A process model of self-regulation and leadership: How attentional resource capacity and negative emotions influence constructive and destructive leadership

Michael D. Collins, Chris J. Jackson
University of New South Wales Business School, Sydney, NSW 2052, Australia

Article info

Article history:
Accepted 19 February 2015
Available online 3 April 2015
Editor: M. Mumford

Keywords:
Attentional resources
Negative emotions
Self-regulation
Constructive leadership
Destructive leadership

Abstract

This study proposes a process model of the antecedents of both constructive and destructive leadership. As task difficulty increases, a leader’s limited attentional resource capacity may become overwhelmed by the experience of high levels of negative emotions, resulting in self-regulation impairment and destructive leadership. When task difficulty is low, or when negative emotions do not overwhelm attentional resource capacity, then self-regulation is effective, giving rise to constructive leadership. We test our model with 161 leaders in the field and find good support for our model in the prediction of transformational leadership and abusive supervision as specific examples of constructive and destructive leadership.

© 2015 Elsevier Inc. All rights reserved.

Introduction

For many years organizational scholars have focused predominantly on constructive forms of leadership, which encompass pro-subordinate and pro-organization leader behaviors (Aasland, Skogstad, Notelaers, Nielsen, & Einarsen, 2010; Schyns & Schilling, 2013). More recently, scholarly attention has shifted to anti-subordinate or destructive forms of leadership (Padilla, Hogan, & Kaiser, 2007), such as petty tyranny (e.g., Kant, Skogstad, Torsheim, & Einarsen, 2013) and abusive supervision (e.g., Mawritz, Folger, & Latham, 2014), which describe leaders who bully, harass or humiliate subordinates (Einarsen, Aasland, & Skogstad, 2007). There are good reasons for this shift in focus, as mounting evidence suggests that destructive leadership harms the mental and physical health of employees and degrades organizational performance (Aasland et al., 2010; Hershcovis & Rafferty, 2012; Schyns & Schilling, 2013). Given the individual and organizational harm attributed to destructive leadership, it is imperative that we better understand why a leader might demonstrate destructive rather than constructive forms of behavior. Armed with such knowledge, organizations could implement strategies to reduce the prevalence and impact of destructive leadership.

The contemporary view holds that negative contextual factors like organizational injustice and abuse from higher-level managers lead to destructive forms of leadership, for example, abusive supervision (Hershcovis & Rafferty, 2012; Tepper, 2007). In addition, a number of leader dispositions such as anger, anxiety and poor self-regulation have been linked to destructive leadership (Kant et al., 2013; Krasikova, Green, & LeBreton, 2013; Mawritz et al., 2014). In reviewing this evidence, Krasikova et al. (2013) argue that destructive leadership is the product of both contextual and dispositional factors (see also Eubanks & Mumford, 2010a). In particular, they propose that destructive leadership is a response to goal blockage when leaders lack sufficient psychological resources, such as attention or emotional self-regulation (Krasikova et al., 2013). Goal blockage occurs when leaders experience difficulty...
achieving their goals, however Krasikova et al. (2013) argue that the likelihood of displaying destructive versus constructive leadership in response to goal blockage depends on a leader’s characteristics and contextual factors.

By incorporating goal blockage and psychological resources in their proposal, Krasikova et al. (2013) answer recent calls to enhance leadership theory by integrating contextual and dispositional factors (see Avolio, 2007; Zaccaro, 2012). In addition, their focus on goal blockage highlights the difficult and demanding nature of managerial work in modern organizations (Joosteen, van Dijke, Van Hiel, & De Cremer, 2014). Senior leaders in particular often face ill-defined and multi-faceted problems that threaten the survival of the organizations they lead (Hambrick, 1989; Sherman, Witt, DeMarie, & Keats, 1999). Furthermore, many operate in a globally connected environment where deadlines are tight and vast quantities of information compete for their attention. Paradoxically, decision-making becomes more difficult and stressful when more information is available, options for action increase and outcomes are crucially important (Hambrick, Finkelstein, & Mooney, 2005; Miller & Cohen, 2001). Such dynamic and demanding work environments have associated with proactive forms of behavior (Parker, Bindl, & Wu, 2013; Parker, Williams, & Turner, 2006) and transformational leadership (Bass, 1990b; Bass & Avolio, 1997). This raises an important question: In what way does difficult or demanding work increase the chance of destructive leadership in some leaders but not others?

While Krasikova et al. (2013) describe some of the factors associated with destructive leadership, they do not explain the process by which the depletion of psychological resources leads to destructive leadership (e.g., Dinh & Lord, 2012). We extend their proposal in the present study to argue that constructive leadership is more likely when there is a sufficient level of psychological resources. We suggest that reducing the adverse impact of destructive leadership starts with understanding the process by which psychological resources, namely, attention and self-regulation, influence leader emotions and behavior. Such insight could inform the selection and development of organizational leaders, particularly for demanding and stressful roles.

This paper has two key objectives: (1) to present a process model of self-regulation and leadership, particularly one that describes how a self-regulatory mechanism is related to either transformational leadership (i.e., constructive leadership) or abusive supervision (i.e., destructive leadership); and (2) to demonstrate how this self-regulatory mechanism can be operationalized and tested in a field experiment utilizing common paper-and-pencil measures. Our central tenet is that sufficient attentional resource capacity is necessary for effective self-regulation and transformational leadership during demanding performance tasks, whereas insufficient attentional resource capacity leads to abusive supervision and heightened negative emotions in the same situation. We next make four important points in relation to psychological resources (i.e., attention and self-regulation) that are central to our proposal.

First, we focus on attention and draw specifically from Beal, Weiss, Barros, and MacDermid (2005), who argue that attentional resources serve as “an ‘engine’ specifically for the act of self-regulation” (p. 1058). Accordingly, we argue that effective self-regulation requires sufficient attentional resource capacity. Second, we conceptualize self-regulation as a state-like construct, varying in strength over time (e.g., Baumeister, Vohs, & Tice, 2007), and not as a trait-like or static construct (see Cervone, Shadel, Smith, & Fiori, 2006). Third, the labels self-regulation and self-control are often used interchangeably; however, self-control is typically considered to be a “deliberate, conscious, effortful subset of self-regulation” (Baumeister et al., 2007, p. 351). Self-control is typically defined as “exerting control over one’s actions and inner states so as to bring them into line with meaningful standards such as goals, values and expectations” (Bertrams, Englert, Dickhauser, & Baumeister, 2013, p. 669). However, we are primarily concerned with the self-regulatory mechanism that determines one’s capacity to exercise self-control (e.g., Cervone et al., 2006) and not a leader’s conscious or deliberate acts of self-control (e.g., Tsui & Ashford, 1994). Finally, like others, we hold that self-regulation is highly adaptive and enables leaders to “engage in goal-directed behavior to bring about long-term desirable outcomes” (Hagger, Wood, Stiff, & Chatzisarantis, 2010, p. 495).

We structure our introduction in the following way. First, we briefly describe transformational leadership and abusive supervision, which are examples of constructive and destructive leadership used in our study. Following Krasikova et al. (2013), we also examine leader characteristics (i.e., attentional resources, self-regulation and negative emotions) and negative contextual factors as likely antecedents of both forms of leadership. Next, we introduce the context-appropriate balanced attention model (CABA; MacCoon, Wallace, & Newman, 2004) and explain how a neurocognitive (brain-based) attentional mechanism regulates leader cognitions, emotions, and behavior. This model is well suited to our purpose because it explains the automatic process by which negative emotions interfere with the allocation of limited-capacity attentional resources during a demanding performance task. We explain how this process leads to self-regulatory impairment, heightened negative emotions and destructive leadership.

Theory and hypotheses development

The antecedents of transformational leadership and abusive supervision

Organizational leaders are often pressured to respond rapidly and accurately to work tasks and frequently make decisions based on scarce or unreliable information. Such decision-making can be demanding and stressful, particularly when a leader’s decisions impact followers and the organization. Effective leadership under such dynamic and demanding conditions requires leaders who are proficient, adaptable and proactive (Griffin, Neal, & Parker, 2007). Transformational leadership is a well-established form of constructive leadership often associated with proactive behavior during dynamic and demanding situations, for example, organizational change or crisis (Bass, 1990b; Franke & Felfe, 2011; Podsakoff, MacKenzie, Moorman, & Fetter, 1990). Transformational leaders motivate others by providing them with a value-laden vision, intellectual stimulation, inspirational communication, supportive leadership and personal recognition (Rafferty & Griffin, 2004).

However, some leaders may be vulnerable to cognitive overload and stress in dynamic and demanding situations, demonstrating few if any constructive leadership behaviors (Eubanks & Mumford, 2010b). Aggressive or hostile behavior could be one possible reaction from leaders who feel threatened in such situations (Anderson & Bushman, 2002). This behavior reflects “abusive supervision,”
a form of destructive leadership describing leaders who “engage in the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact” (Tepper, 200, p. 178). Examples of abusive supervision include intimidation, withholding vital information, and blaming or ridiculing a follower in front of others.

In a recent theoretical review, Krasikova et al. (2013) identified leader anger, anxiety and poor self-regulation as known antecedents of destructive leadership. In addition, several studies have reported a link between abusive supervision and negative contextual factors, such as organizational injustice, psychological contract violation, abuse from higher-level managers and aggressive organizational norms (see Hershcovis & Rafferty, 2012; Mawritz et al., 2014; Tepper, 2007). Furthermore, some scholars argue that destructive leadership is the product of both contextual and dispositional factors (Eubanks & Mumford, 2010a; Krasikova et al., 2013). Evidence supporting this view can be found in two recent empirical studies. Joosten et al. (2014), following the ego depletion literature (Baumeister, Bratslavsky, Muraven, & Tice, 1998), reported that demanding work situations were associated with unethical leader behavior (i.e., destructive leadership) in resource-depleted leaders. Mawritz et al. (2014), in a study based on the cognitive theory of stress (Lazarus & Folkman, 1984), found that supervisors’ hindrance stress and negative emotions (i.e., anxiety and anger) mediated the relationship between “exceedingly difficult” job goals and follower-rated abusive supervision. That is, a leader’s perception of job goals being more difficult led to higher stress, negative emotions and abusive supervision.

These two recent studies both draw on prominent psychological resource theories and provide preliminary evidence linking destructive leadership to demanding work situations and a leader’s psychological resources. However, we could not find an equivalent theory or empirical study examining the influence of contextual factors on a leader’s psychological resources in the more extensive constructive leadership literature. Contextual factors have nevertheless been linked to transformational leadership, with several scholars arguing that transformational leaders are more likely to emerge in “dynamic” rather than stable work environments (Bass, 1990a; Bass & Avolio, 1997; De Hoogh, Den Hartog, & Koopman, 2005). Effective performance in such uncertain work environments requires individuals who are flexible and proactive (Griffin et al., 2007). Proactivity is generally associated with constructive forms of leadership (see Crossley, Cooper, & Wernsing, 2013; Wu & Wang, 2011), including transformational leadership (Bass, 1990b; Bass & Avolio, 1997). Furthermore, while the positive relationship between certain leader dispositions (i.e., emotional stability and conscientiousness; Costa & McCrae, 1991) and transformational leadership has been widely cited (e.g., Bono & Judge, 2004), several studies have reported contradictory or inconclusive findings, particularly when contextual factors vary, e.g., dynamic versus stable work environments (De Hoogh et al., 2005; Judge & Bono, 2000; Lim & Ployhart, 2004; Ployhart, Lim, & Chan, 2001).

Thus it appears that the constructive leadership literature offers no clear and consistent reason as to why transformational leadership is more likely to occur than abusive supervision in dynamic work environments. As previously argued, dynamic work environments can be perceived as difficult and stressful, which constitutes a negative contextual factor associated with abusive supervision (Hershcovis & Rafferty, 2012). In addition, some scholars have suggested that a leader might display both constructive and destructive leadership over a period of time (Aasland et al., 2010; Einarsen et al., 2007). Extending this idea, work environments that are perceived to be dynamic, demanding or stressful can potentially impact leaders’ psychological resources such that they experience difficulty regulating their cognitions, emotions and behavior (Baumeister et al., 2007; Krasikova et al., 2013). As previously argued, a sufficient level of self-regulation is needed to pursue goal-directed behavior and achieve long-term individual and organizational outcomes (e.g., Hagger et al., 2010; Yeow & Martin, 2013). This requirement suggests that effective self-regulation leads to proactive behavior and transformational leadership, rather than abusive supervision. What remains unclear, however, is the process by which demanding or stressful work environments impact psychological resources and leadership.

A partial explanation can be inferred from a study of leader performance that reported a positive correlation between trait anxiety and performance for leaders with higher cognitive ability, while no correlation was found for those with lower cognitive ability (Perkins & Corr, 2005). More generally, a substantial body of research attributes performance impairment to worrying thoughts and anxiety interfering with attention and subsequently reducing the availability of cognitive resources for task-processing activities (e.g., Bertrams et al., 2013; Eysenck & Calvo, 1992; Hardy, Beattie, & Woodman, 2007). Other scholars argue that anxiety interacts with motivational constructs (e.g., extra effort, positive performance goals) to compensate for the effect of anxiety and improve performance, but more so on less difficult tasks (e.g., Eysenck, Derakshan, Santos, & Calvo, 2007; Humphreys & Revelle, 1984).

This suggests that the relationship between anxiety and performance might depend on the difficulty of the task, such that anxiety is associated with impaired performance on difficult tasks but results in unimpaired or even improved performance on easy tasks (see also Smithie, Yeo, Furnham, & Jackson, 2006). It is also conceivable that anxiety is linked to impaired performance in situations where a leader’s cognitive resources are restricted or limited, as reported in the study by Perkins and Corr (2005). Hence, it is possible that dynamic or demanding work environments where leaders experience difficult or stressful performance tasks give rise to negative emotions (e.g., anxiety and anger) that adversely impact their attentional resource capacity, leading to destructive forms of leadership. Building on this idea, we next draw on a neurocognitive model of self-regulation, proposed by MacCoon et al. (2004), to explain the mechanism by which anxiety and other negative emotions interfere with attention, leading to a reduction in attentional resource allocation.

**A neurocognitive model of self-regulation**

The context-appropriate balanced attention model (CABA; MacCoon et al., 2004) describes a neurocognitive limited-capacity “selective attention” mechanism that regulates cognitions, emotions and behavior. In this model selective attention is conceptualized as a “top-down” self-regulatory mechanism responsible for enhancing or suppressing appropriate and inappropriate cognitions, emotions or behaviors (see Botvinick, Braver, Barch, Carter, & Cohen, 2001; Posner & Rothbart, 1998; Posner, Rothbart, Sheese, & Tang, 2007). Accordingly, particular cognitions, emotions and behaviors can be represented as networks of coactivated neurons that are activated...
automatically in a “bottom-up” manner in response to particular stimuli. Difficult cognitive tasks, for example, draw on limited attentional capacity, causing a reduction in available attentional resources for non-dominant stimuli (i.e., non-task-related). Furthermore, selective top-down attention is attracted to the network that is currently most activated and only activates non-dominant networks when attentional capacity is available. Top-down attention is also required to resolve network “coactivation,” that is, when dominant and non-dominant networks compete for limited attentional capacity. This might occur, for example, when non-dominant worrying thoughts and anxiety compete with dominant task-related networks when a leader presents poor business results to a hostile board of directors.

The CABA model is relevant because it describes the seemingly automatic process by which threatening stimuli (i.e., negative contextual factors) can deplete attentional resource capacity, leading to self-regulatory impairment. MacCoon et al. (2004) attribute self-regulatory impairment to an “emotion-driven narrowing of attention,” arguing that as “capacity decreases, individuals will continue to process bias-related cues (their priority) at the expense of processing cues unrelated to this bias” (p. 436). For example, the authors suggest that highly threat-sensitive individuals should process neutral and threatening stimuli equally, when attentional capacity is available, but should preferentially process threatening stimuli as attentional capacity decreases (see also Baskin-Sommers, Wallace, MacCoon, Curtin, & Newman, 2010; Derryberry & Reed, 2002; Eysenck et al., 2007). As attentional capacity is increasingly allocated to these threat networks, less capacity is available to activate those networks responsible for primary tasks (e.g., problem-solving), leading to self-regulatory impairment and poor task performance. For example, a leader who feels angry and resentful when denied an annual bonus might unintentionally react abusively when a subordinate challenges an unpopular leadership decision. This occurs because the leader’s attentional resources are over-allocated to processing the negative emotions related to losing the bonus, leaving less capacity available to respond appropriately to the subordinate’s actions.

The CABA model provides a parsimonious framework, supported by emerging neuroscientific evidence (e.g., the role of the medial prefrontal cortex, see van Noordt & Segalowitz, 2012), that we use to integrate negative contextual factors, negative emotions and attentional resources to predict either constructive or destructive leader behaviors. In addition, the limited-capacity self-regulatory mechanism central to this model is conceptualized as a dynamic state-like construct. This view aligns with Beal et al. (2005), who suggest that regulatory resources “determine a person’s ability to control the allocation of their [cognitive] resources” (p. 1058, the terms “regulatory resources” and “attentional resources” are synonymous). Beal et al. (2005) also argue that a temporal unit of performance, or “performance episode,” is needed to link state-like constructs, such as emotions and attentional resources, to performance. A performance episode is a relatively short, goal-directed task or behavior whereby, “performance during an episode is a joint function of resource level and resource allocation” (Beal et al., 2005, p. 1057, original italics).

We believe that many leadership activities or tasks fit the description of a performance episode, including conducting an annual performance appraisal, leading a team meeting or delivering a presentation. Importantly, we suggest that the level of task difficulty influences the level and allocation of limited attentional resources necessary for effective self-regulation and subsequent leader emotions and behavior. We next describe the process by which this occurs and how fluctuations in leaders’ self-regulation impact their emotions and behavior over the course of demanding performance tasks.

**Toward a process model of self-regulation and leadership**

During the course of a demanding performance episode (i.e., one that is difficult, ambiguous or stressful) we propose that a leader’s emotions and behavior will evolve in the following way. First, difficult performance tasks place heavy demands on a leader’s cognitive and attentional resources (Miller & Cohen, 2001; Shamosh & Gray, 2007; Shamosh et al., 2008). As attentional capacity decreases over time due to heavy task-processing demands, threat-sensitive leaders will focus on processing threat-related negative thoughts (Derryberry & Reed, 2002; MacCoon et al., 2004). Attending to these negative thoughts increases the strength of negative emotions, which further deplete attentional resources. The corresponding reduction in attentional capacity degrades task performance, increases the likelihood of errors, initiates more threat-related negative thoughts, and further increases the activation and allocation of attentional resources to these threat networks (Miller & Cohen, 2001; Shamosh et al., 2008). As a limited-capacity construct, the CABA model predicts that this ongoing process will result in diminishing levels of task-related attentional resources, increasing levels of negative emotion and a weakening or failure in self-regulation.

Accommodationally, we propose a moderated mediation model predicting leader behavior over the course of a demanding performance task (to be clear, we do not expect the same effect for an easy or simple task). Specifically, we propose that attentional resource capacity moderates the relationship between pre-task negative emotions and self-regulation, while self-regulation mediates the relationship between pre- and post-task negative emotions. Furthermore, higher levels of attentional capacity will reduce the adverse effect of pre-task negative emotions on self-regulation, leading to effective self-regulation, lower post-task negative emotions and constructive leader behavior. Conversely, lower levels of attentional capacity will increase the adverse effect of pre-task negative emotions, leading to ineffective self-regulation, higher post-task negative emotions and destructive leader behavior (see Fig. 1).

Effective self-regulation during a demanding performance task therefore depends on the efficient allocation and utilization of limited-capacity attentional resources. A sufficient quantity of attentional resources must be available and allocated throughout the duration of a task to reduce the intensity and adverse impact of negative thoughts and emotions. It is reasonable to expect protracted and difficult performance tasks to consume a greater portion of these limited resources, particularly tasks involving threatening stimuli, such as abuse from a higher-level manager. These situations are likely to evoke strong negative emotions of varying intensity and frequency throughout the duration of a task, while continuing to drain limited attentional resource capacity. Hence, transformational leadership relies on sufficient attentional capacity to maintain effective self-regulation, which mitigates the adverse impact of negative emotions over the course of the task. We summarize this in the following hypothesis.
Hypothesis 1. Higher levels of attentional resource capacity will reduce the effect of pre-task negative emotions during demanding performance tasks, resulting in effective self-regulation and leading to lower post-task negative emotions and higher levels of proactive behavior and transformational leadership, or lower levels of abusive supervision.

If attentional resource capacity is insufficient to resolve the coactivation of dominant and non-dominant networks, for example, those processing task-related and threat-related stimuli, then self-regulation will be ineffective, leading to an increase in negative emotions. Any subsequent increase in negative emotions will further deplete limited attentional capacity, leading to weaker self-regulation and abusive supervision, which we summarize in the following hypothesis.

Hypothesis 2. Lower levels of attentional resource capacity will intensify the effect of pre-task negative emotions during demanding performance tasks, resulting in ineffective self-regulation and leading to higher post-task negative emotions and higher levels of abusive supervision, or lower levels of proactive behavior and transformational leadership.

As stated previously, we do not make the same predictions for easy or simple performance tasks. Such tasks are unlikely to place heavy demands on a leader’s cognitive and attentional resources in the same way as difficult or demanding tasks (Shamosh & Gray, 2007; Shamosh et al., 2008); hence, a leader’s attentional resource capacity is unlikely to diminish greatly over time when performing a simple or easy task. Furthermore, easy tasks are not likely to be perceived as threatening and therefore threat-sensitive leaders will have sufficient attentional resource capacity to process task-related thoughts. Indeed, negative emotions (e.g., anxiety) may interact with motivational factors, such as extra effort, leading to improved performance on easy tasks (Eysenck et al., 2007).

In summary, we have argued that our process model of self-regulation and leadership predicts two separate and distinct forms of leadership during demanding performance tasks, namely, transformational leadership and abusive supervision, which are forms of constructive leadership and destructive leadership, respectively. Having developed our hypotheses, we next describe a “real-world” field study that we conducted to test our model.

Present study

The participants in this study occupied formal leadership roles in several Australian organizations and were attending a leadership development program conducted by their organization. At the time of this study, opportunities to attend such programs were relatively limited and selection was based largely on merit. Hence, most participants were highly motivated and effective in their current role and were attending the program largely for promotional rather than remedial reasons. The first author was engaged by each organization to conduct the program and provide participants with a face-to-face debrief of their test results. Ethics approval for the study was provided by our University.

Drawing on prior field research experience, we anticipated a number of factors that might unexpectedly reduce the size of our sample, for example, shifting organizational priorities or cuts to training budgets. Hence, we sought involvement from several organizations to mitigate this risk. Importantly, our hypotheses required an experimental design, yet this study was to be conducted in work situations where we had far less control than in the laboratory (Antonakis, Bendahan, Jacquart, & Lalive, 2010). We therefore decided to randomly allocate participants to control versus experiment groups based on an approximate 1 to 3 ratio to maximize our sample size for the experiment condition.
**Method**

**Experimental procedure**

Testing our process model of self-regulation and leadership required a study design that could: (1) measure state-like constructs, namely, attentional resource capacity, negative emotions and self-regulation; (2) induce self-regulatory impairment; and (3) quickly gain acceptance at face-value from busy leaders and human resource managers who were indifferent to our research objectives. We therefore designed a short and simple experimental procedure, utilizing familiar paper-and-pencil measures, which could be easily incorporated in the leadership development programs conducted by the first author. Given the central importance and conceptualization of self-regulation as a state-like construct, we next outline the procedure we used to manipulate and measure this, followed by a description of our experimental procedure.

Most ego depletion studies use a number of common procedures for depleting self-control resources (e.g., Bertrams et al., 2013); however, in these studies self-control exertion is usually measured by self-report questionnaires (see review by Hagger et al., 2010). Some example items include: “How difficult did you find the task?” and “How exhausted do you feel right now?” (Bertrams et al., 2013, p. 671). If, as Bertrams et al. (2013) suggest, “altering one’s behavior to comply with rules and standards is the essence of self-regulation” (p. 670, emphasis added), then these self-report questionnaires do not actually measure changes in behavior, but simply perception of task difficulty. In this study we measured self-regulation using a time-limited difficult mathematical test, which provided a simple but effective way to deplete attentional resources and therefore impair self-regulation.

We reasoned that most participants in formal leadership roles have reasonably high personal performance standards or goals, as these are essential in positions of leadership responsibility (Latham & Locke, 1991; Yeow & Martin, 2013). Accordingly, we reasoned that time-limited mathematical tests involve “tradeoff” decisions between speed and accuracy to attain a test score congruent with high personal performance expectations (see Wood & Jennings, 1976). Trade-off decisions are reflected in a participant’s behavioral response to questions contained in the test. Specifically, personal standards or goals emphasizing accuracy over speed are observed in a behavioral response where the ratio of errors committed to questions answered is relatively low. In contrast, personal standards or goals emphasizing speed over accuracy are observed in a behavioral response where the ratio of errors committed to questions answered is relatively high. We assign the term error rate to this behavioral tendency and define this as the ratio of errors committed to the number of questions answered.

We further reasoned that if a participant found a mathematical test to be relatively easy then we would expect a behavioral response that is rapid with a high number of accurate answers and relatively few errors (e.g., Dickman, 1990). In a time-limited test this would equate to a low error rate (i.e., a low ratio of errors committed to questions answered). Also, it would be unlikely for participants to feel overly threatened or experience increasing negative emotions over the course of an easy test. However, in a test perceived as difficult, we would expect a participant to adopt a slower, more deliberate and cautious behavioral response to achieve a test score commensurate with high personal standards or goals. Again, in a time-limited test this should equate to a relatively low error rate. This would reflect effective self-regulation.

However, in the same difficult test condition, if a participant responded rapidly and impulsively, committing a relatively higher ratio of errors to questions answered, then this higher error rate would reflect ineffective self-regulation (as this behavioral response entails making mistakes). In addition, it is highly likely that this situation would arouse negative emotions (e.g., anxiety, anger or fear) that would increase over the course of the difficult test, further draining attentional resource capacity. Evidence supporting this effect can be found in the literature linking cognitive resource depletion and negative emotions with mathematical errors (see Ashcraft & Kirk, 2001; Ayres, 2001; Ayres & Sweller, 1990). Mathematical errors can occur through lack of knowledge, however, they can also result from test anxiety and limitations in working memory, which is a form of attentional resource (Campbell, 1987; DeStefano & Lefevre, 2004; Fayol, Abdi, & Gombert, 1987). Hence, we used a time-limited difficult mathematical test to initiate an “emotion driven self-regulation failure” (MacCoon et al., 2004), while a participant’s level of self-regulation was measured via the error rate obtained on the test.

**Participants and study design**

We collected data over a 15-month period from 187 organizational leaders who were attending a leadership development program conducted by their organization. We invited their direct superior to rate them on an example of constructive and destructive leadership, to minimize the potential effect of common-method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, 26 (13.9%) superiors failed to rate their subordinate within a four-week timeframe and we therefore excluded those participants without superior ratings from the study. Hence our final sample comprised 161 participants with matching superior ratings of leadership. All participants were full-time leaders drawn from six organizations representing the mining (61.5%), government (33.5%) and construction (5%) sectors. Our sample comprised front-line supervisors (56.5%), managers of front-line supervisors (13.6%), business unit managers (19.3%) and senior executives (10.6%). The majority were male (85.6%), held a bachelor’s degree or higher (53.4%) and were an average of 42.5 years old (standard deviation = 9.5 years).

On the first day of each leadership program attendees provided their consent to participate in the study and, unbeknownst to them, were randomly allocated to a control group (easy mathematical test) or an experiment group (difficult mathematical test). Participants then completed a number of pen-and-paper measures in the following order: (1) trait emotions; (2) attentional resource capacity; (3) negative state emotions; (4) an easy or difficult mathematical test for the control or experiment condition, respectively;
and (5) negative state emotions (repeat-measure). Third-party ratings of constructive and destructive leadership were completed online by each participant’s superior within four weeks of this procedure.

**Constructs and measures**

**Attentional resource capacity**

A measure of “fluid intelligence” was used as an index of attentional resource capacity. Fluid intelligence is defined as the ability to reason and solve novel problems and has been associated with working memory, abstract reasoning and attention (Kanfer & Ackerman, 2004). There is also evidence linking fluid intelligence to greater utilization of cognitive resources on difficult decision-making tasks (Del Missier, Mantyla, & De Bruin, 2012; Shamosh & Gray, 2007). The Australian Council for Educational Research (ACER) abstract reasoning test is a commonly used measure of fluid intelligence for personnel selection purposes. It has an internal reliability of 0.83 (Morgan, Stephanou, & Simpson, 2000) and was used to establish a baseline measure of attentional resource capacity. Participants completed Part 1 of the test, which contains 20 multiple-choice questions assessing pattern recognition of abstract figures. A high fluid intelligence score indicates high attentional resource capacity.

**Negative state emotion**

The Positive and Negative Affect Scale (PANAS) provides a measure of pleasurable and aversive emotional states, respectively (Watson, Clark, & Tellegen, 1988). We used the 10-item Negative Affect (NA) scale (e.g., “distressed,” “upset,” “scared”) to measure negative state emotion. Participants were asked to rate on a five-point scale (1 = very slightly or not at all, 5 = very much) the extent to which they experienced each particular emotion immediately before (pre-test) and immediately after completing (post-test) the mathematical test. Watson et al. (1988) report an internal reliability of 0.85 for the NA scale. The PANAS has been used previously in destructive leadership studies (e.g., Mawritz et al., 2014). High scores indicate high positive and negative emotionality.

**Self-regulatory impairment**

Participants in the control condition (easy mathematical test) completed the ACER Test of Employment Entry Maths (TEEM), which is a multiple-choice test of basic mathematical ability containing 32 questions. The time limit for the test is 25 min and it has good internal reliability of 0.80 (Izard, Woff, & Doig, 1992). Participants in the experiment condition (difficult mathematical test) completed the ACER Select Professional Numerical test (SPN), which is an advanced test of mathematical ability containing 29 questions that include number sequences, arithmetical reasoning and number matrices. The time limit for the test is 20 min and it has good internal reliability of 0.80 (ACER, 2003). Self-regulatory impairment was measured by calculating the percentage of total errors committed divided by the total number of questions answered by participants on the test (labeled error rate). As previously argued, a low error rate reflects effective self-regulation and a high error rate reflects ineffective self-regulation.

**Proactivity, transformational leadership and abusive supervision**

The direct superiors of each participant were asked to rate the behavior of their subordinate over the previous month. The one-month timeframe was used to ensure an adequate sampling of recent participant behaviors displayed under varying contexts. Each superior completed the nine-item proactivity scale of the Multidimensional Performance Questionnaire (MPQ; Griffin et al., 2007). This scale consists of three sub-scales measuring proactive behavior at the individual, team and organizational levels. The measure uses a five-point rating scale (1 = very little, 5 = a great deal) and has good internal reliability, ranging from 0.83 to 0.94 across the three sub-scales. Example items include: “made changes to the way their core tasks are done,” “developed new and improved methods to help their work unit perform better,” and “became involved in changes that are helping to improve the overall effectiveness of the organization.” High scores indicate high proactive behavior.

Each superior also completed the 15-item measure of transformational leadership developed by Rafferty and Griffin (2004). This contemporary measure of constructive leadership consists of five sub-factors of transformational leadership: vision, intellectual stimulation, inspirational communication, supportive leadership and personal recognition. The measure uses a five-point rating scale (1 = strongly disagree, 5 = strongly agree) and has good internal reliability, ranging from 0.82 to 0.96 across the five sub-factors. Example items include: “has a clear understanding of where we are going,” “challenges others to think about old problems in new ways,” and “says positive things about the work unit.” High scores indicate high transformational leadership.

Finally, the same superior completed the 15-item abusive supervision questionnaire (Tepper, 2000), which is a well-established measure of destructive leadership (Hershcovis & Rafferty, 2012). The measure uses a five-point rating scale (1 = I cannot remember him/her ever using this behavior, 5 = he/she uses this behavior very often) and has good internal reliability of 0.90. Example items include: “ridicules others,” “tells others their thoughts or feelings are stupid,” and “gives others the silent treatment.” High scores indicate high abusive supervision.

**Negative trait emotions**

We measured participants’ negative trait emotions before starting the procedure to compare the general tendency to experience negative state emotions between participants in the control and experiment conditions. We reasoned that any significant difference between the groups might influence our results. The trait anxiety, anger and immoderation (i.e., impulsivity) scales from the International Personality Item Pool (IPIP; Goldberg, 1990, 1992) were used for this purpose. Each scale contains 10 items and participants were asked to rate how accurately each item described them in general (1 = very inaccurate, 5 = very accurate). The IPIP is a widely
used public domain personality measure and scales have good internal reliabilities of 0.83, 0.88 and 0.77, for trait anxiety, anger and immoderation, respectively (International Personality Item Pool). High scores indicate high negative trait emotions.

**Data analysis**

We adopted a strictly confirmatory framework where we proposed a single theory-derived model and tested the fit of this model to the control data (easy mathematical test) and experiment data (difficult mathematical test) as recommended by Joreskog (1993). Our hypotheses were tested using path analysis (see Fig. 1) and hierarchical regression analysis to model the simple slopes of the proposed interaction.

**Results**

**Descriptive statistics**

Table 1 shows the means (M), standard deviations (SD), reliability coefficients (α) and analysis of variance between variables in the control and experiment conditions. Zero-order correlations for all variables are presented separately for each condition in Table 2. The reliability coefficients are generally acceptable (between 0.66 and 0.96) and the correlations between key variables support the expected relationships described in our model, which we summarize next.

Examining Table 2, in the control condition (n = 38), attentional resource capacity is negatively correlated with self-regulatory impairment (r = −.66, p < .01) and positively correlated with superior-rated proactivity (r = .33, p < .05); pre-test negative emotion has a weak negative correlation with self-regulatory impairment (r = −.41, p < .01); pre- and post-test negative emotion are positively correlated (r = .33, p < .05); and self-regulatory impairment has a weak positive correlation with post-test negative emotion (r = .31, p < .10) and is negatively correlated with proactivity (r = −.35, p < .05). Hence, participants with higher attentional resource capacity demonstrate effective self-regulation during an easy mathematical test and are rated higher in proactivity by their superior. Furthermore, participants with higher levels of pre-test negative emotion are likely to demonstrate effective self-regulation (although this effect is weak). Higher levels of pre-test negative emotion and effective self-regulation are also associated with higher scores on the easy mathematical test (r = .40, p < .05 and r = −.94, p < .01, respectively). Finally, effective self-regulation during the easy mathematical test is associated with higher superior-rated proactivity, which is strongly correlated with higher transformational leadership (r = .62, p < .001).

In the experiment condition (n = 123), attentional resource capacity is negatively correlated with self-regulatory impairment (r = −.41, p < .01) and negatively correlated with superior-rated abusive supervision (r = −.19, p < .05); pre-test negative emotion is positively correlated with self-regulatory impairment (r = .21, p < .01); pre- and post-test negative emotion are positively correlated (r = .47, p < .01); and self-regulatory impairment is positively correlated with post-test negative emotion (r = .37, p < .01) and with abusive supervision, although weakly (r = .15, p < .10), and negatively correlated with proactivity (r = −.20, p < .05). Hence, participants with higher attentional resource capacity also demonstrate effective self-regulation during a difficult mathematical test and are rated lower in abusive supervision by their superior. However, participants with higher levels of pre-test negative emotion are likely to demonstrate ineffective self-regulation, which is associated with lower scores on the difficult mathematical test (r = −.73, p < .01). Consistent with participants in the control condition, an increase in the level of pre-test negative emotion leads to a significant increase in post-test negative emotion via self-regulatory impairment. Furthermore, ineffective self-regulation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n = 38)</th>
<th>Experiment (n = 123)</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math questions answered</td>
<td>96.79</td>
<td>6.48</td>
<td>−</td>
</tr>
<tr>
<td>Math questions correct</td>
<td>86.10</td>
<td>12.64</td>
<td>−</td>
</tr>
<tr>
<td>Trait anxiety</td>
<td>2.34</td>
<td>0.53</td>
<td>0.72</td>
</tr>
<tr>
<td>Trait anger</td>
<td>1.98</td>
<td>0.51</td>
<td>0.78</td>
</tr>
<tr>
<td>Trait impulsivity</td>
<td>2.28</td>
<td>0.50</td>
<td>0.67</td>
</tr>
<tr>
<td>Attentional resource capacity</td>
<td>13.63</td>
<td>3.31</td>
<td>−</td>
</tr>
<tr>
<td>Pre-test neg. emotion</td>
<td>1.29</td>
<td>0.27</td>
<td>0.67</td>
</tr>
<tr>
<td>Self-regulatory impairment</td>
<td>11.39</td>
<td>9.20</td>
<td>−</td>
</tr>
<tr>
<td>Post-test neg. emotion</td>
<td>1.21</td>
<td>0.23</td>
<td>0.66</td>
</tr>
<tr>
<td>Abusive supervision</td>
<td>1.16</td>
<td>0.20</td>
<td>0.80</td>
</tr>
<tr>
<td>Transformational leadership</td>
<td>3.89</td>
<td>0.40</td>
<td>0.82</td>
</tr>
<tr>
<td>Proactivity</td>
<td>3.50</td>
<td>0.70</td>
<td>0.95</td>
</tr>
</tbody>
</table>

* Reported as a percentage.

a Fluid intelligence test score (maximum = 20).

b Error rate obtained on mathematical test.

c Superior-rated.

p < .05.

** p < .01.

*** p < .001.
between participants in each condition. Table 2 shows that the levels of trait anxiety, anger and impulsivity are similar between the two groups. However, those in the experiment condition performed worse on the difficult mathematical test to be difficult and more threatening, leading to a significantly higher level of negative emotion following the test than those in the control condition and experienced higher negative emotions during the easier mathematical test (control condition). The ANOVA results in Table 1 indicated that performance on the test differed significantly between the two conditions. In contrast to the experiment condition, participants in the control condition reported a significantly higher level of negative emotion following the test than those in the control condition (M = 157.57, SD = .51 versus M = 121.74, SD = .23), however, this reduction was non-significant (t(37) = 1.60, p = .118). Conversely, participants in the experiment condition experienced a large and significant increase in the level of negative emotion (from M = 117.57, SD = .24 to M = 157.57, SD = .51; t(122) = −9.70, p < .001). Finally, it is unlikely that any difference in state emotion can be attributed to differences in trait emotions between participants in each condition. Table 2 shows that the levels of trait anxiety, anger and impulsivity are similar between the two groups.

Together, these results indicate that participants have similar levels of attentional resource capacity and negative trait emotions, yet those in the experiment condition performed worse on the difficult mathematical test and experienced higher negative emotions post-test than participants in the control condition, who completed the easier mathematical test. Furthermore, the slight decrease in negative emotions over the duration of the easier mathematical test (control condition) suggests that participants found this test to be relatively easy and therefore non-threatening. However, it appears that participants in the experiment condition found their mathematical test to be difficult and more threatening, leading to a significant increase in negative emotion over the duration of the test.
These results provide initial support for our argument that leaders who undertake a demanding performance task experience an increase in negative emotions over the duration of that task. Specifically, given that participants in both conditions had equivalent attentional resource capacity immediately before the test, it is plausible that the more cognitively demanding test depleted this resource over time, thus accounting for higher self-regulatory impairment and negative emotions in the experiment group only. We explore this further in the following path analysis.

Path analysis

We report the standardized regression weights for each path and the squared multiple correlations for the variables in our model for both the control and experiment conditions in the prediction of transformational leadership and abusive supervision (see Figs. 2 and 3). We next report the following goodness-of-fit indexes for each path model and condition. First, the hypothesized superior-rated proactivity–transformational leadership path model (Fig. 2) was an acceptable fit to the data in both the control, $\chi^2(10, N = 38) = 13.71, p = .19; \text{CFI} = .94; \text{RMSEA} = .10$, and experiment conditions $\chi^2(10, N = 123) = 16.87, p = .08; \text{CFI} = .99; \text{RMSEA} = .07$. Second, the hypothesized superior-rated abusive supervision path model (Fig. 3) was a good fit to the data in the control condition, $\chi^2(10, N = 38) = 12.11, p = .28; \text{CFI} = .99; \text{RMSEA} = .03$, and a satisfactory fit in the experiment condition $\chi^2(10, N = 123) = 16.56, p = .09; \text{CFI} = .97; \text{RMSEA} = .05$. We have adopted the goodness-of-fit indexes and cutoff values recommended by Byrne (2010), namely, the chi-square ($\chi^2$) statistic ($p > .05$), comparative fit index (CFI) > .95, and root mean square error of approximation (RMSEA) < .05. While the RMSEA exceeds the recommended cut-off value for the superior-rated proactivity–transformational leadership path model (Fig. 2), on balance we consider the goodness-of-fit indexes (particularly the chi-square statistic) to be acceptable for this model.

Multi-group comparison

To test whether specific parameters in our two path models differed significantly between the control and experiment conditions, we next conducted a multi-group comparison in which all regression weights and covariances in each model were constrained to be equal for both conditions (as recommended in Byrne, 2010). In addition, all predictors were mean-centered prior to analysis to minimize the potential effects of multicollinearity (see Little, Card, Bovaird, Preacher, & Crandall, 2007). The constrained model fit statistic for the proactivity–transformational leadership path model (Fig. 2) was significantly different, $\chi^2(21, N = 161) = 60.72, p = .001$, from the unconstrained model, $\chi^2(10, N = 161) = 30.70, p = .06; \text{CFI} = .95; \text{RMSEA} = .06$. While the constrained model fit statistic for the superior-rated abusive supervision path model (Fig. 3) was also significantly different, $\chi^2(20, N = 161) = 40.93, p = .004$, from the unconstrained model, $\chi^2(10, N = 161) = 12.95, p = .23; \text{CFI} = .98; \text{RMSEA} = .04$. These results indicate that the parameters in each model differed significantly between the control and experiment conditions, suggesting that different effects were obtained in each condition. We next examine these direct and indirect effects in further detail.

Fig. 2 shows a significant direct effect of self-regulatory impairment on superior-rated proactivity in both the experiment ($\beta = -.24, p < .01$) and control ($\beta = -.34, p < .05$) conditions. We interpret this as lower self-regulatory impairment, i.e., effective self-regulation influences higher superior-ratings of proactivity, regardless of test difficulty. The indirect effects for this path model are displayed in Table 3.

There are significant indirect effects through self-regulation impairment from pre-test negative emotion to superior-rated proactivity and transformational leadership in both the control and experiment conditions ($\beta = .06, p < .05$ and $\beta = -.03, p < .05$, respectively, as shown in Table 3). Examining Fig. 2 reveals that higher pre-test negative emotion influences higher superior-rated proactivity and transformational leadership, through effective self-regulation (i.e., lower error rate) in the easy test condition (i.e., lower cognitive load). Conversely, in the difficult test condition (i.e., higher cognitive load), higher pre-test negative emotion

![Path model diagram](image-url)
influences lower superior-rated proactivity and transformational leadership, through ineffective self-regulation, as predicted (i.e., higher error rate).

Second, there are significant indirect effects through self-regulation impairment from attentional resource capacity to superior-rated proactivity and transformational leadership in both the control and experiment conditions ($\beta = .12, p < .05$ and $\beta = .07, p < .01$, respectively, as shown in Table 3). That is, higher attentional resource capacity influences effective self-regulation (i.e., lower error rate) and higher superior-rated proactivity and transformational leadership, regardless of test difficulty, as predicted.

Third, there are significant indirect effects through self-regulation impairment from attentional resource capacity to post-test negative emotion in the control and experiment conditions ($\beta = -.31, p < .01$ and $\beta = -.12, p < .01$), respectively, as shown in Table 3. That is, higher attentional resource capacity, through effective self-regulation (i.e., lower error rate), influences lower post-test negative emotion, as predicted.

Fourth, there are significant indirect effects through self-regulation impairment between pre- and post-test negative emotions in the control and experiment conditions ($\beta = -.16, p < .05$ and $\beta = .05, p < .05$, respectively, as shown in Table 3). Fig. 2 indicates that

### Table 3

<table>
<thead>
<tr>
<th>Path Model</th>
<th>Standardized indirect effect</th>
<th>SE</th>
<th>p</th>
<th>LL 99% CI</th>
<th>UL 99% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proactivity–transformational leadership path model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre neg. emotion → S–R impairment $^a$ → proactivity → TF leader $^b$</td>
<td>.06 $^*$</td>
<td>.03</td>
<td>.04</td>
<td>.02</td>
<td>.03</td>
</tr>
<tr>
<td>Attentional resources $^c$ → S–R impairment → proactivity → TF leader</td>
<td>.12 $^{**}$</td>
<td>.07</td>
<td>.02</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>Attentional resources → S–R impairment → post neg. emotion</td>
<td>-.31 $^{**}$</td>
<td>-.07</td>
<td>-.02</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>Pre neg. emotion → S–R impairment → post neg. emotion</td>
<td>-.16 $^{**}$</td>
<td>.05</td>
<td>.07</td>
<td>.03</td>
<td>.09</td>
</tr>
<tr>
<td>Attentional resources $\times$ pre neg. emotion → S–R impairment → post neg. emotion</td>
<td>.05</td>
<td>.03</td>
<td>.05</td>
<td>.03</td>
<td>.325</td>
</tr>
<tr>
<td>S–R impairment → proactivity → TF leader</td>
<td>-.22 $^{**}$</td>
<td>.10</td>
<td>.06</td>
<td>.757</td>
<td>.17</td>
</tr>
<tr>
<td>Abusive supervision path model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre neg. emotion → S–R impairment → abusive supervision</td>
<td>-.04 $^*$</td>
<td>.06</td>
<td>.02</td>
<td>.447</td>
<td>.024</td>
</tr>
<tr>
<td>Attentional resources → S–R impairment → abusive supervision</td>
<td>-.09 $^*$</td>
<td>.04</td>
<td>.12</td>
<td>.04</td>
<td>.411</td>
</tr>
<tr>
<td>Pre neg. emotion → S–R impairment → post neg. emotion</td>
<td>-.31 $^{**}$</td>
<td>.05</td>
<td>.07</td>
<td>.03</td>
<td>.009</td>
</tr>
<tr>
<td>Attentional resources $\times$ pre neg. emotion → S–R impairment → post neg. emotion</td>
<td>.05</td>
<td>.03</td>
<td>.05</td>
<td>.325</td>
<td>.252</td>
</tr>
<tr>
<td>Attentional resources $\times$ pre neg. emotion → S–R impairment → abusive supervision</td>
<td>.01</td>
<td>.02</td>
<td>.03</td>
<td>.02</td>
<td>.986</td>
</tr>
</tbody>
</table>

Note: Standardized regression coefficients reported. Bootstrap sample size = 1000. SE = standardized estimate; LL CI = lower limit confidence interval; UL CI = upper limit confidence interval; con = control ($n = 38$); exp = experimental ($n = 123$).

$^a$ Self-regulatory impairment (where low error rate on math test = effective self-regulation and high error rate on math test = ineffective self-regulation).

$^b$ Transformational leadership.

$^c$ Attentional resource capacity (measured by fluid intelligence test).

$^*$ $p < .05$.

$^{**}$ $p < .01$.
effective self-regulation (i.e., lower error rate) leads to a reduction in negative emotions over the duration of the easy test, whereas ineffective self-regulation (i.e., higher error rate) influences an increase in negative emotions over the course of the difficult test, as predicted.

Finally, there is a significant indirect effect through self-regulation impairment from the two-way interaction between attentional resource capacity and pre-test negative emotion, to superior-rated proactivity and transformational leadership in the experiment condition only (β = .15, p < .05, as shown in Table 3). It is difficult to interpret the indirect effect of this two-way interaction on superior-rated transformational leadership. For example, the indirect effect of this two-way interaction on superior-rated proactivity is non-significant (β = −.02, p = .25), while a significant indirect effect exists through superior-rated proactivity from self-regulation impairment to superior-rated transformational leadership in both the control and experiment conditions (β = −.22, p < .05 and β = −.16, p < .01, respectively, as shown in Table 3). We interpret this to mean that effective self-regulation leads to higher superior-rated transformational leadership, through superior-rated proactivity, regardless of the level of test difficulty.

Fig. 3 indicates a significant direct effect of self-regulatory impairment on superior-rated abusive supervision in the experiment condition (β = .19, p < .05), but not the control condition (β = .15, p = .37). We interpret this as ineffective self-regulation leading to higher superior-rated abusive supervision, but only in the difficult test condition (i.e., high cognitive load), as predicted. We next examine the indirect effects for this path model (see Table 3).

First, there is a significant indirect effect through self-regulation impairment from pre-test negative emotion to superior-rated abusive supervision for the experiment condition (β = .04, p < .05), but not the control condition (β = −.02, p = .45), as shown in Table 3. Examining Fig. 3 reveals that higher pre-test negative emotion leads to higher superior-rated abusive supervision, via ineffective self-regulation (i.e., higher error rate) in the difficult test condition only (i.e., high cognitive load).

Second, Table 3 indicates that a significant indirect effect exists through self-regulation impairment from attentional resource capacity to superior-rated abusive supervision for the experiment condition (β = −.08, p < .05), but not the control condition (β = −.09, p = .44). This indicates that higher levels of attentional resource capacity lead to effective self-regulation (i.e., lower error rate) and lower superior-rated abusive supervision in the difficult test condition only, as predicted. Finally, the indirect effects through self-regulation impairment from attentional resource capacity to post-test negative emotion, and between pre- and post-test negative emotions, are the same as the superior-rated proactivity–transformational path model (Fig. 2).

Hierarchical regression analysis to interpret the simple slopes

Fig. 2 shows a significant direct effect of the two-way interaction between attentional resource capacity and pre-test negative emotion on superior-rated proactivity for the experiment condition (β = .26, p < .01), but not for the control condition (β = −.02, p = .93). To examine the effect of this interaction (in the difficult test condition only) we conducted a hierarchical regression analysis in which proactivity was predicted by the main effects of attentional resource capacity and pre-test negative emotion at Step 1. We added a two-way interaction between the mean-centered scores of attentional resource capacity and pre-test negative emotion at Step 2, as recommended by Aiken and West (1999). The results of this hierarchical regression analysis explained a significant increase in the variance in superior-rated proactivity (ΔR² = .07, F(1, 119) = 3.38, p < .05). Since there are no significant indirect effects through self-regulation from this two-way interaction to proactivity, as reported previously, we conducted simple slope analyses to examine the direct effect of this interaction (see Little et al., 2007). Fig. 4a shows that, in line with our hypothesis, high pre-test negative emotion significantly reduces superior-rated proactivity among participants who are low in attentional resource capacity (one SD below the mean), β = −1.53, p < .01. However, superior-rated proactivity is higher among participants with high pre-test negative emotion and high attentional resource capacity; however, this effect is not significant, β = −.43, p = .28.

Fig. 3 shows a significant direct effect of the two-way interaction between attentional resource capacity and pre-test negative emotion on superior-rated abusive supervision for the experiment condition (β = −.29, p < .01), but not for the control condition (β = −.16, p = .34). To examine the effect of this interaction (in the difficult test condition only) the same hierarchical regression analysis as before was conducted, except that superior-rated abusive supervision (not proactivity) was predicted by the main effects of attentional resource capacity and pre-test negative emotion at Step 1. The results of this hierarchical regression analysis explained a significant increase in the variance in superior-rated abusive supervision (ΔR² = .09, F(1, 119) = 5.72, p < .001). Again, there are no significant indirect effects between this two-way interaction and abusive supervision (via self-regulation), so we conducted simple slope analyses to examine the direct effect of this interaction. Fig. 4b shows that, in line with our hypothesis, high pre-test negative emotion significantly increases superior-rated abusive supervision among participants who are low in attentional resource capacity (one SD below the mean), β = .88, p < .001. However, superior-rated abusive supervision is lower among participants with high pre-test negative emotion and high attentional resource capacity; however, this effect is not significant, β = .29, p = .15.

Discussion

Our study provides evidence favoring a process model of leadership. Specifically, we demonstrate how tasks of varying difficulty impact a leader’s attentional resource capacity and negative emotions, leading to differences in self-regulation and constructive or destructive forms of leader behavior. In support of Hypothesis 1, we found that higher levels of attentional resource capacity reduced the adverse impact of pre-task negative emotions during both difficult and easy performance tasks. This resulted in effective self-regulation, leading to lower post-task negative emotion and higher levels of superior-rated proactivity and transformational leadership (a form of constructive leadership). Although we did not formally postulate the influence of easy performance tasks on self-regulation, our results demonstrate the impact of varying contextual factors on the relationship between pre-task negative emotions and self-regulation. We found that high pre-task negative emotion in the difficult test condition led to ineffective self-regulation,
whereas high pre-task negative emotion in the easy test condition led to effective self-regulation. Furthermore, our results suggest that self-regulation influences transformational leadership indirectly through proactivity. We believe that these results might explain the previously raised inconsistencies in studies examining the relationship between negative trait emotions and transformational leadership (e.g., Bono & Judge, 2004; Judge & Bono, 2000).

Our results provide evidence that contextual factors such as task difficulty can influence the relationship between negative state emotions, self-regulation and leader behavior (e.g., Eysenck et al., 2007). A more cognitively demanding task (i.e., the difficult test) increased the adverse effect of negative emotions on attentional resource capacity, leading to ineffective self-regulation, lower proactivity and lower transformational leadership. In contrast, a less cognitively demanding task (i.e., the easy test) decreased the adverse effect of negative state emotion on attentional resource capacity, leading to effective self-regulation, higher proactivity and higher transformational leadership. The majority of leadership trait studies do not examine the interaction of contextual factors, such as task difficulty, and state-like leader attributes such as self-regulation and proactivity (see Avolio, 2007; Zaccaro, 2007, 2012). Therefore, the relationship between negative trait emotions and transformational leadership is likely to be confounded in studies where these factors are ignored (Tett & Guterman, 2000).

Furthermore, it has been suggested that transformational leadership is more prevalent in dynamic rather than stable work environments (Bass, 1990b; De Hoogh et al., 2005). However, we found a significant indirect effect, via proactivity, from self-regulation to transformational leadership in both the difficult and easy test conditions. That is, effective self-regulation predicted higher proactivity, which was associated with higher transformational leadership regardless of the context. We do not suggest that the difficult and easy mathematical tests used in our study represent dynamic and stable work environments, respectively. However, it is plausible that they might exert a similar influence on a leader’s psychological resources. For example, dynamic work environments can be cognitively and emotionally demanding (Finkelstein & Hambrick, 1996) in a similar way to difficult mathematical tests (Ayres, 2001). Hence, our results suggest that transformational leadership might occur equally in dynamic and stable work environments, while effective self-regulation and proactivity appear to be important antecedents underrepresented in the literature.

In support of Hypothesis 2, we found that lower levels of attentional resource capacity increased the adverse impact of pre-task negative emotions during the difficult performance task only. This resulted in ineffective self-regulation, leading to higher post-task negative emotions and higher levels of abusive supervision (a form of destructive leadership). Furthermore, we found that higher levels of attentional resource capacity resulted in effective self-regulation and lower abusive supervision.
Common to both hypotheses, our results demonstrated that effective self-regulation relied on sufficient attentional resource capacity regardless of the level of task difficulty. Higher attentional resource capacity resulted in effective self-regulation and lower post-task negative emotion in both test conditions. Also, effective self-regulation resulted in reduced negative emotions, while ineffective self-regulation resulted in increased negative emotions over the course of an easy or difficult performance task.

Finally, in terms of self-regulation, the amount of variance explained in the difficult test condition ($R^2 = .227, p < .01$) was less than half that of the easy test condition ($R^2 = .528, p < .01$). This indicates the influence of other factors, in addition to attentional resource capacity and pre-test negative emotion, during the difficult test condition. Perhaps the higher cognitive demands of the difficult test, combined with increased negative emotions, depleted limited attentional resources and initiated increased effort or more deliberate self-control strategies (e.g., Humphreys & Revelle, 1984). We leave this for future researchers to investigate.

**Strengths, limitations and future research**

We believe that our study makes a number of unique contributions to the leadership literature. First, it enhances our understanding of why negative contextual factors like demanding and stressful performance tasks, common in dynamic work environments, might result in both constructive and destructive leader behaviors. Our process model of self-regulation and leadership highlights the central role of attentional resource capacity in reducing the adverse impact of negative emotions on self-regulation in these situations. We have tested this model in a real-world setting with motivated leaders and demonstrated how this can predict both transformational leadership and abusive supervision as examples of constructive leadership and destructive leadership, respectively. Second, we have conceptualized self-regulation as a dynamic state-like construct that describes the capacity for leaders to exercise self-control. In this way we have moved beyond static trait-like models to provide a more realistic account of how leader emotions and behavior evolve over the course of an easy or difficult performance task.

Our study also has potential applicability beyond leadership research. We have developed and tested a simple and practical way to manipulate and measure self-regulation that is impervious to the influence of “response distortion,” i.e., attenuation of undesirable traits like anger, and inflation of desirable traits like conscientiousness (see Bolino & Turnley, 2003; Tett & Simonet, 2011; Vasilopoulos, Reilly, & Leaman, 2000). Response distortion can not only confound the interpretation of empirical results (e.g., De Hoogh et al., 2005; Dobson, 2000), but weaken confidence in leadership selection decisions (see Hogan, Hogan, & Roberts, 1996; Spillane, 2012). We believe that our experimental procedure could be used in organizations to identify those leaders who are more vulnerable to self-regulatory impairment and destructive leadership, thereby reducing the prevalence and negative impact of such harmful behavior. This could be achieved by matching leaders to roles best suited to their capacity for self-control, and by specifically focusing on emotional self-regulation training (Yeow & Martin, 2013).

The findings of this study should also be considered in light of several limitations, each of which should be addressed by future research. First, the sample size of the easy test condition was considerably smaller than that of the difficult test condition ($n = 38$ and $n = 123$, respectively). We made this decision due to our lack of control in a real-world experimental field study (versus laboratory study) and attempted to maximize the size of the sample in the difficult test condition as this was our focal interest. Similar sized samples have also been reported in recent leadership studies employing path analysis or structural equation modeling (e.g., Hur, van den Berg, & Wilderom, 2011; Nohe, Michaels, Menges, Zhang, & Sonntag, 2013).

Second, we cannot say for certain whether a test of fluid intelligence provides the most appropriate measure of attentional resource capacity. Working memory tests have also been linked to regions of the medial prefrontal cortex (Bush, Luu, & Posner, 2000; Fan et al., 2009; Rothbart, Sheese, & Posner, 2007) and have been associated with abstract reasoning and attention (Kanfer & Ackerman, 2004). Future research might attempt to replicate our study using a suitable test of working memory to measure attentional resource capacity (e.g., Ackerman, Beier, & Boyle, 2005; Hamilton, Hockey, & Rejman, 1977).

Finally, while our measure of self-regulation might be impervious to self-response inflation, self-report measures of negative emotion are not and can result in non-normal data that might confound the interpretation of results (e.g., Crawford & Henry, 2004; Dobson, 2000). Although not a major issue in this study, this does highlight a potential risk in future research using self-report emotion measures.

**Conclusion**

While leaders have the potential to inspire their subordinates and achieve ambitious organizational and social goals, the evidence suggests that they can also cause unintentional harm and irreparable damage. In this paper we have attempted to explain one of the reasons for this anomaly. We have presented and tested a model of self-regulation and leadership that describes the process by which both constructive and destructive leadership occur, and the context in which leaders are most vulnerable to destructive forms of behavior. It is our hope that this study encourages further research into the antecedents of destructive leadership and effective remedies to reduce its prevalence and adverse impact on individuals, organizations and society in general.

**References**


