functions (Richards & Gross, 1999, 2000, 2006). Further, while suppression may have value in its ability to mask emotional expression, leaders who suppress their emotions are likely to still experience the emotion as well as the strains associated with surface acting (Gardner, Fischer, & Hunt, 2009; Humphrey et al., 2008). Therefore, in addition to situation selection, suppression

is likely to be a maladaptive regulation strategy for leaders, as it demonstrates detrimental influences across both cognitive and social domains that are critical for effective leadership. Consequently, we propose that emotion-avoidant strategies, such as situation selection and suppression, will be negatively related to effective leader problem solving performance.

*Hypothesis 5**:** Emotion-avoidant regulation strategies (e.g. situation selection and suppression) will be negatively related to leader problem solving performance.*

Affect, Emotion Regulation, & Leadership Problem Solving Skills

In order to properly understand the impact of trait affect on leader performance it may need to be viewed within the context of emotion regulation. The notion that individuals continually try to manage their affect indicates that there may not only be a relationship between trait affect and emotion regulation, but that the regulation of emotion may serve as a mechanism through which affect impacts leadership.

Gross and John (2003) found that individual differences in one's use of emotion regulation resulted in different emotional experiences, such that those who tended to reappraise their emotions experienced more positive emotions and less negative emotions. However, those who have a tendency toward using suppression experienced less positive emotions and more negative emotions (Gross & John, 2003). Additionally, more recent research conducted by Dixon-Gordon, Aldao, and De Los Reyes (2015) and Aldao & Nolem-Hoeksema (2012) has demonstrated that one's use of regulation strategies may be dependent on the emotional circumstance, such that the type of emotion

being experienced and the intensity of the emotion can influence the regulation strategy that one utilizes.

Along these lines it may be that trait differences in affect are related to individual differences in emotion regulation use. While the causal mechanism of this relationship is difficult to parse, as it may be that trait affect leads to different strategy use or that the continual use of a particular strategy leads to changes in trait affect, there is a strong indication that these two concepts are intertwined. Previous findings indicate that individuals are less willing to process their negative emotions (Dixon-Gordon et al., 2015) and that the experience of such negative emotions cause them to disengage from their emotions and the situation (e.g. Sheppes, 2014; Sheppes & Levin, 2013). As such, we expect that trait positive affect and positive affect intensity will be related to cognitive emotion regulation strategies (e.g. reappraisal and attentional deployment), while trait negative affect and affect intensity will be positively related to emotion-avoidant regulation strategies (e.g. suppression and situation selection).

Hypothesis 6a: Trait positive affect and affect intensity will be positively related to cognitive emotion regulation strategies (e.g. cognitive reappraisal and attentional deployment).

Hypothesis 6b: Trait negative affect and affect intensity will be positively related to emotion-avoidant regulation strategies (e.g. situation selection and suppression).

Finally, leaders must operate in workplace settings that are guided by the display rules of an organization (Humphrey, 2012) and emotion regulation processes can be conscious or subconscious acts (Gross, 2015). Accordingly, the impact of trait affect on

leadership may need to be viewed through the frame of emotion regulation. Prior research has not only illustrated the existence of affective differences between the habitual use of emotion regulation strategies (Gross & John, 2003), but has also shown that affective features of a situation (e.g. valence and intensity) influence an individual's use of emotion regulation strategies (Dixon-Gordon et al., 2015). Further, as emotion regulation is a process used to control affect and emotion, it may be that the impact of affect on leadership is mediated through emotion regulation.

While we have proposed that positive affect and negative affect are likely to exhibit direct effects on leadership problem solving, it is plausible that their effects operate through their linkage with certain emotion regulation strategies. Particularly with regard to their potential impact on decision making, Heilman et al. (2010) argue that the influence that emotion has on decision outcomes may be a consequence of emotion regulation strategies. As such, identifying the framework through which affect and emotion regulation influence leadership outcomes can serve to further our understanding of how emotion-related constructs impact effective leadership.

Hypothesis 7: Emotion regulation strategies will mediate the relationship between trait affect and leader problem solving performance

Method

Participants

Participants included 184 psychology undergraduate students at a large southwestern university in the United States who volunteered to complete the study for course credit. Participants completed the study using an online-based data collection system. Responses from three participants were not included in subsequent analyses due

to a large amount of missing data. The mean age of participants was 19.43 (SD = 2.02) and 69.1 percent were female (n = 125). On average, the participants had 2.42 years of work experience.

Procedure

After the informed consent process, participants first completed a measure assessing one's frequency of emotional experiences, one's emotional intensity, and one's use of emotion regulation strategies. Following the affect measure, participants were asked to take on the role of a leader and completed four leadership scenarios (See Appendix A). Participants responded to four separate vignettes describing social/organizational leadership challenges. After reading through each vignette, participants were asked to describe the actions and decisions they would make in the situation. Each scenario corresponded to a leadership performance domain with the potential to elicit emotions in followers and leaders including conflict resolution, ethical decision making, feedback, and high-stakes situations (Connelly et al., 2013). After responding to the leadership scenarios, participants then completed a series of covariate measures and a demographics questionnaire.

Independent Variables

Trait positive and negative affect frequency. Trait positive and trait negative affective frequency were measured via a self-report measure assessing eight positive emotions (i.e. content, happy, excited, hopeful, interested, proud, determined, and powerful) and eleven negative emotions (i.e. bored, powerless, anxious, sad, afraid, distress, guilty, shame, frustrated, angry, and disgusted). Items for this measure were partially drawn from the Differential Emotions Scale (Izard, 1993). Participants were

asked to rate the frequency in which they felt these emotions within the past few weeks. Each of the items was rated on a 7-point Likert scale ranging from "not at all" to "extremely often". For the trait positive affect scale, Cronbach's α was .84. For the trait negative affect scale, Cronbach's α was .82.

Trait positive and negative affect intensity. Trait positive affect intensity and trait negative affect intensity were measured along with the trait affect. In addition, to rating the frequency in which the particular emotion was experienced, participants were asked to rate "On average, how intensely have you felt this emotion". Intensity items were rated on a 7-point Likert scale ranging from "very slightly" to "extremely". For the trait positive affect intensity scale, Cronbach's α was .79. For the trait negative affect intensity scale, Cronbach's α was .82.

Emotion Regulation. The measure used to assess one's use of emotion regulation strategies was developed by drawing items from prior measures and creating items based on prior literature. Items relating to cognitive reappraisal and suppression were drawn from the Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003). Items pertaining to attentional deployment, situation selection, and situation modification were written based on a review of these regulation strategies (e.g. Gross, 2015; Gross, 2008). Example items include "When I want to feel less negative emotions, I am able to think about something else to lessen those emotions", "I do not mind entering situations in which I am likely to feel negative emotions" (reverse-coded) and "When I want to feel more positive emotions, I can change aspects of the situation in order to do that".

Scale construction resulted in the development of 16 items relating to cognitive reappraisal, attentional deployment, situation selection, situation modification, and suppression. An exploratory factor analysis (EFA) procedure utilizing maximum likelihood methods and a promax rotation was used to assess the factor structure of the emotion regulation items. The initial EFA procedure retained a 5-factor solution. However, as we are proposing two latent emotion regulation factors (i.e. cognitive-focused strategies and emotion avoidant strategies), we also rationally developed a two factor scale partially based on the initial EFA results and prior literature (e.g. Gross, 2008; Gross, 2015). Therefore, confirmatory factor analysis (CFA) procedures utilizing maximum likelihood procedures were used to test the model fit of the 5-factor and 2-factor solutions. The 2-factor solution (χ^2 (26) = 58.35, $p < .001$; RMSEA = 0.08; SRMR = 0.06; GFI = 0.94; CFI = 0.92; TLI = 0.88) displayed relatively similar fit to the 5-factor solution (χ^2 (94) = 148.87, $p < .001$; RMSEA = 0.05; SRMR = 0.06; GFI = 0.91; CFI = 0.90; TLI = 0.88). However, the 5-factor solution was not theoretically meaningful. Therefore, the 2-factor solution was retained.

The cognitive emotion regulation scale included items pertaining to cognitive reappraisal (e.g. “When I want to feel less negative emotions, I change my perspective on the situation”) and attentional deployment (e.g. “When I want to feel less negative emotions, I am able to think about something else to lessen those emotions”). This six-item scale asked participants to rate on a 7-point Likert scale (“strongly disagree” to “strongly agree”) the extent to which they used these particular regulation strategies. Cronbach’s α was .78. The emotion-avoidant regulation scale included items pertaining to suppression (e.g. “I generally try not to show my negative emotions”) and situation

selection (e.g. “I tend to avoid situations where I am likely to experience negative emotions”). This three-item scale asked participants on a 7-point Likert scale to rate the extent to which they used these particular regulation strategies. Cronbach’s α was .53.

Dependent Variables

The four open-ended leadership scenarios were coded by three doctoral students in psychology blind to the study’s purpose. Frame-of-reference training (Bernardin & Buckley, 1981) was conducted with the raters in which they received operational definitions and benchmark ratings scales (see Table 1) of all leader outcome variables. Following the initial training meeting, coders were asked to complete ratings for 20 participants in order to check initial interrater reliability estimates. After an additional coding meeting, consensus was reached as adequate interrater reliability estimates were met (r^*_{wg} = .70) and the raters were given the responses of all participants to code.

While each leadership scenario addressed a different leadership performance domain, each response was coded for the same outcome variables. The leadership problem solving and social judgment variables were all rated on 5-point benchmark scales ranging from “very low” to “very high” based on the solution formulated by the participant and their reasoning behind the decision. The leader outcome variables were rated via questions and benchmark scales noted in the variable descriptions below.

Problem Solving and Social Judgment Variables.

Solution Quality. Solution quality was defined as the degree to which the solution provided was realistic, practical, and appropriate for the situation. Higher quality responses involved a greater understanding of the issue at hand, a logical response, and a useful solution. Interrater agreement (r^*_{wg}) was .85.

Originality. Participant responses were coded for originality which was defined as the degree to which the plan is original, provides a novel solution to the problem, and is elaborative/descriptive. Interrater agreement (r^*_{wg}) was .83.

Elegance. The elegance of a participant's response was assessed by rating the degree to which the solution was articulated in a concise manner. Responses with a high level of elegance flow seamlessly, are refined, and provide a well-planned solution. Interrater agreement (r^*_{wg}) was 0.88

Considering Others' Perspectives. Participant responses were rated for the extent to which others' potential reactions were considered as well as if multiple perspectives were taken in making the decision. Interrater agreement (r^*_{wg}) was .66.

Social Perceptiveness. The participant's perceptiveness to the situation was defined as the extent to which the response involved awareness of the needs, goals, and demands of others as well as understanding one's relationship with others. Interrater agreement was (r^*_{wg}) .73.

Good Judgement under Uncertainty. This variable was defined as the degree to which the participant was willing to make decisions and take appropriate action in the uncertain situation. Interrater agreement (r^*_{wg}) was .84.

Covariate Measures

Empathy. Empathy is another emotion-related variable that has been shown to contribute to effective leadership (Kellet, Humphrey, & Sleeth, 2002). Therefore, one's ability to emotionally empathize with others was measured using the 16-item Toronto Empathy Questionnaire (Spreng, McKinnion, Mar & Levine, 2009). Example items include "when someone else is feeling excited, I tend to get excited too" and "Other

people's misfortunes do not disturb me a great deal". Items were measured on a 5-point Likert scale ranging from never to always. Cronbach's α was .88.

Personality. As the five-factor model of personality has been shown to demonstrate moderate relationships with leadership (Judge, Bono, Ilies, & Gerhardt, 2002), personality was assessed using the Big Five Inventory (John & Srivastava, 1999) where the personality traits of openness, conscientiousness, extraversion, agreeableness, and neuroticism were measured. Participants were asked to rate various characteristics using a 5-point Likert scale ranging from "disagree strongly" to "agree strongly". Cronbach's α was .74 for openness, .82 for conscientiousness, .89 for extraversion, .82 for agreeableness, and .82 for neuroticism.

Self-Regulation. The ability to regulate one's behavior was assessed using the Short Self-Regulation Questionnaire (Carey, Neal, & Collins, 2005). Example items include "I have trouble making plans to help me reach goals" and "I set goals for myself and keep track of my progress". Items were rated on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree". Cronbach's alpha was .93.

Affect Intensity. As participants are likely to differ in their responsiveness to affective events, affect intensity was assessed using the 40-item Affect Intensity Measure (Larsen, 1984). Example items include "When I accomplish something difficult I feel delighted or elated" and "When I feel happy it is a strong type of exuberance". Items were rated on a 6-point Likert scale ranging from "never" to "always". Cronbach's α was .90.

Depression. Participant self-reported depression scores were measured via the Beck Depression Inventory (BDI-II) (Beck, Steer, Ball & Ranieri, 1996). The BDI-II

consists of 21 items that assess a variety of symptoms associated with higher levels of depression (e.g. sadness, loss of pleasure, lack of sleep, etc.) via 4-point scale ranging from "0" to "3". Cronbach's α was .91.

Demographics. Age, gender, and work experience were all measured due to their potential to be related to affective experiences (Fujita, Diener, & Sandvik, 1991) and potential to influence the ability of participants to respond to the leadership scenarios.

Results

Construct Validity

The evaluation of developed measures is a critical step in ensuring that the construct of interest is truly being measured. As such, establishing a nomological network through the assessment of convergent and divergent relationships with other relevant constructs will serve as a source of validity evidence for our measures of trait affect, affect intensity, and emotion regulation.

Positive and negative trait affect have been shown to have particular relationships with constructs such as depression (Watson et al., 1988) and the big five factors of personality (Larsen & Ketelaar, 1991) as well as certain correlations with each other (Watson et al., 1988). Correlations between positive affect and negative affect and other constructs of interest can be found in Table 2. Our measure of positive affect was found to be negatively related to depression (r = -.53, p < .01), negatively associated with neuroticism (r = -.37, p < .01), and positively associated with extraversion (r = .38, p < .01). Our measure of negative affect was found to relate positively to depression (r = .58, p < .01), positively with neuroticism (r = .52, p < .01),

and negatively with extraversion (r = -.15, p < .05). Prior has indicated that positive affect and negative affect are independent constructs (Watson et al., 1988). However, our measures of positive affect and negative affect produced a negative association with one another (r = -.35, p < .01). Together these findings provide moderate support that our measures accurately reflect positive affect and negative affect.

Our measure of affect intensity attempts to categorize intensity in terms of positive and negative affect. Prior research has measured affect intensity from a more global approach (e.g. Diener, Larsen, Levine, & Emmons, 1985) as it has been demonstrated that positive affect intensity and negative affect intensity are positively related. Therefore, we expect our measures of positive and negative intensity to similarly reflect prior findings with different measures of affect intensity (Larsen & Diener, 1987). Convergent and divergent relationships can be found in Table 2. Positive affect intensity was found to positively associated with general affect intensity (r = .32, p < .01), positively related to our measure of positive affect (r = .73, p < .01), and negatively related to our measure of negative affect (r = -.19, p < .05). Negative affect intensity was found to be positively associated with general affect intensity (r = .20, p < .01), negatively related to our measure of positive affect (r = -.28, p < .01), and positively related to our measure of negative affect (r = .74, p < .01). Further, our measures of positive affect intensity and negative affect intensity were found to not be associated (r = -.05, p = .51).

Emotion regulation scales assessing cognitive reappraisal and suppression have been found to display meaningful and differential relationships with well-being measures, such as depression, the big five factors of personality, and broader forms of

self-regulation (Gross & John, 2003). While our measures of emotion regulation (e.g. cognitive strategies and emotion-avoidant strategies) include cognitive reappraisal and suppression, respectively, they also include other forms of regulation. However, we expected the relationships with our two measures to reflect the convergent and divergent relations found in prior studies. Convergent and divergent correlations can be found in Table 2.

Our measure of cognitive emotion regulation strategies was found to be positively associated with openness ($r = .26$, $p < .01$), extraversion ($r = .23$, $p < .01$), agreeableness ($r = .35$, $p < .01$), unrelated to conscientious ($r = .10$, $p = .17$), and negatively related to neuroticism ($r = -.31$, $p < .01$). Further, cognitive emotion regulation strategies were found to be negatively associated with depression ($r = -.39$, $p < .01$) and positively associated with self-regulation ($r = .31$, $p < .01$). Emotion-avoidant strategies were found to be negatively associated with openness ($r = -.15$, $p < .05$), extraversion ($r = -.25$, $p < .01$), agreeableness ($r = -.22$, $p < .01$), conscientiousness ($r = -.21$, $p < .01$), and unrelated to neuroticism ($r = .07$, $p = .35$). Further, emotion avoidant strategies were positively associated with depression ($r = .23$, $p < .01$) and negatively associated with self-regulation ($r = -.22$, $p < .01$). Finally, our measures of cognitive and emotion-avoidant strategies were found to be negatively associated ($r = -.24$, $p < .01$). Taken together, this evidence of convergent and divergent relations provides validity evidence that our measures tap distinct emotion regulation constructs.

Hypothesis Testing

Descriptive statistics, reliability statistics, and correlations among variables can be found in Tables 2-3. Means and standard deviations of leadership outcomes are

presented in Table 4. Results from the correlational and hierarchical regression analyses indicate that trait positive affect is not associated with problem solving performance. Therefore, Hypothesis 1 was not supported. Trait negative affect was negatively associated with the leadership outcome variable, elegance (r = -.17, p <.05). Further, hierarchical regression analyses (see Table 5) demonstrated that trait negative affect was a significant predictor of quality (β = -.26, p < .05), originality (β = -.28, p < .05), elegance (β = -.35, p < .01), and social perceptiveness (β = -.34, p < .01) above and beyond personality and empathy. Therefore, Hypothesis 2, which indicated that trait negative affect would be negatively related to problem solving performance, was supported. Hypothesis 3a and Hypothesis 3b postulated that trait positive affect intensity and trait negative affect intensity would account for variance in leader performance above trait positive affect and trait negative affect, respectively. However, both positive affect intensity and negative affect intensity displayed non-significant relationships with all of the leader outcome variables. As such, Hypothesis 3a and 3b were not supported.

A series of correlational and hierarchical regression analyses were conducted in order to test the relationship between emotion regulation strategies and leader problem solving. Hypothesis 4 dealt with cognitive emotion regulation strategies and their relationships with leader problem solving performance. Results indicate a significant positive relationship between cognitive emotion regulation strategies and solution quality (r = .27, p <.01), elegance (r = .21, p < .01), social perceptiveness (r = .17, p < .05), and good judgment under uncertainty (r = .22, p < .05). Further, hierarchical regression analyses (see Table 6) indicated that cognitive emotion regulation strategies

were predictive of solution quality (β = .25, p < .01) and good judgment under uncertainty (β = .22, p < .01) above and beyond empathy and personality. Therefore, Hypothesis 4 was supported.

Results indicate that emotion-avoidant emotion regulation strategies are negatively associated with solution quality (r = -.21, p < .01), elegance (r = -.20, p < .01), social perceptiveness (r = -.15, p < .05), and good judgment under uncertainty (r = -.15, p < .05). However, hierarchical regression analyses indicated that emotion-avoidant emotion regulation strategies were not predictive of leadership outcomes. While the negative correlations between emotion-avoidant strategies and problem solving performance indicate that these emotion regulation strategies may be maladaptive, Hypothesis 5 was not supported as emotion-avoidant strategies were not significant predictors of the outcome variables.

In addition to examining the relationships of affect and emotion regulation with leadership, Hypothesis 6a and 6b suggested that there will be associations between trait affect and emotion regulation use. Results indicate that both trait positive affect (r = .38, p < .01) and trait positive affect intensity (r = .22, p < .01) are positively associated with cognitive emotion regulation strategies. Further, both trait positive affect (r = -.21, p < .01) and trait positive affect intensity (r = -24, p < .01) are negatively related to the use of emotion-avoidant regulation strategies. These results provide support for Hypothesis 6a. Trait negative affect was found to be positively associated with emotion avoidant regulation strategy use (r = .15, p < .05). Trait negative affect intensity was not related to the use of emotion-avoidant regulation strategies (r = .07, p > .05). Therefore, partial support was found for Hypothesis 6b.

Hypothesis 7 proposed a mediational relationship between trait affect, emotion regulation and the leader problem solving performance variables (see Figure 1). As such, a series of multiple mediational analyses were conducted using the MEDIATE macro (Hayes & Preacher, 2014). A separate multiple mediational analysis was ran for each leader outcome variable. Results indicate that trait positive affect frequency improved the quality, originality, and elegance of the participant's response through its positive relationship with cognitive-focused emotion regulation strategies ($CI_{.95}$ = .004, .059; $CI_{.95}$ = .0002, .043; $CI_{.95}$ = .001, .037). Further, trait positive affect improved the social perceptiveness of participants and their ability to make good judgements under conditions of uncertainty via its positive relationship to one's use of cognitive-focused emotion regulation strategies ($CI_{.95}$ = .001, .054; $CI_{.95}$ = .002, .053).

Discussion

Affective events are not only pervasive in the workplace (Weiss & Cropanzano, 1996) but in the role of leaders as well (e.g. Gooty et al., 2010; Rajah, Song, & Arvey, 2011). Further, as effective leader performance relies on interpersonal interactions as well as a leader's ability to solve complex organizational problems (Mumford et al., 2000a), the purpose of the present effort was to examine how to individual differences in trait affect frequency, trait affect intensity, and emotion regulation influence leader problem solving performance. Study findings contribute to the collection of literature on affect and leadership in the following ways. First, results indicate that in the context of the performance domains examined positive affect and negative affect differentially relate to leader problem solving performance. Second, with regard to its impact on leader performance, trait affect intensity does not appear to explain variance above that

explained by trait affect. Thirdly, the present study builds upon prior research assessing emotion regulation in leadership (e.g. Humphrey, 2012) by incorporating the Gross (1998) model of emotion regulation into the leadership context and investigating the potential adaptiveness of these strategies for leader problem solving performance. Finally, the current study attempts to expand on our understanding of affect, emotion regulation, and leadership

As affect is predicated to be a stable influence on the leadership process (Joseph et al., 2015), we expected that positive and negative affect would influence leader social problem solving performance. Our results indicate that trait positive affect frequency is unrelated to leader problem solving, while trait negative affect frequency is negatively related to a number of leader problem solving outcomes. Trait positive affect frequency does not appear to hinder, or facilitate, effective problem solving within the present context. The leader behavior domains utilized in the present study involved negative emotional scenarios. Isen and Patrick (1983) demonstrated that those high in positive affect are less willing to work with negative material in order to maintain their current mood state. Therefore, the lack of findings in regard to trait positive affect frequency, may be due to the negative emotional elements comprising the leadership scenarios.

Additionally, results show that trait negative affect frequency was a negative predictor of leader problem solving performance. Those higher in negative affect frequency produced lower quality, less original, less elegant, and less socially perceptive problem solutions to the leadership scenarios. The problem solving scenarios involved complex, ill-defined interpersonal situations that called not only for the consideration of multiple situational causes, but understanding the needs of others

involved as well. As negative affect facilitates more analytical thinking (Fredrickson, 2001), this concentrated focus associated with negative affect is likely to be detrimental to leader problem solving in situations that require that identification of alternative causes and solutions as well as the integration of competing perspectives. Therefore, as demonstrated here, trait negative affect frequency is damaging to effective leader problem solving performance.

With regard to trait positive and negative affect intensity, our findings indicate that neither trait positive affect intensity or trait negative affect intensity explain variance in leader problem solving performance above that explained by trait affect. Potential reasons for the non-findings may stem from the lack of discriminate validity between these measures and our measures of trait affect frequency as they displayed strong, positive correlations. Furthermore, the separation of trait affect intensity into positive and negative dimensions may have impacted our results as well. Prior research has indicated that positive and negative affect intensity tend to be highly correlated (Larsen & Diener, 1987); however, our measures were not correlated with one another. However, general affect intensity, measured via the AIM (Larsen & Diener, 1987) demonstrated positive, moderate relationships with leader problem solving outcomes. As such, affect intensity appears to contribute to effective leader problem solving, but in the form of a general affective dimension, not positive and negative factors. Additionally, the influence of affective intensity may be contextual. It may be that affect intensity is more important in positive emotional leadership domains than negative emotional situations, which was not examined in the present study.

Our results also indicate that individuals with a stronger tendency to use cognitive-focused emotion regulation strategies displayed greater problem solving performance. More specifically, individuals with a preference to use cognitive reappraisal and/or attentional deployment exhibited more effective problem solving than those with a preference for situation selection and/or suppression. These findings demonstrate that individual differences in emotion regulation preference predict leader performance. Furthermore, prior research (e.g. Panno, Lauriola, & Figner, 2012) has demonstrated that naturally occurring differences in emotion regulation are associated with differences in risky decisions. Our findings are in agreement with these findings and expand these results to the leadership context and beyond the emotion regulation strategies of cognitive reappraisal and suppression.

Cognitive-focused emotion regulation strategies, such as those identified here, provide leaders with effective tools for managing their emotions, while additionally allowing them to gain a greater situational perspective and a greater ability to operate within emotional contexts. On the other hand, emotion-avoidant emotion regulation strategies are ineffective as they either result in the avoidance of emotional situations or provide leaders with ineffective means for managing their own emotion. Results indicate that emotion regulation strategies, such as cognitive reappraisal and attentional deployment, are adaptive forms of emotion regulation, particularly within the domain of leader problem solving. Further, these findings align with prior emotion regulation research indicating the adaptiveness of cognitive regulation strategies (Aldao, Nolen-Hoeksema, & Schweizer, 2010).

The present study also addressed the potential relationships between trait affect frequency, trait affect intensity, and emotion regulation. Our results suggest that individual differences in both trait positive and negative affect frequency as well as trait positive and negative affect intensity relate to differences in emotion regulation preference. Trait positive affect frequency and intensity relate to the use of more cognitively-focused emotion regulation strategies, whereas trait negative affect frequency is associated with more emotion-avoidant regulation strategies. These results concur with previous research by Gross and John (2003) which found that cognitive reappraisal and suppression differentially related to the experience of positive and negative emotions.

These findings indicate a strong connection between an individual's affective tendencies and their use of emotion regulation strategies. Therefore, we tested whether emotion regulation acts as a mediator in the relationships between affect frequency, affect intensity, and leader problem solving. Findings provide partial support for the mediational relationship as trait positive affect frequency was significantly mediated through cognitive-focused emotion regulation strategies. These results suggest an interesting insight into how affect and emotion regulation influence leader processes, such as problem solving. It has been argued (e.g. Heilman, 2010) that the influence of affect on decision making is a consequence of emotion regulation. Furthermore, as individuals frequently utilize emotion regulation strategies to manage their emotional experiences (Gross, 2015), these findings suggest that in order to fully understand how affect influences leader problem solving, as well as other leader behaviors, it is important to frame this relationship within the context of emotion regulation.

Theoretical Implications

The findings from the present effort have theoretical implications for the domains of affect and emotion regulation in leadership. Traditionally, research on leader affect has focused on its effects on followers, quality of exchange relationships, and leadership styles (Gooty et al., 2010). The present study expands on this framework demonstrating that affect can be influential in more cognitively-oriented leadership outcomes, such as problem solving and social judgment. Leaders are often required to formulate and implement solutions to social-organizational problems (Mumford et al., 2000c) within environments that are filled with affect (Barsade & Gibson, 2007). Therefore, affect, which has been identified as a consistent influence on the leadership process (Joseph et al., 2015), requires further examination within the cognitive domain of leader effectiveness in order to gain a fuller understanding of how affect permeates within leadership.

Furthermore, the current study expands the framework of emotion management in leadership. The regulation of inappropriate emotions has been identified as a critical skill for effective leadership (Riggio & Reichard, 2008). However, as demonstrated here, the use of different emotion regulation strategies does not lead to identical results. Instead it appears as though certain strategies, namely those that are cognitively-focused (i.e. cognitive reaprriasal and attentional deployment), facilitate more effective leadership. As emotion regulation strategies are linked with particular behavioral and cognitive tendencies (e.g. John & Gross, 2004; Heilman et al., 2010) uncovering which strategies enable effective leadership can improve our understanding of emotion management in the context of the workplace. Additionally, the findings suggest that

emotion regulation is a valuable tool for leader cognition. Within the domain of leadership, emotion management has been identified as crucial for the establishment of follower relationships, leadership styles, and leader well-being (Humphrey, 2012). However, the results here indicate that emotion regulation may be just as critical for the cognitive skills associated with effective leadership (Mumford et al., 2000c). The results of the present study suggest that leaders who prefer to use cognitive-focused emotion regulation strategies over emotion-avoidant strategies are more effective at creating problem solutions.

Practical Implications

Practical recommendations based upon the present study may be somewhat difficult as the constructs of interests were assessed as naturally occurring individual differences; however, the results do suggest that the development of certain emotion regulation strategies may serve to facilitate effective leadership. The context in which leaders operate often exposes them to an assortment of affectively challenging events (Humphrey, 2012) and the possession of effective emotional skills is suggested to be highly beneficial for leaders. Training programs on emotional skills, such as emotion regulation, have been developed (Riggio & Reichard, 2008). Unfortunately, the effectiveness of such training efforts is not well understood. Therefore, the present study can aid such efforts as the results here indicate that the development of cognitive-focused emotion regulation strategies, particularly in those that are less likely to use such strategies, may serve as an area for effective training.

Limitations

Despite the contributions made by the present effort, there are limitations that should be mentioned. First, the results of the present study are correlational. As both trait affect and emotion regulation were investigated as individual differences and not experimentally manipulated, we cannot rule out that the relationships demonstrated in the present study are caused by a third variable. Despite the fact that relationships were displayed via naturally occurring tendencies, without the use of manipulation, the possibility of extraneous variables cannot be eliminated.

A second limitation is that the current study employed an undergraduate student sample. The use of such a sample may hinder the generalizability of our results to an organizational setting. However, the scenarios used for the present study contextualized the leadership role within situations relevant to the sample. As such, the leader problem solving and social judgment variables examined in this study are relevant to an undergraduate sample.

A third limitation deals with some of the scales utilized in the study. The measures of positive affect intensity and negative affect intensity did not display adequate divergence from our measures of positive affect and negative affect. As such, the lack of differentiation between the two sets of scales may account for the lack of findings with the intensity construct. Further, the emotion-avoidant emotion regulation scale demonstrated low internal consistency (α = .53). The results demonstrated via this measure displayed moderate relationships with our outcomes of interest and was divergent from our measure of cognitive emotion regulation strategies. However, since

this measure failed to meet the minimum reliability estimate (α= .70), results should be interpreted with caution.

A fourth limitation is that the leader scenarios utilized within the study only involved negative emotional situations. However, performance domains faced by leaders are likely to elicit positive emotion in addition to negative emotions. Furthermore, Isen and Patrick (1983) point out that task and situational factors can produce different decision outcomes for those high in positive or negative affect. As such, it is possible that the relationships displayed between affect and leader outcomes in the present study could be different under alternative emotional conditions.

Future Research and Conclusion

The present study examined the influence of affect frequency, affect intensity, and emotion regulation on leader problem solving performance. Due to the complex relationships between such constructs and leader outcomes, more research is needed on understanding the ways in which affect and emotion regulatory processes can impact the cognitive aspects of leader performance. Potential avenues of research include investigating how affect and emotions are utilized within the decision making process. Certain types of leaders may differentially utilize emotion in the decision making process, thus understanding how that impacts leader effectiveness may be a critical endeavor. Furthermore, in order to improve our understanding of affect and emotion it is essential to examine these constructs as dynamic rather than static phenomena. Prior research (e.g. Eid & Diener, 1999; Kuppens et al., 2007) has demonstrated that within-person variation in emotion is stable and predictable. Therefore, addressing these concepts from a within-person viewpoint, rather than a between-person perspective,

may provide interesting insight into how leaders are able to adapt to certain situations and be more, or less, effective in emotion-relevant performance domains.

Emotion regulation also deserves further examination within the domain of leadership. The present study identifies potentially adaptive and maladaptive emotion regulation strategies for the leadership context. However, individuals are likely to use multiple types of emotion regulation strategies. In line with the concept of emotion regulation flexibility discussed by Aldao, Sheppes, and Gross (2015), leaders who have a greater repertoire of regulation strategies may be better adept at addressing the variety of situations faced within an organization. Due to the importance placed on emotion management for a number of leadership outcomes (Humphrey, 2012), understanding how a leader's flexibility in emotion regulation use influences their effectiveness is likely to be beneficial.

In conclusion, leaders are frequently required to solve complex social, organizational problems that are placed within emotionally-evoking situations. Therefore, uncovering how individual differences in trait affect, affect intensity, and emotion regulation impact problem solving performance is critical to our understanding of effective leadership. Our findings indicate that both trait affect and emotion regulation influence a leader's ability to produce effective problem solutions. As such, more research addressing how affective and emotion-related processes impact leader problem solving and decision making skills appears to be a worthwhile endeavor within the leadership domain.

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Table 1.

Operational Definitions of Leader Problem Solving and Social Judgment Variables

Leader Variable	Operational Definition
Problem Solving	
Quality	The degree to which the solution is realistic, practical, and appropriate for the situation
Originality	The degree to which the plan is original, unexpected, and elaborate
Elegance	The degree to which the solution was articulated in a concise manner
Social Judgment	
Considering Others' Perspectives	The degree to which multiple perspectives were considered in making the decision
Social Perceptiveness	The degree to which the response involved the awareness of the needs, goals, and demands of others and relationships with others
Good Judgment Under Conditions of Uncertainty	The degree to which the participant is willing to make decisions and take appropriate action in the uncertain situation

Table 2.

Means, Standard Deviations, and Correlations of Emotion Regulation, Trait Affect, and Reference Measures

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Cognitive	4.87	0.92	(.78)														
2. Emotion-avoidant	2.08	0.82	-.24**	(.53)													
3. Positive Frequency	4.69	0.92	.38**	-.21**	(.84)												
4. Negative Frequency	3.57	0.94	-.22**	.15*	-.35**	(.82)											
5. Positive Intensity	4.64	0.88	.32**	-.24**	.73**	-.19*	(.79)										
6. Negative Intensity	3.68	1.03	-.14	.072	-.28**	.74**	-.05	(.82)									
7. Empathy	3.86	0.53	.29*	-.38**	.18*	-.02*	.27**	.06	(.88)								
8. Self-regulation	3.75	0.50	.31**	-.22**	.39**	-.26**	.31**	-.20**	.29**	(.93)							
9. Affect intensity	3.76	0.53	.16*	-.32**	.27**	.20**	.32**	.20**	.53**	.09	(.90)						
10. Openness	3.45	0.61	.26**	-.15*	.21**	.07	.31**	.09	.26**	.27**	.26**	(.74)					
11. Conscientiousness	3.67	0.65	.10	-.21**	.20**	-.03	.16*	-.08	.24**	.70**	.18*	.06	(.82)				
12. Extraversion	3.21	0.88	.23**	-.25**	.38**	-.15*	.36**	-.22**	.26**	.27**	.35**	.28**	.12	(.89)			
13. Agreeableness	3.90	0.68	.35**	-.216**	.09	-.17*	.17*	-.15*	.58**	.34**	.23**	.17*	.36**	.15*	(.82)		
14. Neuroticism	2.94	0.73	-.31**	.07	-.37**	.52**	-.31**	.47**	.02	-.35**	.30**	-.01	-14	-.26**	-.33**	(.82)	
15. Depression	34.85	9.03	-.39**	.23**	-.53**	.58**	-.43**	.45**	-.14	-.41**	.07	-.05	-.21**	-.25**	-.23**	.58**	(.91)

Note. $N = 181$. * $p < .05$. ** $p < .01$. Reliabilities are presented in the parentheses along the diagonal.

Table 3.

Correlations Between Emotion Regulation, Trait Affect, and Reference Measures with Leader Outcomes

	Quality	Originality	Elegance	Considering	Social Percept.	Judgment
Cognitive-focused	.27**	.14	.21**	.03	.17*	.22**
Emotion-avoidant	-.21**	-.05	-.20**	-.03	-.15*	-.15*
Positive Frequency	.08	-.01	.06	-.04	-.01	.04
Negative Frequency	-.12	-.08	-.17*	-.04	-.10	-.05
Positive Intensity	.07	-.01	.05	-.10	.02	.07
Negative Intensity	-.01	.04	-.03	-.03	.04	.06
Empathy	.25**	.18*	.24**	.16*	.21**	.24**
Self-regulation	.13	.03	.12	-.04	.09	.06
Affect Intensity	.23*	.15*	.15*	.15*	.20**	.21**
Openness	.05	.11	.08	-.06	.06	.02
Conscientiousness	.09	-.06	.11	-.04	.07	.06
Extraversion	.02	-.01	.04	-.04	-.01	-.01
Agreeableness	.17*	.08	.15*	.13	.13	.13
Neuroticism	.04	.08	-.03	.09	.09	.06
Depression	-.15*	-.02	-.15	.07	-.06	-.11

Note. $N = 181$. * $p < .05$. ** $p < .01$. Considering = considering others' perspectives; Social Percept. = social perceptiveness; Self-obj. = self-objectivity; Self-reflect. = self-reflectivity; Judgment = good judgment under conditions of uncertainty.

Table 4.
Means and Standard Deviations of Leader Outcomes

	M	*SD*
Quality	2.81	0.33
Originality	3.02	0.31
Elegance	2.95	0.28
Considering	2.56	0.38
Social perceptiveness	2.59	0.36
Judgment	2.81	0.29

Note. $N = 181$. Considering = considering others' perspectives; Judgment = good judgment under conditions of uncertainty.

Table 5.

Hierarchical Regression Analyses of the Relationships Between Trait Affect Variables and Leader Outcomes

	Quality		Originality		Elegance		Considering		Social Percept.		Judgment	
Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Gender	.08	.08	-.09	-.09	-.00	-.00	.09	.10	.09	.09	.08	.08
Empathy	.21*	.17	.21*	.19	.24*	.22*	.10	.12	.15	.12	.24*	.20
Openness	-.00	.00	.07	.10	.03	.06	-.09	-.05	.03	.04	-.02	-.02
Conscientiousness	.01	.02	-.08	-.06	.06	.08	-.12	-.12	.00	.03	-.00	.01
Extraversion	-.03	-.03	-.06	-.03	-.05	-.01	-.03	-.03	-.04	-.01	-.06	-.05
Agreeableness	.05	.07	.03	.04	-.02	-.01	.14	.14	.05	.05	-.01	.01
Neuroticism	.04	.13	.08	.13	-.04	.04	.10	.13	.07	.15	.03	.09
Positive		.09		.03		.02		.14		-.02		.02
Negative		-.26*		-.28*		-.35**		-.08		-.34**		-.20
Positive Intensity		-.05		-.10		-.09		-.19		-.03		.02
Negative Intensity		.13		.16		.20		.00		.19		.14
F	2.02	1.88*	1.62	1.58	1.67	2.00*	1.80	1.54	1.62	1.85*	1.84	1.47
R^2	.08	.10*	.06	.09	.06	.11*	.07	.09	.06	.11*	.07	.09
ΔR^2		.03		.03		.05*		.02		.05		.02

Note. $N = 181$. * $p < .05$. ** $p < .01$. Positive = positive frequency; Negative = negative frequency; Social = social perceptiveness; Good Judgment = good judgment under uncertainty. Values presented are the standardized beta coefficients. * $p < .05$. ** $p < .01$.

Table 6.

Hierarchical Regression Analyses of the Relationships Between Emotion Regulation and Leader Outcomes

	Quality		Originality		Elegance		Considering		Social Percept.		Judgment	
Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Gender	.08	.06	-.09	-.09	-.00	-.02	.09	.09	.10	.08	.08	.06
Empathy	.21*	.13	.21*	.19	.24*	.18	.10	.10	.15	.10	.24*	.18
Openness	-.00	-.06	.07	.05	.03	-.00	-.09	-.09	.03	-.01	-.02	-.06
Conscientiousness	.01	.01	-.08	-.08	.06	.05	-.12	-.11	.00	.00	-.00	.00
Extraversion	-.03	-.06	-.06	-.07	-.05	-.07	-.03	-.03	-.04	-.06	-.06	-.08
Agreeableness	.05	.02	.03	.01	-.02	-.03	.14	.13	.05	.03	-.01	-.03
Neuroticism	.04	.11	.08	.11	-.04	.01	.10	.10	.07	.12		.09
Cognitive-focused		.25**		.14		.16		.03		.16		.22**
Suppression-focused		-.12		.01		-.11		.02		-.08		-.06
F	2.02	3.08	1.61	1.60	1.67	1.98*	1.80	1.40	1.63	1.86	.184	2.39*
R^2	.08	.14**	.06	.07	.06	.09	.07	.07	.06	.09	.07	.11*
ΔR^2		.06**		.01		.03		.00		.03		.04*

Note. $N = 181$. * $p < .05$. ** $p < .01$. Positive = positive frequency; Negative = negative frequency; Social = social perceptiveness; Good Judgment = good judgment under uncertainty. Values presented are the standardized beta coefficients.

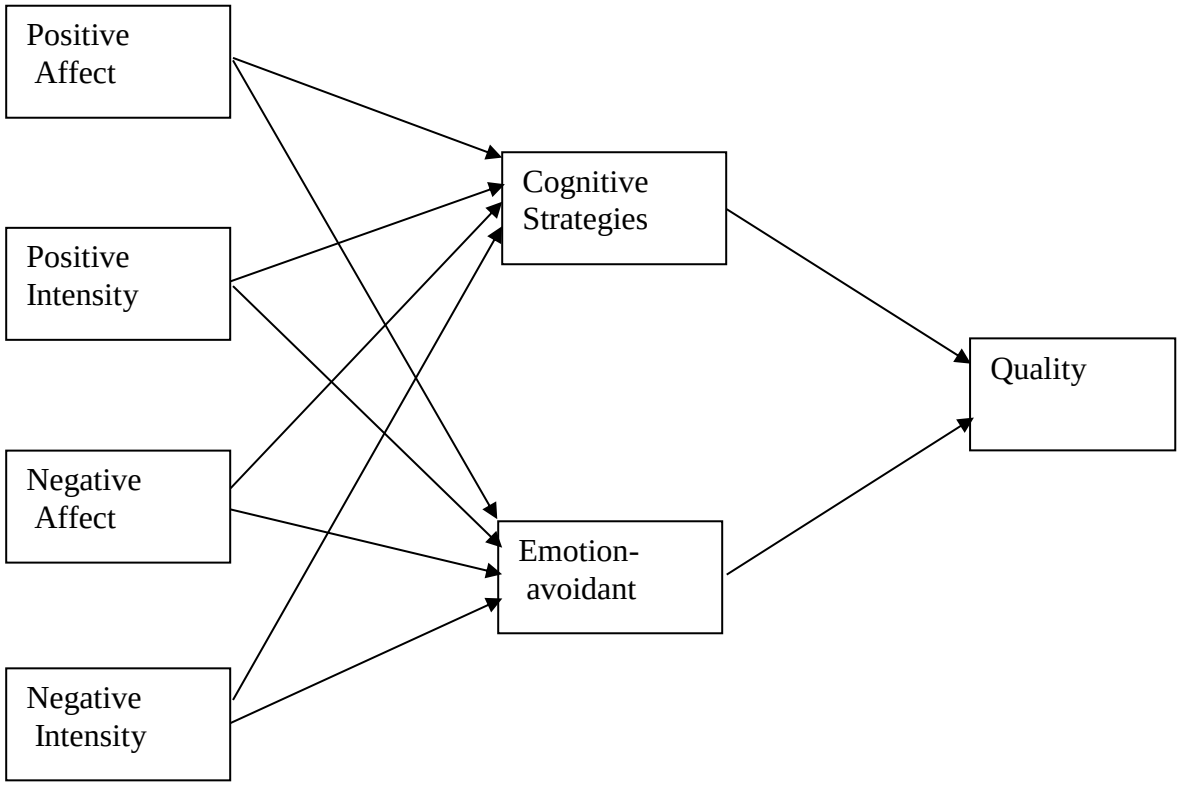


Figure 1. Example trait affect, emotion regulation and leadership outcome mediation model

Appendix A

Leadership Scenarios

Scenario 1: Conflict Resolution

You are an assistant manager at a new retail clothing store and you are responsible for managing 10 part-time employees. Your team must meet monthly sales goals for the next year, or there is a chance that the store will close. Company policy enables employees to earn 5% of sales price for each item sold. This policy has created a highly competitive environment, and you have had multiple complaints about team members stealing each other's customers and sales ring ups. This is having a negative impact on morale. Team members have not been cooperating on shared opening and closing duties, have been late for shifts, have been griping about coworkers and the workplace in general, and 1 team member quit two weeks ago. You know something has to change when you look at the monthly numbers and see that your team is below sales quota by 15%. You have a staff meeting tomorrow. How will you address this situation? What will you say to the staff? What actions will you take? How can you get sales back on track?

Scenario 2: Ethical Decision-Making

You are in a leadership role in a sorority/fraternity and are in charge of organizing a large fundraising charity event. This event is highly visible one in the community and will reflect on the local and national chapters of your sorority/fraternity, so things must go smoothly. You are managing and coordinating the efforts of more than a dozen people who are helping with various aspects of the event. One of the volunteers pulls you aside and tells you that he suspects that another volunteer, the

treasure and a personal friend of yours, has been misusing funds that were collected for the event. You do some investigating and something is wrong with the financial accounting, but you don't have any proof of wrongdoing. You are worried that word of some wrongdoing will get out and negatively impact this event. How will you address this situation? What will you say to your friend?

Scenario 3: Feedback

You are a shift manager at a food service company. Low sales have caused corporate to enact new company policies nationwide. Since you are a shift manager, it is your duty to enforce these new policies. However, due to the nature of the new policies, not all employees have been welcoming to the changes. Specifically, you have noticed that one of your more senior and better performing employees has been exhibiting noticeably less effort and encouraging others to do the same. Further, you have heard rumors that this employee has been bad mouthing you behind your back. The rumors have not only attacked your character, but have undermined your skills and abilities as a manager. Your company cannot remain functional if this type of behavior exists, but you know this person has shown promise in the past. What are you going to do? Provide details about what you will do and provide a rationale for your actions.

Scenario 4: High-stakes Situation

You are in a leadership role in an on-campus student group. You hold weekly meetings with other elected members to discuss various issues, such as ways to increase visibility within the community, increase student involvement, and future plans for your group. Over the year, you have gotten to know all the other members well and have developed strong friendships within the group. You have begun to notice that one of

your more energetic group members has been less talkative and enthusiastic. You do not give it much thought and attribute the behavior to her just having a bad day. However, as weeks go by, you notice that her behavior has not changed and in fact has gotten worse. After your most recent meeting, other group members approach you with details about the member's unusual behavior. They explain that her boyfriend has been verbally abusive and controlling and she feels as though she is stuck in this situation. Everyone is turning to you for help and guidance in this situation. How will you approach this situation and what are you going to do? Provide details about what you will do and provide a rationale for your actions.