STRUGGLING TO MEET THE BAR: OCCUPATIONAL PROGRESS FAILURE AND INFORMAL LEADERSHIP BEHAVIOR

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We integrate theory and research about individuals' responses to failures and develop a model in which occupational progress failures precipitate ruminative processes that limit the extent to which individuals subsequently act as informal leaders. Our first study, an experiment with a sample of advanced accounting students, found that manipulating poor performance on a simulated certification test promoted ruminative thoughts about the test, which were negatively related to peer ratings of informal leadership behavior during a subsequent task. A separate field study using a regression discontinuity design in a 14-week military training program found that failure to pass the required physical fitness examination early in group formation influenced psychosomatic symptoms—an indirect measure of sustained rumination—and consequently hindered enactment of informal leadership behavior. We also theorized and found that neuroticism enhanced the positive effect of failure on rumination in Study 1 and psychosomatic symptoms in Study 2. We discuss the implications for developing theories concerning how disruptive personal events may interfere with employees' engaging in informal leadership behavior.

Due to heightened demands for innovation and adaptation, organizations increasingly need employees to take more initiative and exhibit leadership among peers, even when leadership is not a part of their formal job requirements (Day, Gronn, & Salas, 2004; Klein, Mahoney, McGahan, & Pitelis, 2019). This has encouraged scholars to examine factors that may prompt individuals not in formal leadership roles to behave as leaders among their work unit peers. Yet, this research has largely overlooked the influence of situational factors, presenting an incomplete picture of when and why individuals practice informal leadership. Informal leadership "occurs when team members who do not occupy formal leadership positions engage in influence behavior that helps their team determine shared goals, motivates

task activity in pursuit of those goals, and creates a positive social climate" (Wellman, Newton, Wang, Wei, Waldman, & LePine, 2019: 337). Drawing on a growing recognition of the important role that events can have on behavior in groups and organizations (Morgeson, Mitchell, & Liu, 2015), we theorize that experiencing failed progress toward a desired occupational benchmark precipitates psychological responses that can limit individuals' capabilities to engage in informal leadership behaviors.

Feedback concerning failed progress toward achieving one's occupational benchmarks is ubiquitous, and it is normally a matter of great personal concern (Brunstein & Gollwitzer, 1996). For example, members of various professions including academics, civil engineering, commercial aviation,

financial, firefighting, insurance, law enforcement, legal, medical, military and real estate, must pass rigorous examinations to ensure their continued employment or advancement. Research has also shown that failures in pursuing career goals that do not involve tests, such as project discontinuance (Shepherd, Patzelt, & Wolfe, 2011), rejections for promotion (Lam & Schaubroeck, 2000), and perceiving one is failing to achieve career benchmarks (Creed, Wamelink, & Hu, 2015), can be a mentally and emotionally consuming concern. When important personal goals are unattained, the failure remains active in one's mind, particularly when one can later reverse it (Leroy, 2009; Martin & Tesser, 1989). We refer to evidence of a discrepancy between expected and actual occupational progress that is potentially reversible through one's own efforts as *occupational progress failure.*

We draw from two perspectives to model how occupational progress failure impedes informal leadership behavior. First, the goal progress theory of rumination (Martin & Tesser, 1989) states that when individuals fail in domains important to their personal identities, they tend to ruminate about the failure and its implications for themselves until they reverse the failure or the failure becomes terminal. Rumination is "a form of emotion-focused thinking in which one devotes considerable attention to setbacks or regrets and, thus, withholds cognitive resources from more productive applications" (Dane, 2018: 186–187). Further drawing from goal progress theory, we argue that more neurotic individuals will demonstrate stronger effects of occupational progress failure on self-focused rumination and, separately, psychosomatic symptoms that derive from prolonged rumination (Brosschot, Gerin, & Thayer, 2006).

Second, Kanfer and Ackerman's (1989) resource allocation model argues that performance and learning on novel or complex tasks are compromised by the more limited attentional resources available when there are other tasks or thoughts that prompt one's attention. Informal leadership requires considerable attention to identifying the needs of others, anticipating change in the environment to foster collective adaptation, and determining how to exert social influence (Day et al., 2004; Gerpott, Lehmann-Willenbrock, Voelpel, & van Vugt, 2019; Reiter-Palmon, 2003; Zaccaro, Gilbert, Thor, & Mumford, 1991). Informal leadership behaviors are complex and not routinized (Lord, Hannah, & Jennings, 2011), thus requiring surplus attentional resources beyond those required for core tasks (see Mikulincer,

1989). Persistent rumination elicited by occupational progress failures may therefore reduce informal leadership behaviors by limiting surplus attentional resources. We thus formulate a moderated mediation model that jointly links occupational progress failure and trait neuroticism to informal leadership behavior.

We tested our model in two separate studies. The first study was an experiment that manipulated failure on a practice run of the Certified Public Accounting (CPA) exam that accountants need to pass to advance their careers in public accounting. This study examined the mediated effect of failure through ruminative thinking on informal leadership behavior exhibited in a subsequent leaderless group discussion task. The second study assessed the relationship between occupational progress failure and informal leadership in a cohort of military trainees during a 14-week period. Using a regression discontinuity design, we tested a causal model in which failure on a diagnostic physical fitness test, which trainees needed to subsequently pass to proceed with their military careers, was indirectly related to peer-rated informal leadership behavior through elevated psychosomatic symptoms. We further examined how neuroticism moderates the indirect effect of failure on informal leadership behavior in both studies.

Our research contributes to the leadership literature in two primary ways. The first contribution lies in illuminating how occupational progress failure events can contribute to individuals' propensities to demonstrate leader-like behaviors among their peers. Occupational progress failures are prevalent in organizational life. They maintain their disruptive effects on attention and behavior because a cycle of rumination is unlikely to terminate until one succeeds or fails irreversibly (Jones, Papadakis, Orr, & Strauman, 2013; Roberts, Watkins, & Wills, 2013). By theorizing how occupational progress failure events can have enduring effects on informal leadership behavior, over and beyond other established individual characteristics (including extraversion, conscientiousness, and neuroticism) and interpersonal factors (peer respect and interpersonal justice), and by modeling how these events interact with trait neuroticism, our studies reveal the powerful yet largely neglected role of events in leadership.

This research also describes how intrapsychic states compromise employees' potential to engage in informal leadership behavior. Leadership is not just "granted" by others. It must first be "claimed" through concerted attempts to enact leadership (DeRue & Ashford, 2010). Complementing the extant psychological perspectives, and consistent with the

resource allocation model (Kanfer & Ackerman, 1989), our research indicates that occupational progress failure limits acts to claim informal leadership, and this occurs through the intrapsychic process of ruminative cognitions (Study 1) and the psychosomatic symptoms that are precipitated by persistent rumination (Study 2; see Ottaviani et al., 2016; Verkuil, Brosschot, Gebhardt, & Thayer, 2010). Thus, we extend theory and research on informal leadership by focusing on the cognitions of would-be peer leaders, promoting a new avenue for leadership research. The increasingly competitive occupational landscape and the growing demand for occupational incumbents to pass certification tests (Albert, 2015) and take on high-risk assignments (Dong, Seo, & Bartol, 2014), together with the heightened importance of informal leadership behavior in today's complex and turbulent work environments, lend practical urgency to such understanding.

FAILURE EVENTS, COMPROMISED ATTENTION, AND INFORMAL LEADERSHIP

As reviewed by Morgeson and colleagues (2015), a broad range of studies have pointed to how particular events can be disruptive to the routines and adaptive behaviors of individuals and other entities. Morgeson et al. (2015: 521) noted that critical events have the potential to "curtail the attainment of important goals" and "become a central focus until they are resolved." As noted above, occupational progress failures are critical to the lives and careers of incumbents and thus tend to provoke considerable rumination about oneself and the implications of the failure (Martin & Tesser, 1989). Such self-focused rumination about failure (hereafter "ruminative thinking") consumes cognitive resources that could otherwise be used for noncore tasks such as engaging in informal leadership behaviors. Below, we describe how occupational progress failures induce cognitive states that limit individuals' capacities to meet the challenges of informal leadership, and we conceptualize how responses to these events may be contingent on individual differences.

Occupational Progress Failure and Ruminative Thinking

The goal progress theory of rumination (Jones et al., 2013; Martin & Tesser, 1989) postulates that goal progress failure events promote ruminative thinking. Goal progress failures are personally "important" and stall one's progress toward a

"higher-order" goal (Martin & Tesser, 1989: 308–309). They are not terminal events, such as losing one's position or suffering failure of one's marriage. Goal progress theory draws from the Zeigarnik effect wherein incomplete tasks are more accessible in memory than are completed tasks. Martin, Shrira, and Startup (2004) provided the example of individuals who have the higher-order goal of receiving academic tenure. Falling short of an acceptable publication trajectory at the midterm review would be an example of a goal progress failure, as the individual can potentially reverse this trend by the time of the tenure decision. Occupational progress failures are a subtype of goal progress failures; they have implications for career advancement, a prominent higher-order goal for most people (Creed et al., 2015).

When people do not attain an important personal benchmark, they tend to dwell on the failure and the need to accomplish the goal (Leroy, 2009). As stated by Martin and Tesser (2006: 147), rumination "is instigated when individuals fail to progress toward important higher order goals and ceases when individuals either attain the goal, resume progress toward it, or disengage from the goal." Failure-related thoughts that derive from incomplete progress toward a higher-level goal recur continually, which is a defining feature of ruminative thinking. Individuals who fail initially to achieve an important occupational benchmark but have the opportunity to reverse the failure are prone to ruminative thinking because they cannot mentally disengage from the failed goal. For example, analysts in U.S. brokerage firms who fail their Security and Exchange Commission Series 7 exam cannot advance to a brokerage sales position. They may retake the exam at a later date. In the meantime, the failure, how that failure is perceived by others, and the potential for the failure to derail one's career are salient concerns. Therefore, occupational progress failures precipitate ruminative thinking, a pattern of repetitive, uncontrolled thoughts about the failure and its implications for the individual (see Jones et al., 2013; Martin & Tesser, 1989).

Laboratory studies have demonstrated the effects of goal progress failures on ruminative thinking (e.g., Geisler & Kubiak, 2009; Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999; Roberts et al., 2013; Thompson, Webber, & Montgomery, 2002), as have field studies of individuals' self-reports of goal failures and rumination (Lavallee & Campbell, 1995; Moberly & Watkins, 2010). This review of extant theory and research leads to our first hypothesis:

Hypothesis 1. Occupational progress failure is positively related to ruminative thinking.

Indirect Effects of Occupational Progress Failure on Informal Leadership Behavior

Theories of cognitive resource allocation emphasize that while individuals differ in the overall amounts of cognitive resources that they can devote to different tasks, each has a finite amount of resources. Individuals are less able to engage effectively with tasks when their attention is occupied by concerns about other matters (Kahneman, 1973). Kanfer and Ackerman's (1989) resource allocation model has been influential in guiding research about performance, motivation, and learning. Their model distinguishes domains of attention into on-task, off-task, and self-regulatory effort. On-task effort refers to attention devoted to performing a task, whereas off-task effort concerns thoughts and actions that distract from performing a task, such as daydreaming or ruminating about matters unrelated to the task. Self-regulation includes actions such as self-monitoring to ensure one's actions are correctly adapted to the task, evaluating one's progress, or managing one's affective reactions. These strategies, which also consume attentional resources, determine how one distributes effort across on-task and off-task domains.

The resource allocation model also proposes that the amount of attentional resources needed to effectively perform a task increases when the task is more complex and less well-learned. To lead, whether formally or informally, one must actively process informational cues to determine when adaptive responses are needed from the group and how one can support others. At the same time, one must identify interventions that may benefit the maintenance or collective performance of the group and determine how to engage social influence tactics to gain cooperation for one's initiatives (Day et al., 2004; Gerpott et al., 2019; Reiter-Palmon, 2003; Zaccaro et al., 1991). Owing to the many external cues and other novel information one must process to engage in informal (and formal) leadership, leadership is a complex task domain (Lord et al., 2011). Performing complex and novel tasks such as informal leadership thus requires greater attentional resources compared to routine and well-learned tasks (e.g., core job tasks).

Unlike formal leadership, for which incumbents have typically gained experience and leadership demands are continual, informal leadership is by definition discretionary and comparatively less routine. After applying their cognitive resources to core tasks, individuals generally have less to allocate toward the complex task of informal leadership. When this limited pool of cognitive resources is further compromised by attending to off-task demands, such as ruminating about an occupational progress failure, one's attentional resources may be reduced to such a low level as to preclude effective informal leadership behaviors. Consider the example of the stock trader ruminating over the failed exam described above. When meeting with peers to select a stock portfolio (primary core task), with the off-task ruminative thoughts about failure consuming attention, they would have fewer resources to allocate beyond the primary purpose of the meeting (portfolio selection). They would thus be less likely to engage in informal leadership behaviors in their team, such as by monitoring and managing the team's emotional tone and interpersonal interactions and considering how the team might better coordinate its expertise.

In sum, occupational progress failure results in attentional resources being allocated to the off-task activity of failure-related rumination. The constraint on resources imposed by significant off-task efforts forces individuals to make trade-offs between different on-task activities and between on-task and off-task domains (Kanfer & Ackerman, 1989). Thus, individuals are less likely to devote cognitive resources to noncore (discretionary), complex tasks like informal leadership following an occupational progress failure. Leading others effectively also requires high self-regulatory effort and capability (Zhou, Wang, & Vancouver, 2019), which is impaired by ruminative thoughts (Schwartzer, 1996). The need to devote attentional resources to self-regulation competes with the broader need for attentional resources to perform informal leadership. Therefore, the demands for self-regulation inherent in informal leadership exacerbate the extent to which ruminative thinking following an occupational progress failure limits the capacity to enact such behaviors. In contrast, core tasks are well-learned and require fewer attentional resources to perform effectively. Thus, even when off-task rumination leaves fewer attentional resources available for a core task (e.g., stock picking in the example above) and self-regulation, performance on such tasks is less likely to be compromised than informal leadership behavior.

Our prediction that informal leadership will be hindered when cognitive resources are less available due to ruminative thinking is also consistent with

the findings of dual-task studies involving failure feedback. Performance on complex tasks is impaired after individuals have received failure feedback on an alternate task (Mikulincer, 1989; Whiteman & Mangels, 2016). This effect has been attributed to the processes outlined in resource allocation theory wherein the failure increases ruminative thinking, diminishing the attentional resources needed to engage in complex tasks effectively. Notably, complex tasks are often also nondominant, meaning they cannot be performed effectively using well-learned behaviors (Mikulincer, 1989). Based on research reviewed by Kluger and DeNisi (1996), the cognitive resource depletion that results from excessive self-focused attention following failure inhibits performance on nondominant tasks but not on dominant (well-learned) tasks.

Due to the lack of surplus cognitive resources resulting from the high attentional demands of off-task thoughts (Kanfer & Ackerman, 1989; Kluger & DeNisi, 1996), to ensure they can apply sufficient resources toward core task performance we expect that incumbents will tend to conserve attentional resources by avoiding engagement with complex and discretionary tasks such as informal leadership.

Hypothesis 2. Occupational progress failure has a negative indirect effect on informal leadership behavior through ruminative thinking.

Moderation by Neuroticism

The goal progress theory of rumination also recognizes that some individuals experience similar failure events more intensely than others, and that traits that predispose one to worry and depression moderate the goal failure effect on rumination (Martin & Tesser, 1989). Similarly, Kluger and DeNisi (1996: 276) referred to the "tendency to blame the self, think about the self, or doubt the self" as moderating failure–performance relationships. Recent extensions of the goal progress theory of rumination predict that the adverse effect of failure on well-being is stronger among persons who are more prone to ruminate (Jones et al., 2013; Roberts et al., 2013). As noted by Jones et al. (2013: 483–484), goal progress failures elicit "repetitive, intrusive thoughts with a negative focus, which includes depressive rumination, post-event rumination, and thoughts about the reasons for and implications of goal failure." This emphasis on anxiety ("I might not succeed. What then?"), depressive mood ("I am a failure.") and a general tendency to worry and feel vulnerable ("What am I to

do?") is consistent with the tripartite model of anxiety and depression that underlies how the construct of neuroticism is represented in much of contemporary personality research (Slaughter & Kausel, 2009).

As summarized by Matthews and Wells (2004), the general personality dimension of neuroticism reflects the tendency to react to adverse experiences by ruminating upon them. Persons with higher neuroticism scores tend to experience adverse events more intensely and have more difficulty than others in coping with uncertainty. This makes them more prone to worry and have a depressed mood (Goldberg, 1999; Hirsh & Inzlicht, 2008; Slaughter & Kausel, 2009). These tendencies may explain why they exhibit stronger affective responses to failure (versus success) feedback in laboratory experiments (Hirsh & Inzlicht, 2008). We thus expect neurotic persons to exhibit stronger effects of occupational progress failure on ruminative thinking.

Hypothesis 3. The positive relationship between occupational progress failure and ruminative thinking is stronger among persons with higher levels of neuroticism.

In sum, we expect that persons who are more neurotic will exhibit more ruminative responses to occupational progress failure (Hypothesis 3), and that ruminative thinking inhibits informal leadership behavior (Hypothesis 2). Thus, we propose that neuroticism moderates the negative indirect effect of occupational progress failure on informal leadership behavior within our overall model.

Hypothesis 4. The negative indirect effect of occupational progress failure on informal leadership behavior is stronger among persons with higher levels of neuroticism.

OVERVIEW OF STUDIES 1 AND 2

Our first study tested the hypotheses in a laboratory experiment. We also tested these hypotheses in a field setting over a multiweek period, using a sample of U.S. Army trainees. In this second study, we assessed psychosomatic symptoms as an indirect measure of persistent rumination over a more extended period. Psychosomatic symptoms refer to co-occurring physical symptoms that are not readily attributable to an etiology of physical injury or disease but rather can be explained by the influence of psychological responses on the neuroendocrine system (Halliday, 1941). Individuals tend to experience elevated psychosomatic symptoms during

periods of increased psychological stress (Frese, 1985). Distressed individuals often manifest such symptoms as poor sleep and appetite, dizziness, and upset stomach, while being less aware of the emotions or cognitions that may precipitate the symptoms. When rumination perseveres, as we argue that it does following occupational progress failures until such time that one reverses the failure or it becomes terminal, it results in more pronounced psychosomatic symptoms (Brosschot, Pieper, & Thayer, 2005; Ottaviani et al., 2016; Verkuil et al., 2010). This is represented by the dashed arrow connecting ruminative thinking and psychosomatic symptoms in Figure 1. Thus, our expectation of a positive relationship between occupational progress failure and psychosomatic symptoms, as examined in Study 2, derives from the same mechanism of elevated ruminative thinking as we examine in Study 1.

In most contexts of occupational progress failure, a substantial interval elapses before one has an opportunity to reverse the failure. For example, after failing a component of the CPA exam in the United States, one currently must wait a minimum of 32 days before retaking that component. Likewise, after failing to receive an expected promotion, a lengthy period normally elapses before one is again considered for promotion. The perseverative cognition hypothesis (Brosschot et al., 2006) draws from abundant laboratory and field research indicating that persisting rumination about an adverse event elevates stress hormones and destabilizes the autonomic nervous system, thereby enhancing symptoms of ill health, including psychosomatic symptoms (Ottaviani et al., 2016; Verkuil et al., 2010). While persistent rumination can lead to elevated psychosomatic symptoms within one to a few days (e.g., Emmons, 1992; Emmons & King, 1988; Verkuil, Brosschot, Meerman, & Thayer, 2012), both ruminative thinking and the

elevation in symptoms it presages can extend across weeks and months (Firoozabadi, Uitdewilligen, & Zijlstra, 2018). Because persistent ruminative thoughts about a progress failure tend to produce or worsen psychosomatic symptoms (Brosschot et al., 2005; Verkuil et al., 2010), we expect a positive relationship between occupational progress failure and psychosomatic symptoms, and that psychosomatic symptoms, in turn, reduce informal leadership behaviors.

STUDY 1: METHODS

Sample and Procedures

We recruited a sample of 99 accounting students from a private university located in the Southeast United States. At the time of our study, all participants were within a few months of graduating and taking the CPA exam, and passing this exam was necessary to advance their career objectives. Among them, 46 reported that they were male and 53 female, and 73 were completing their master's degree in accounting. The other 26 were undergraduate accounting seniors. The average age was 22.9 years. Nearly all participants (97%) had taken accounting internships with public accounting firms or other organizations.

Students preregistered for one of the three two-hour experimental sessions. At the start of each session, we overviewed the study procedures and informed subjects about the two separate study activities: a "CPA" diagnostic accounting test and a case discussion. Before the accounting test, students completed a brief online survey measuring personality traits. We manipulated occupational progress failure by using the 30-minute accounting test. Students were randomly assigned to either a very difficult test or an easy test.

After the accounting test and feedback, students were provided with a case that required them to

FIGURE 1
Research Model
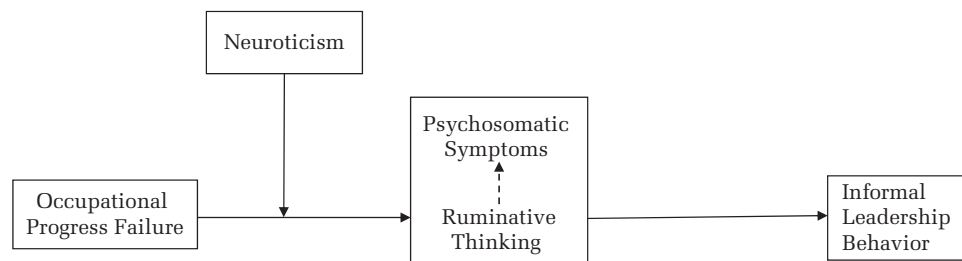
Notes: Dashed arrow represents a conceptual connection that is consistent with prior research. It is not tested in the studies. Study 1 assesses a path through Ruminative Thinking, and Study 2 assesses a path through Psychosomatic Symptoms.

identify inappropriate accounting practices brought to light by an audit of a homeowners' association (Lehmann & Heagy, 2017). Students first worked individually to read the case and to identify any "red flags" wherein improper accounting practices had occurred. They were given 15 minutes to do so before being assigned to four-person groups to complete the group assignment. This individual task helped ensure participants processed the case in-depth and were prepared to engage in a group discussion. We also used individual performance on this task for a supplementary analysis that is described below. We directed students to different rooms for the discussion to ensure privacy. The students were given 40 minutes to discuss and complete two group assignment questions. After returning to the main lab room, students completed the second online survey. They reported on their own experiences and their observations of teammates' leadership behavior in the group task. At the end of the session, students were debriefed, and each was paid $100.

Manipulation

We randomly assigned students to either the treatment condition or the control condition. Both conditions included 15 accounting questions. In the treatment condition, 11 questions were from past Becker CPA preparation tests that the publisher determined were the most difficult, and four were from other CPA preparation tests. The control condition questions were used at the host university in introductory and intermediate accounting classes and thus would be quite easy for accounting students at this level. Subjects in both conditions were told their test was a CPA diagnostic test. Immediately after the exam the students were given accurate exam performance results (number of correct answers) and were permitted to peruse the correct answers to each question. This method is commonly used in research manipulating failure in the lab (e.g., Vohs, Park, & Schmeichel, 2013). In the experimental condition (hereafter "difficult exam condition"), the mean number of correct answers out of the 15 questions was 4.49 ($SD = 1.75$, $n = 49$), and the range was 1–9. In the control condition (or "easy exam condition"), the mean number of correct answers was 13.6 ($SD = 1.33$, $n = 50$), and the range was 9–15. Thus, students in the difficult exam condition scored significantly lower on the test than those in the easy exam condition ($F_{1, 97} = 849.17$, $p < .001$). In addition, as a manipulation check, after the exam (and before the case preparation), participants rated their agreement with the statement "I performed well on the accounting test." Compared to those in the easy exam condition ($M = 3.96$), students in the difficult exam condition reported that they had done more poorly on the exam ($M = 1.92$; $F_{1, 97} = 100.47$, $p < .001$). Finally, the difficult exam condition subjects scored significantly lower on a 3-item measure of accounting self-efficacy ("I am competent in taking accounting-related exams such as a CPA exam", "I am better than most of my classmates at tackling accounting problems", and "I can deal with just about any issues in preparing for an accounting exam" $\alpha = .85$) administered after the exam and feedback (M difference = (3.83–3.19), $F_{1, 97} = 10.02$, $p < .001$). The manipulation was therefore used to index *failure* (1 = difficult exam condition, 0 = easy exam condition).

Measures

Neuroticism. We assessed neuroticism before the manipulation of failure using the IPIP-NEO-120 (Johnson, 2014). This instrument consists of six facets, including anxiety, depression, vulnerability, anger, self-consciousness, and immoderation. Four items measured each facet, using a 5-point scale ranging from 1 (= strongly disagree) to 5 (= strongly agree). We measured neuroticism using facets indexing "anxiety" (e.g., "I worry about things" and "I get stressed out easily"), "depression" (e.g., "I often feel blue" and "I dislike myself"), and "vulnerability" (e.g., "I panic easily" and "I feel I'm unable to deal with things"). This approach is consistent with research showing that anxiety, depression, and vulnerability correlate highly and form one higher-order construct, whereas other facets generally do not reflect the same construct (Slaughter & Kausel, 2009: 272–274). We specified a higher-order confirmatory factor analysis (CFA) model in which the three facets loaded on one higher-order factor. The model fit the data fairly well ($\chi^2_{(51)} = 106.64$, comparative fit index [CFI] = .91, Tucker–Lewis index [TLI] = .88, standardized root mean square residual [SRMR] = .06). A separate higher-order CFA with all six facets loading on one factor showed significantly worse fit ($\chi^2_{(246)} = 447.01$, CFI = .82, TLI = .80, SRMR = .09). We therefore focus on the composite of these three neuroticism facets in testing our hypotheses but present analyses of the other facets in Online Appendix 1.[1]

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[1] Access all online appendices from this link: https://www.dropbox.com/sh/mn7i4tf7g8ufnuv/AABetGOBODOYeolAJU4xD-BUa?dl=0

Ruminative thinking. We measured ruminative thinking in the second survey that followed the failure manipulation and group discussion. We adapted items from the rumination measure introduced by McCullough, Bono, and Root (2007) to create a 5-item measure suitable for our study context. The five items were "I had trouble doing other things because thoughts about the accounting test kept coming into my mind," "I couldn't get thoughts of the accounting test out of my mind even though I wanted to," "I found myself playing the unresolved questions in the accounting test over and over in my mind," "Memories and thoughts that came into my mind about the accounting test made me feel upset or troubled," and "Even when I was engaged in group discussions, I thought about the accounting test."

Informal leadership behavior. Students were instructed to prepare for a case discussion concerning accounting fraud after the accounting test and feedback. We assigned participants to same-sex groups of four persons comprised of two persons from each experimental condition. Constrained by the number of students who signed up for each session, five three-person groups contained both male and female students. Supplemental analyses that included only the same sex groups produced results largely identical to those reported below.

After the group discussion, participants rated the extent to which each teammate exhibited leadership during the group task. We used four items to capture the demonstration of leader-like behaviors. The first two items refer to fundamental leadership behaviors that are observed across contexts (Day et al., 2004; Wellman et al., 2019), including ("[This person] provided inspiration and motivation for our team" and "[This person] provided direction and structure for our team"). The other two items were developed for this study to represent a variety of leadership behaviors commonly seen in the current group task ("[This person] encouraged our team to think about and integrate members' ideas" and "[This person] kept us on task to ensure we delivered our requirement").[2]

We aggregated teammates' ratings for each participant to measure their informal leadership behavior in the group task. Most of the participants (85%) were rated by three teammates, with the rest rated

by two. We found adequate agreement among peer ratings of the same participant (M $rwg_{(j)} = .74$; median $rwg_{(j)} = .87$), an a significant portion of the variance was attributable to the ratees (ICC$_{(1)} = .15$; ICC$_{(2)} = .34$; $F_{(98, 183)} = 1.51$, $p < .001$).

Other variables. Prior to the failure manipulation, we measured the other four Big 5 personality traits (in addition to neuroticism as described above) using the mini-IPI (Donnellan, Oswald, Baird, & Lucas, 2006). We controlled for extraversion and conscientiousness, which have been found in prior research to be positively related to leadership (Judge, Bono, Ilies, & Gerhardt, 2002). We also controlled for participants' overall GPA because it is a potential indicator of intelligence, a predictor of leader emergence (Judge et al., 2002) that is related to performance on a wide range of tasks.

Because of the experimental design and the relatively small sample size ($n = 99$), we did not control for other demographic variables. Notably, we found in separate analyses that none of a set of potential control variables (i.e., gender, age, program of study, experimental session, group size) was significantly related to either ruminative thinking or informal leadership behavior, and they did not differ across the experimental conditions. Controlling for these variables in supplemental analyses also did not change our findings.

Before the group discussion, we administered a separate individual task in which participants identified improper accounting practices ("red flags") by marking the case with a red pen. They were instructed to leave the red pen in the lab before leaving for the group discussion. They were also asked not to cross out or modify their answers. They were provided a blue pen to make additional notes during the group discussion. Each participant's assignment was graded by an accounting instructor and one of four research assistants who were graduate accounting students. Using the list of 28 red flags provided in the case teaching note, participants were given one point for each correctly identified red flag practice. The correlation of assignment grades provided by the assistants and the instructor was .87. On average, subjects identified 10.6 ($SD = 5.13$) red flags correctly.

STUDY 1: RESULTS

We conducted CFAs to assess the discriminant validity of neuroticism, extraversion, conscientiousness, and ruminative thinking. We specified neuroticism as a higher-order factor indexed by three

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[2] We also asked "How often did [Peer Name] take a leadership role in our team?" We found that this item had a zero-order correlation of .74 with our informal leadership measure.

TABLE 1
Correlations and Descriptive Data among Analysis Variables (Study 1)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Failure (*T2*)	0.49	0.50												
2. Ruminative thinking (*T3*)	1.29	0.59	.38**	(.92)										
3. Informal leadership behavior (*T3*)	3.46	0.59	−.05	−.23*	(.83)									
4. Neuroticism (*T1*)	2.51	0.66	.02	.20*	.04	(.90)								
5. Conscientiousness (*T1*)	3.48	0.92	.03	.08	.03	.02	(.88)							
6. Extraversion (*T1*)	2.99	0.76	−.02	−.11	.22*	−.17	−.05	(.77)						
7. GPA	3.37	0.97	.13	.02	−.11	.09	.01	.02						
8. Age	22.91	1.61	−.02	−.02	−.10	−.04	−.00	.02	.13					
9. Gender	1.54	0.50	.15	−.03	.11	.31**	.08	−.17	.07	−.13				
10. Program of study[a]	1.74	0.44	−.01	.06	.02	.03	−.00	−.07	.36**	.48**	−.14			
11. Group size[b]	3.85	0.36	.02	.04	−.08	.22*	−.22*	−.05	.17	.17	.00	.20		
12. Session 1[c]	0.39	0.49	.03	.02	−.05	−.01	−.05	−.10	.13	.02	.21*	.06	.17	
13. Session 2[c]	0.37	0.49	−.01	.10	−.02	−.02	.06	.12	−.10	−.02	−.29**	−.06	−.20*	−.62**

Notes: n = 99 (Listwise). Failure was coded as 1 = difficult exam condition, 0 = easy exam condition. α reliability coefficients are shown in parentheses. *T*1 = Time 1, *T2* = Time 2, *T3* = Time 3.

[a] Program of study: 1 = undergraduate accounting, 2 = master's in accounting.

[b] Group size denotes the number of participants in the case discussion group, which is either 3 or 4.

[c] Session 1 and Session 2 are dummy variables representing the three experimental sessions.

* $p < .05$

** $p < .01$

separate facets in the CFA models. This higher-order factor was allowed to covary with the other three factors. The congeneric model with all four self-reported measures produced CFI, RMSEA, and SRMR fit indices that meet conventional thresholds of acceptable fit, whereas the TLI index was slightly lower than desired levels (Browne & Cudeck, 1993) ($\chi^2_{(266)} = 407.89$, CFI = .90; TLI = .88; RMSEA = .07; SRMR = .07). Alternative CFA models in which we constrained the factor correlation between any two factors to unity showed worse fit. Table 1 presents the descriptive statistics and correlations of the study variables.

To account for the nesting of 99 participants within 26 discussion groups, we estimated the respective models in Mplus and used the sandwich estimator (Type = cluster; Cluster = complex). This method adjusts the standard errors of the estimates (see Galbraith, Daniel, & Vissel, 2010). We controlled for students' overall GPA, neuroticism, extraversion,

TABLE 2
Coefficients for Main and Interactive Effects of Failure on Ruminative Thinking and Informal Leadership Behavior (Study 1)

	Model 1				Model 2			
	Ruminative Thinking		Informal Leadership Behavior		Ruminative Thinking		Informal Leadership Behavior	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
GPA	−.03	.04	−.08	.04	−.02	.03	−.08	.04
Extraversion	−.06	.05	.17**	.06	−.07	.06	.18**	.06
Conscientiousness	.04	.06	.04	.08	.02	.06	.04	.08
Neuroticism	.17*	.08	.12	.09	−.01	.06	.14	.12
Failure	.45**	.10	.07	.13	.44**	.10	.07	.13
Failure × neuroticism					.36*	.17	−.04	.17
Ruminative thinking			−.25**	.08			−.25**	.08
R^2	.19		.13		.23		.13	

Notes: n = 99. Coefficients are unstandardized. Model 1 and Model 2 refer to two separate SEM models tested using Mplus.

* $p < .05$

** $p < .01$

and conscientiousness in testing all hypotheses. The Mplus results are summarized in Table 2. As shown in the Model 1 column, there was a positive relationship between failure and ruminative thinking ($a = .45$ ($SE = .10$), $p < .001$). This supports Hypothesis 1. In addition, ruminative thinking was negatively associated with informal leadership behavior ($b = -.25$ ($SE = .08$), $p < .01$). To obtain a more accurate test of the statistical significance of the indirect effect of failure on informal leadership behavior ($ab = -.11$ ($SE = .04$), $p < .01$), we used a utility developed by Selig and Preacher (2008). Based on 20,000 resamplings, the 95% confidence interval (CI) of the indirect effect excluded 0 (Monte Carlo CI (95%) = $-.21, -.04$). Results thus support Hypothesis 2.

Hypothesis 3 predicts that neuroticism accentuates the adverse influence of failure on ruminative thinking. As reported in the Model 2 column (Table 2), the interaction of neuroticism and failure predicting ruminative thinking was significant ($a = .36$ ($SE = .17$), $p < .05$). Figure 2 shows the plot of this interaction. Consistent with our prediction, failure had a stronger positive effect on ruminative thinking among participants reporting higher levels of trait neuroticism (+1 SD; simple slope = .68 ($SE = .18$), $p < .001$), compared to those with lower levels of trait neuroticism (–1 SD; simple slope = .20 ($SE = .11$), $p = .06$). These results support Hypothesis 3.

We assessed the moderated mediation effect (Hypothesis 4) by computing the conditional indirect effects of failure on informal leadership behavior among participants reporting higher and lower levels of neuroticism. Supporting Hypothesis 4, the indirect effect of failure was significant among participants with higher levels of neuroticism (+1 SD; $ab = -.17$ ($SE = .06$), $p < .01$, Monte Carlo CI (95%) = $-.30, -.06$), but not among those with lower levels of neuroticism (–1 SD; $ab = -.05$ ($SE = .03$), $p = .11$, CI (95%) = $-.09, .004$).

Supplementary Analyses

We conducted region of significance analysis to determine the range of neuroticism values for which the effect of failure on ruminative thinking was statistically significant. This analysis showed that the effect was significant ($p < .05$) for a neuroticism range (>2.03), representing 74.7% of the participants. To examine the robustness of our results, we again tested the hypotheses after excluding the control variables (i.e., extraversion, conscientiousness, and GPA). Results (Online Appendix 2) did not differ materially from those reported in the paper.

We also examined how failure affected individual performance as measured by the number of red flags participants correctly identified for the individual assignment. Unlike informal leadership behavior in the leaderless group discussion, this task was not discretionary and, based on the subjects' accounting training, performance was disposed to dominant responses. We regressed individual performance on the failure manipulation. As with the analyses testing the hypotheses, we controlled for neuroticism, conscientiousness, extraversion, and overall GPA. We found that failure did not influence individual performance ($b = -.43$ ($SE = 1.13$), $p = .71$), nor did neuroticism moderate the effect. In addition, the indirect effect of failure on individual performance as mediated by ruminative thinking was not significant ($ab = -.58$ ($SE = .40$), $p = .14$; Monte Carlo CI (95%) = $-1.47, .13$).

The effect of failure on ruminative thinking could be less pronounced among more extraverted individuals, as their predisposition to engage with others may limit the "alone time" in which rumination predominates. Conscientious individuals demonstrate high self-discipline, leading them to focus more on executing tasks and actively regulating their behavior. Accordingly, they may have a lesser tendency to become emotionally stuck and ruminate about the failure (see Conway, Csank, Holm, & Blake, 2000). Yet, results showed that neither extraversion ($a = 0.03$ ($SE = .13$), $p = .82$) nor conscientiousness ($a = 0.07$ ($SE = .10$), $p = .50$) moderated the effect of failure on ruminative thinking.

FIGURE 2
Plot of the Interaction of Occupational Progress Failure with Neuroticism Predicting Ruminative Thinking (Study 1)
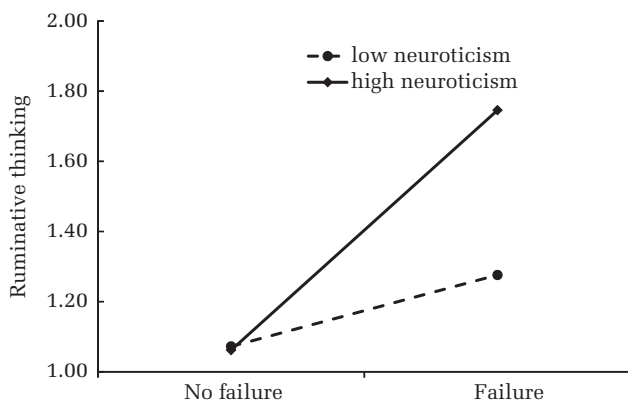
In sum, this study demonstrated that occupational goal progress failure promotes ruminative thinking. Such rumination was negatively related to peer ratings of informal leadership behavior in a leaderless group discussion. The indirect effect was stronger among more neurotic participants. Yet, as these were responses in the immediate aftermath of a failure, additional research was needed to assess the impact of occupational progress failure on informal leadership behavior in a naturalistic setting.

STUDY 2: METHODS

Sample and Context

U.S. Army recruits engaged in the Basic Combat Training (BCT) course must pass a physical fitness examination to complete the training successfully and remain in the military. Demonstrated fitness is an occupational requirement for U.S. Army infantry personnel (Knapik, Rieger, Palkoska, Van Camp, & Darakjy, 2009). Thus, failure on the mandatory fitness test is likely to create distress based on concern one might not continue in the military. This study aimed to investigate the effect of *failure* on the fitness examination, over and above the influence of *fitness level* represented by test scores. Because the examination is uniformly scored across the training cohort, we could make inferences about the causal effect of failure (vs. success) using a regression discontinuity design (Berk, Barnes, Ahlman, & Kurtz, 2010; Cook, Shadish, & Wong, 2008).

Study participants were one company-sized military unit participating in a combined basic and advanced infantry training residential program that constituted their initial entry into the military. These data were collected as part of a broader research project. Data for two previous studies were collected in this project, with one including two additional companies (Hannah, Schaubroeck, & Peng, 2016). The other included those two companies but not the company included in the present study (Schaubroeck, Peng, & Hannah, 2013). Both studies focused on the effects of behaviors of drill instructors on follower outcomes. Except for performance as rated by drill instructors and perceived peer respect, which were used in supplementary analyses in this study, there is no overlap between this study's variables and those of the other two studies.

A training company is under the direction of a company commander and consists of four platoons that are supervised on a full-time basis by a drill sergeant, and one or more other drill sergeants occasionally assist them. The platoons are further subdivided into squads of 10–15 trainees. In our study, training and military duties were often conducted at the squad level, and soldiers in the same squad shared sleeping quarters and continually interacted. These factors created a suitable context within which to assess informal leadership behavior. Although the drill sergeants were the only leaders with formal authority over the squad, they were not squad members *per se* and were not always present during squad activities.

At the time of the study, only males were permitted to serve as infantry personnel in the U.S. Army. Participants' ages ranged from 17 to 39 ($M = 21.2$ years; $SD = 3.6$). They all reported graduating from high school or obtaining high school equivalency, and 6% had graduated from college. Self-reports of ethnicity represented that 3% were Asian or Pacific Islander, 3% were Black, non-Hispanic, 19% were Hispanic, 64% were White, while 3% represented themselves as "Other" and 8% chose not to report their ethnicity.

Procedures

This study spanned the 14-week duration of this company's training program. The program began with the normal 10-week BCT training course, followed immediately by the four-week Advanced Infantry Training. The trainees were assigned to the same squads throughout the study. Participation in the study was voluntary. Trainees were offered an alternative activity if they chose not to participate, but all opted to participate. Surveys were administered in an auditorium on Sundays, including the first Sunday of the training, which was one day after trainees' arrival on base (Time 1), seven weeks later (Time 2), and shortly before graduation (Time 3). A total of 243 trainees provided informed consent to participate in the study at Time 1, with 218 (90%) providing data at all three periods. Failure to complete a subsequent survey was due to an assignment to other duties (e.g., security detail), illness or hospitalization, or, for a small number, a midcourse transfer to other programs. Supplemental analyses showed that dropping from the sample at any stage was not significantly related to any of the study variables.

Measures

Occupational progress failure and fitness exercises. Occupational progress failure was operationalized as failing to pass the diagnostic Army Physical Fitness Test (APFT) administered before

FIGURE 3
Timeline of the Study Design (Study 2)
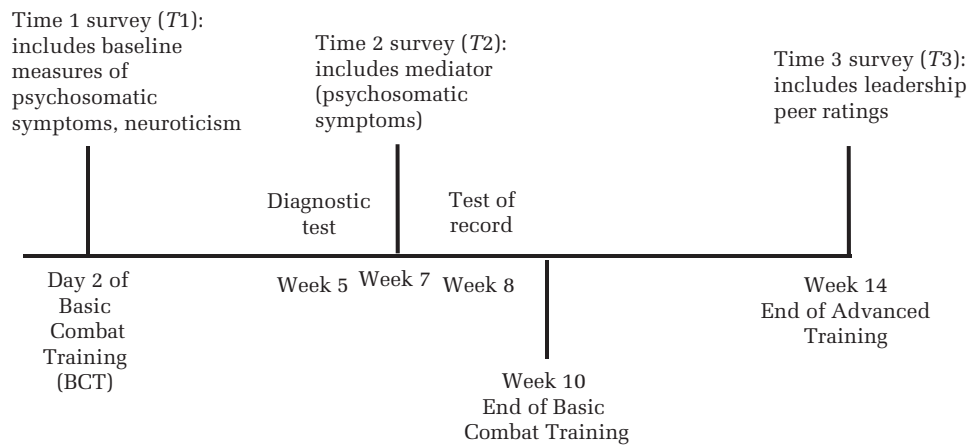
the test of record. Figure 3 shows the schedule for the three surveys across the 14 weeks of the training. The key diagnostic fitness test was administered to trainees in their fifth week of the program. This diagnostic APFT preceded by two weeks the midway survey (Time 2, Week 7) at which we measured the hypothesized mediator. A fitness test for the record took place in the eighth week of the program. Failing that test would prevent the trainee from graduating from BCT. The Week 5 diagnostic test was well-suited to test the effect of occupational progress failure on informal leadership behavior, as it occurred when the training moved from focusing on individual tasks (e.g., map reading) toward a greater volume of activities that required interdependence at the squad level (e.g., squad battle drills) and thus informal leadership was prevalent. It also occurred sufficiently early in the training course, permitting trainees nine weeks to interact with one another in team contexts, thereby grounding ratings of peers' leadership at Time 3.

The APFT consisted of three standardized components: sit-ups, push-ups, and a two-mile run. Each recruit was required to pass all three components at the same examination. Component scoring was standardized, ranging from 0 to 100. During the BCT phase of training, scores of 50 or higher were needed to pass each component. Participants who fell short of the passing score on any component were naturally assigned to the occupational progress failure condition.

Psychosomatic symptoms. Psychosomatic symptoms were assessed at Times 1 and 2 using a briefer version of the somatic complaints scale used by Ganster, Fox, and Dwyer (2001). Trainees were asked how frequently (1 = "never" to 5 = "very often") they experienced each of the eight symptoms "during the past few weeks" (e.g., "nauseous or had an upset stomach," "slept very poorly at night," "headache," "poor appetite").

Informal leadership behavior. Informal leadership behavior was assessed using peer ratings at the end of the training program (Time 3). Trainees were each provided the names of five squad peers, chosen on a pseudo-random basis using the alphabetical order of last names as a guide. They were asked to rate a minimum of three squad peers on a 7-point scale (1 = "very untrue of him/her" to 7 = "very true of him/her"), "overall, based on what you have observed during this training program." The three items were "provides inspiration and motivation for our team," "provides purpose and direction for our team," and "encourages our team to think about values and ethics as a soldier." The distinct (not included in Study 1) item concerning values and ethics ensured that the measures fit the specific informal leadership context. The two items we used in both studies are critical to leadership among peers in any context.

There was substantial agreement among peers in assessments of the same individual ($M\ rwg_{(j)} = 76$; median $rwg_{(j)} = .88$), and a considerable portion of the variance (32%) is attributable to the ratees ($ICC_{(1)} = .32; ICC_{(2)} = .58; F_{189, 382} = 2.39, p < .001$).[3]

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[3] A supplementary analysis of a separate Army basic training sample found a correlation of .60 between these three items ($\alpha = .79$) and the five-item subscale of inspirational motivation ($\alpha = .88$) from Podsakoff, MacKenzie,

Neuroticism. Neuroticism was assessed at Time 1 using the mini-IPIP (Donnellan, Oswald, Baird, & Lucas, 2006). Trainees responded to four statements on a 5-point scale (1 = "strongly disagree" to 5 = "strongly agree") concerning "how you behave in general." These are "I have frequent mood swings," "I am anxious most of the time," "I get upset easily," and "I often feel blue." As with Study 1, this measure captures anxiety, depression, and vulnerability, the core conceptual elements of neuroticism (see Slaughter & Kausel, 2009).

Other variables. We measured *conscientiousness* (e.g., "I get chores done right away.") and *extraversion* (e.g., "I talk a lot.") with four-item scales from the mini-IPIP. As with Study 1, we used these two personality variables as control variables in the core analyses.

Perceiving respect from peers enhances group-serving behaviors (Tyler & Blader, 2000), which increase the likelihood of being seen as a leader (Hu, Zhang, Jiang, & Chen, 2019). Because group peers were aware of their groupmates' performance on the APFT, our core analysis controlled for an alternative pathway in which test failure may undermine informal leadership behavior through *perceived peer respect*. Perceived peer respect was measured at both Time 1 and Time 2 by adapting the 6-item scale reported by Tyler and Blader (2000) to refer to "my squad members" (e.g., "My squad members value me as a member"). We also controlled for leader (drill sergeant) treatment using Colquitt's (2001) 4-item *interpersonal justice* scale at Time 2. A lower level of interpersonal justice could potentially contribute to psychosomatic symptoms, and it may encourage peers to have lower respect for the individual (Tyler & Blader, 2000). This could lower one's potential to emerge as an informal leader. Trainees rated the behaviors directed toward them ("treats me in a polite manner," "treats me with dignity," "treats me with respect," "refrains from improper remarks or comments") of the drill sergeant who was assigned full-time to their squad. As trainees would expect some "tough love" from drill sergeants, they were instructed as follows: "Base your ratings of your drill sergeant's behavior relative to your expectations. For each behavior, answer the extent to which it meets your expectations for a drill sergeant" (1 = "Much worse than I expected" to 5 = "Much better than I expected").

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Moorman, and Fetter's (1990) transformational leadership index.

We controlled for *trainees' overall performance* in the program at Time 3 by specifying it as an antecedent of informal leadership behavior. Higher-performing individuals' initiatives and opinions tend to carry more weight with peers, and they tend to be seen more as prototypical members of the group. They may thus emerge more readily as leaders (Hogg, 2001). The full-time drill sergeant for each squad rated the overall performance of each squad member. We adapted three items from a job performance scale used by Motowidlo and Van Scotter (1994) ("performs at a high level overall," "is very effective at training tasks," and "exceeds performance standards").

Analyses

We employed a regression discontinuity (RD) design. When properly applied and with adequate statistical power, RD can obtain estimates of causal effects that approximate randomized field experiments (Berk et al., 2010; Cook et al., 2008). RD approximates the effect of a randomly assigned treatment when units or individuals are assigned to a treatment condition purely based on scores on a rating variable(s), and a single explicit threshold applies uniformly to determine placement in a condition (e.g., passing or failing). Occupational progress failure or success (hereafter "failure") is defined as "1" when the trainee did not meet the criterion of 50 points on any one of the three dimensions on the diagnostic fitness test and "0" otherwise. We assessed the effect of failure on an outcome variable after also regressing the outcome on the three diagnostic test scores. A significant effect of failure indicates an abrupt change in the intercept around the passing threshold using the following specification:

$$Y_i = b_0 + b_1 1\{Score_{cj} - 50 < 0\} + b_2 (Score_{cj} - 50) + e \quad (1)$$

Here Y_i is the vector of outcome variables (psychosomatic symptoms [Time 2] and peer-rated leadership assessment [Time 3]), and $1\{Score_{cj} - 50 < 0\}$ indicates whether an individual's scores on any of the three (j) fitness test components (c) were below the threshold. $Score_{cj} - 50$ is the distance between the individual's score on each component and the passing threshold. As the scoring methods are uniform and no other variable aside from the test scores (i.e., $Score_{cj}$) determines failure or passing, after controlling for these scores the regression of an outcome

variable on the binary failure variable represents a "treatment" effect of failure.

As with Study 1, we tested the hypotheses using Mplus and applied the sandwich estimator to account for the nesting structure in our data (i.e., trainees within squads). We controlled for the prior (Time 1) measure of psychosomatic symptoms. The effect of failure on the measure of psychosomatic symptoms at Time 2, two weeks after the diagnostic fitness test, can thus be interpreted in terms of its effect on change in psychosomatic symptoms (Cronbach & Furby, 1970). Mplus accounts for missing data based on the full information maximum likelihood method, the preferred approach to dealing with missing data (Schafer & Graham, 2002).

STUDY 2: RESULTS

Table 3 shows the means, standard deviations, and correlations among the analysis variables. Based on their APFT component scores (run, sit-ups, push-ups), 46 trainees in the final analysis sample (21%) failed the diagnostic test. We removed one of these cases because it demonstrated an outsize influence on the results based on Cook, log likelihood, and other outlier identification indexes generated by Mplus. However, excluding this observation was not material to any of the hypothesized effects or the levels of statistical significance. The component scores exhibited moderately high correlations with one another and with failure (1 = failing one or more test components, 0 = otherwise).

A confirmatory factor analysis (CFA) assessed the discriminant validity of the five self-reported variables assessed at Time 1, including neuroticism, conscientiousness, extraversion, peer respect, and psychosomatic symptoms. In the congeneric model, in which all five factors were separate and permitted to correlate, the fit indices met or exceeded conventional standards (e.g., Browne & Cudeck, 1993; $\chi^2_{(289)} = 408.91$; CFI = .92; TLI = .91; RMSEA = .04; SRMR = .06). Alternative CFAs in which the correlation between any two factors was constrained to unity exhibited significantly worse fit. These findings support treating these factors separately in the analyses.

Tests of Hypotheses

Table 4 provides the estimates from regressing informal leadership behavior, psychosomatic symptoms, and peer respect on failure and the APFT test component deviation scores (hereafter "component scores"). Model 1 in Table 4 assesses the overall effect of failure on informal leadership behavior, which was negative and significant ($b = -.70$ ($SE = .28$), $p < .01$). As shown under Model 2, failure was positively related to psychosomatic symptoms ($a = .36$ ($SE = .09$), $p < .01$), supporting Hypothesis 1.

TABLE 3
Correlations and Descriptive Data among Analysis Variables (Study 2)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Failure	0.21	0.41														
2. Informal leadership behavior (*T*3)	4.83	1.46	−.29**	(.98)												
3. Push-ups deviation score	24.20	18.60	−.53**	.26**	−											
4. Sit-ups deviation score	23.86	19.00	−.62**	.18*	.51**	−										
5. 2-mile run deviation score	27.43	18.28	−.45**	.25**	.50**	.36**	−									
6. Psychosomatic symptoms (*T*1)	1.75	0.61	.22**	−.15	−.13	−.16*	−.24**	(.76)								
7. Psychosomatic symptoms (*T*2)	1.53	0.64	.34**	−.23**	−.21**	−.26**	−.15*	.41**	(.84)							
8. Peer respect (*T*1)	3.52	0.70	−.14	.02	.13	.07	.08	−.14	−.16*	(.92)						
9. Peer respect (*T*2)	3.98	0.76	−.21**	.29**	.29**	.23**	.16*	−.22**	−.31**	.38**	(.94)					
10. Interpersonal justice (*T*2)	3.90	0.88	−.16*	.06	.17*	.12	.16*	−.10	−.25**	.26**	.47**	(.93)				
11. Neuroticism (*T*1)	2.30	0.70	.02	−.03	.04	.01	.01	.23**	.14	−.06	−.01	−.00	(.68)			
12. Extraversion (*T*1)	3.12	0.74	−.12	.09	.12	.06	.01	.02	.02	.28**	.24**	.22**	.07	(.65)		
13. Conscientiousness (*T*1)	3.41	0.67	−.03	−.00	.06	−.01	.09	−.09	−.10	.19**	.17*	.20**	.06	.03	(.62)	
14. Task performance (*T*3)	5.30	1.20	−.20**	.34**	.25**	.22**	.27**	−.21**	−.18**	−.07	.22**	.09	−.16*	.05	−.05	(.90)

Notes: Pairwise *n* values range from 182 (leadership) to 217 (failure, exercise scores). *T*1 = Time 1, *T*2 = Time 2, *T*3 = Time 3.

* *p* < .05

** *p* < .01

TABLE 4
Main and Interactive Effects on Psychosomatic Symptoms (PSS), Peer Respect, and Informal Leadership Behavior (Study 2)

	Model 1		Model 2						Model 3					
	Informal Leadership Behavior (T3)		PSS (T2)		Peer Respect (T2)		Informal Leadership Behavior (T3)		PSS (T2)		Peer Respect (T2)		Informal Leadership Behavior (T3)	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
PSS (T1)	−.11	.13	.34**	.09	−.18	.11	.07	.15	.33**	.08	−.17	.11	.08	.15
Peer respect (T1)	−.06	.18	−.04	.07	.23**	.06	−.20	.17	−.03	.07	.23**	.06	−.19	.17
Interpersonal injustice (T2)	.00	.12	−.14**	.04	.30**	.06	−.16	.11	−.13**	.04	.31**	.06	−.15	.10
Performance rating (T3)	.31**	.10					.26**	.09					.27**	.09
Test failure	−.70**	.28	.36**	.09	.10	.17	−.60*	.27	.34**	.08	.09	.17	−.58*	.29
Push-ups deviation score	.01	.01	−.00	.00	.01	.00	.00	.01	−.00	.00	.01*	.00	.00	.01
Sit-ups deviation score	−.01	.01	−.00	.00	.01	.00	−.01	.01	−.00	.00	.01	.00	−.01	.01
2-mile run deviation score	.01	.01	.00	.00	−.00	.00	.01	.01	.00	.00	−.00	.00	.01	.01
Neuroticism	.01	.14	.05	.03	.03	.04	.00	.16	−.04	.05	−.00	.04	−.08	.19
Extraversion	.14	.09	.08	.06	.10	.07	.12	.09	.07	.05	.09	.07	.11	.08
Conscientiousness	−.02	.11	−.03	.06	.05	.05	−.10	.12	−.03	.06	.05	.05	−.10	.12
Failure × neuroticism									.35**	.12	.13	.14	.34	.30
PSS (T2)							−.34**	.13					−.38**	.13
Peer respect (T2)							.53**	.13					.52**	.14
R^2	.19		.29		.36		.27		.31		.37		.27	

Notes: Coefficients are unstandardized. Models 1, 2, and 3 refer to separate SEM models tested using Mplus. $T1$ = Time 1, $T2$ = Time 2, $T3$ = Time 3.
* $p < .05$
** $p < .01$

Results for mediation and moderated mediation are also shown in Table 4. Hypothesis 2 proposes an indirect relationship between failure and informal leadership behavior through psychosomatic symptoms. Direct effects on informal leadership behavior were specified for all antecedent and control variables predicting psychosomatic symptoms (failure, three test component scores, three personality variables, interpersonal justice of drill sergeant, peer respect, and baseline [Time 1] measures of the psychosomatic symptoms). We also specified overall performance (Time 3) as a direct antecedent of informal leadership behavior. As shown in Table 4 (Model 2), psychosomatic symptoms (Time 2) was negatively related to informal leadership behavior ($b = -.34$ ($SE = .13$), $p < .01$). The indirect effect is negative and significant ($ab = -.12$ ($SE = .06$), $p < .05$; Monte Carlo CI (95%) = −.26, −.02), supporting Hypothesis 2.

Hypothesis 3 predicts that neuroticism moderates the effect of failure on psychosomatic symptoms. We centered neuroticism by its grand mean and regressed psychosomatic symptoms on failure and neuroticism, and their interaction. As shown under Model 3, the interaction effect was significant ($a = .35$ ($SE = .12$), $p < .01$). Figure 4 shows the positive effect of failure on psychosomatic symptoms among trainees with relatively high levels (+ 1 SD) of neuroticism (simple slope = .58 ($SE = .09$), $p < .001$), and a lack of relationship among those with relatively low levels (−1 SD) of neuroticism

FIGURE 4
Plot of the Interaction of Occupational Progress Failure with Neuroticism Predicting Psychosomatic Symptoms (Study 2)
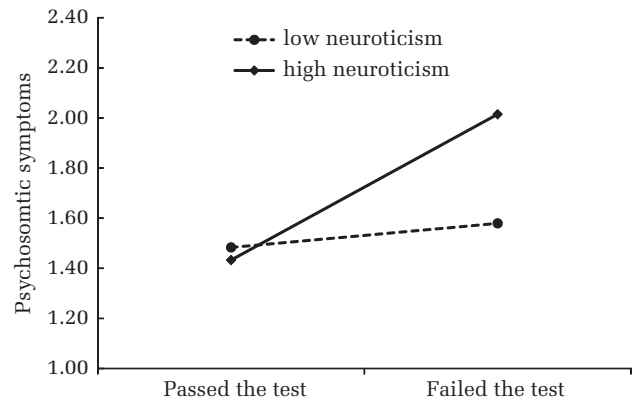
(simple slope $= .10$ $(SE = .14)$, $p = .48$). This pattern supports Hypothesis 3.

Hypothesis 4 predicts that neuroticism moderates the indirect effect of failure on informal leadership behavior through psychosomatic symptoms. We used the same predictors as when testing Hypothesis 3, and, in addition, controlled for trainee performance. In this model, we also included the paths through the hypothesized mediator (psychosomatic symptoms [Time 2]) and the alternative mediator (peer respect [Time 2]) to informal leadership behavior, as well as all the direct effects as assessed in testing Hypothesis 2. This analysis found that when neuroticism was relatively high ($+1$ SD), there was a negative indirect effect of failure through psychosomatic symptoms (ab (high) $= -.22$ $(SE = .09)$, $p < .05$), whereas there was no indirect effect when neuroticism was relatively low (-1 SD) (ab (low) $= -.04$ $(SE = .05)$, $p = .40$). The Monte Carlo confidence interval for higher neuroticism was negative (CI (95%) $= -.41, -.07$), whereas it included 0 for lower neuroticism (CI (95%) $= -.16, .06$). These results support Hypothesis 4.

Supplementary Analyses

To examine the robustness of our results, we tested our hypotheses again after excluding all control variables. Results (see Online Appendix 2) did not differ from those reported above. We also explored alternative forms of relationships between the test component scores and psychosomatic symptoms and leadership. These analyses indicated no statistically significant quadratic or cubic relationships. We also found no quadratic or cubic interactions of component scores with failure. Accounting for scores on the fitness test of record does not influence the conclusions linking diagnostic test failure to informal leadership behavior (see Online Appendix 3).

As in Study 1, we conducted a region of significance analysis of the interaction effect. The effect of failure on psychosomatic symptoms was significant ($p < .05$) at neuroticism levels of 1.87 or higher, representing 72.6% of participants. We also examined the potential moderating role of extraversion and conscientiousness. Extraversion ($a = -.26$ $(SE = .12)$, $p < .05$) and conscientiousness ($a = -.30$ $(SE = .10)$, $p < .01$) separately moderated the relationship between failure and symptoms. For both personality variables, there is a stronger positive relationship at lower levels (-1 SD) (extraversion: $a = .53$ $(SE = .09)$, $p < .001$; conscientiousness: $a = .56$ $(SE = .11)$, $p < .001$) compared to higher levels (extraversion:

$a = .15$ $(SE = .15)$, $p = .31$; conscientiousness: $a = .16$ $(SE = .07)$, $p < .05$).

GENERAL DISCUSSION

Our studies found that occupational progress failure indirectly influences informal leadership behavior as assessed in a leaderless group discussion (Study 1) and in intact work groups bracketed over time (Study 2). Below, we discuss theoretical and practical implications of these and other findings, along with study limitations and future research directions.

Theoretical Implications

The broader literature on leadership influence has emphasized the situational and personal factors that lead people to attribute leader-like qualities to other persons (van Knippenberg & Hogg, 2003; Lord, Foti, & De Vader, 1984). Complementing this perspective, our studies identified a causal influence of adverse events—occupational progress failures, which elicit ruminative thinking and impede individuals' potential to "claim" leadership in their group (DeRue & Ashford, 2010). Our theorizing does not suggest that following occupational progress failure, individuals devote more cognitive resources to core tasks than they would in the absence of such off-task effort. Rather, they have less surplus cognitive resources due to ruminative thinking, which limits their potential to meet the demands of both core tasks and complex peripheral (noncore) tasks. Prioritization of core tasks owing to a more limited overall pool of cognitive resources is consistent with the findings of both studies. Ruminative thinking was not related to task performance, assessed as an objective performance score on an audit task in Study 1 and rated performance on the core military training tasks in Study 2. This suggests that effort on core tasks may have been unaffected while discretionary informal leadership behaviors suffered.

The majority of participants who failed the diagnostic test in Study 2 passed the test of record three weeks after the initial failure. A supplementary analysis showed no effect of the failure on psychosomatic symptoms as assessed at the conclusion of the training ($b = .11$, $SE = .18$, $p = .52$). Bearing in mind that an increase in psychosomatic symptoms observed in the middle of the training was attributable to the failure event and, theoretically, ruminative thinking about the failure, this pattern is consistent with the goal progress theory of

rumination (Martin & Tesser, 1989). As we noted, the theory proposes that rumination about failure tends to cease after the failure is reversed or is no longer relevant, as when the higher-order goal (e.g., becoming a soldier) is either attained or no longer maintained. However, the effect of the earlier increase in symptoms on ratings of informal leadership persevered. This suggests that owing to their lesser capacity to engage in leadership at one stage in the training (between initial failure and failure resolution), many were not able to establish themselves as leaders among their peers in the final six weeks of the training when they were no longer subject to the resource drain of off-task effort that may be attributed to concern about the failure. Having missed the opportunity to emerge as a leader initially may later make it difficult to establish leadership because peers' initial view of one as not being willing or able to inspire or direct the team is likely to persist. First impressions significantly impact the informal leadership structures that emerge in groups (DeRue, Nahrgang, & Ashford, 2015), and early leadership experiences influence members' perceptions of an individual's fit with their prototype of a leader (Lord et al., 1984). Lack of involvement in leadership also impedes forming a personal identity as a leader (DeRue & Ashford, 2010; Lord & Hall, 2005). Whereas many individuals do not establish themselves as leaders owing to their lack of ability or desire to lead, our findings suggest that occupational progress failures deprive individuals of the resources they need to exhibit leadership, and it may be challenging to establish leadership after regaining such resources.

The effect of occupational progress failure on ruminative thinking (Study 1) and psychosomatic symptoms (Study 2) was significant across the majority of participants, although these relationships were stronger among individuals reporting higher neuroticism. Neurotic persons are more prone to ruminative thinking when faced with negative feedback or uncertainty (Hirsh & Inzlicht, 2008). Research has also shown that personality traits such as conscientiousness and extraversion are positively associated with acts of informal leadership (Hu et al., 2019; Judge et al., 2002). Examining our Study 2 moderation findings for neuroticism, conscientiousness, and extraversion from a different perspective indicates that personality traits predicted psychosomatic symptoms and, in turn, informal leadership behavior among persons who had experienced an occupational progress failure. These traits did not exhibit significant effects among those who had not failed. Taken together, this finding suggests that focusing on the simple effects of traits on informal leadership behavior, as established in prior research, may be limiting because it overlooks critical adverse events that occur intermittently during many individuals' careers. When these events occur early in one's entry to a group or organization, they may undermine the potential to establish oneself as a leader.

In our studies, any ruminative thinking that was tied to the failure event was not plausibly a productive use of cognitive resources to achieve one's higher-order goal. In the field study, for example, trainees who failed the diagnostic test did not likely ruminate persistently about how to do push-ups or sit-ups or how to perform their daily training tasks better. Yet, in other contexts, an occupational progress failure could encourage individuals to devote energy and attention to reversing the failure, such as reflecting on ways to improve performance or remind oneself about areas that require more concerted attention (Dane, 2018; Kuhl, 1987). Due to the high cognitive accessibility of an uncompleted task (Martin & Tesser, 1989), this type of problem-focused rumination may potentially help one engage with tasks in the failed domain. The literature indicates that problem-focused rumination does not have the adverse psychological or psychosomatic effects of affective, self-focused rumination that pertains to reliving a failure and dwelling on its implications (Firoozabadi et al., 2018; Kinnunen, Feldt, & de Bloom, 2019). Nevertheless, such problem-focused rumination drains cognitive resources, including the additional effort required to maintain focus while frequently switching attention to the goal activity (Koch, Poljac, Müller, & Kiesel, 2018). For example, after failing to pass a CPA exam section, an individual might devote time away from their core tasks to study, or their thoughts may readily drift to accounting concepts that are less relevant to the job but concern possible test material.

For practical reasons, in Study 2 we utilized psychosomatic symptoms as a proxy for persistent ruminative thinking. Still, it is important to consider the boundaries around which such symptoms represent the theoretical effect of ruminative thinking. We attribute the failure effect on psychosomatic symptoms to persistent ruminative thinking based on three observations. First, from Study 1 and other laboratory studies (e.g., Geisler & Kubiak, 2009; Koole et al., 1999; Roberts et al., 2013; Thompson et al., 2002), as well as field studies of individuals' self-reports of goal failures and rumination (Lavallee &

Campbell, 1995; Moberly & Watkins, 2010), there is a reliable causal effect of such failures on ruminative thinking. Second, the relationship between rumination and symptoms of this nature has been demonstrated to be quite strong (see meta-analysis results by Ottaviani et al., 2016) and in the direction of rumination presaging the symptoms rather than the reverse effect or mere comorbidity (Brosschot et al., 2005). Thus, combining these observations and the effect of failure on Time 2 symptoms in Study 2, it is reasonable to infer that ruminative thinking among those who failed had elevated their psychosomatic symptoms. Third, we found in Study 2 that symptoms did not persist after the goal progress failure was reversed, as is expected by the goal process theory of rumination and supported by other findings (Koole et al., 1999; Wrosch, Scheier, Miller, & Carver, 2003).

Practical Implications

These findings have implications for how organizations approach requirements they place on employees beyond core job duties and how they manage members' temporary failures in meeting these requirements. Organizations neither can nor should seek to shield individuals from failure, especially as failures often promote learning and thus better long-term performance (Deichmann & van den Ende, 2013). Yet, as our findings indicate, occupational progress failures promote ruminative thinking and ultimately psychosomatic symptoms, detracting from performance on complex noncore tasks such as informal leadership. Organizations can often do more to assist employees' preparation to meet important occupational benchmarks, such as by providing time or financial assistance to study for a certification test. For those who failed important occupational benchmarks, managers can provide personal support by encouraging them to take a more growth-oriented mindset toward their job and career goals as has been found to enhance individuals' development as leaders (Dragoni, Tesluk, Russell, & Oh, 2009). This may better ensure that any mind-wandering associated with work goals "might gravitate toward being more goal-directed rather than goal digressive (i.e., unnecessarily stressful)" (Dane, 2018: 192).

The propensity for occupational progress failure to reduce informal leadership does not necessarily reflect a lower personal competency or desire for leadership, and the adverse effect on informal leadership may persist well after the eliciting event.

Managers may therefore form false negative views of certain individuals' leadership potential. One approach to overcome this would be for managers to approach workers who have reversed occupational progress failures with an opportunity to engage in leadership in a setting in which a leadership structure is not already established, such as by chairing a new committee. In addition, individuals are less prone to ruminating about failure when they receive affirming information about their progress toward the same higher-order goal (Brunstein & Gollwitzer, 1996; Koole et al., 1999). By recognizing the achievements and contributions of followers who recently experienced occupational progress failures, leaders may help to promote their engagement in informal leadership.

Limitations and Future Directions

Limitations of these studies lead us to view the findings with some caution. A significant limitation is that the designs of our studies did not permit us to assess the underlying serial mediation process wherein occupational progress failure influences psychosomatic symptoms through ruminative thinking. In an ideal study, researchers would randomly administer goal progress failure and bracket daily levels of the focal variables. Such a design could determine how ruminative thinking over a sustained period may fluctuate and influence psychosomatic symptoms and affect informal leadership behaviors in turn.

Although occupational progress failure did not affect performance on core tasks in either study, core task performance might be influenced by the heightened level of ruminative thinking and psychosomatic symptoms in other settings. Dane (2018) noted that mind wandering is most costly in jobs that require careful monitoring of one's surroundings, intensive detail work, and avoidance of errors, which characterizes the work in many occupations, such as emergency technicians, dining servers, and laboratory technicians. Other outcomes that are separate from dominant task domains also merit attention. Because ethical behavior and safety behavior involve dealing with ambiguous cues and often conflict with efforts to maximize core task performance, both potentially suffer following occupational progress failures.

Over 20% of the trainees in Study 2 initially failed the test, which is comparable to failure rates for other occupational certifications (e.g., ASCP Board of Certification Research and Development Committee, 2015). Yet, the proportion of test-takers who initially

fail on other certification exams is much higher, such as for the CPA designation in the United States. A high base rate of failure may indicate a very difficult test, and individuals who see colleagues they believe are more capable also fail may believe they are unlikely ever to pass. Conversely, failing when there is a lower base rate of failure may be more demoralizing as it may make failure a more personal matter. We thus encourage research on the relationship between failure base rates and ruminative thinking.

Finally, our studies were conducted in a single country, and leadership perceptions are theoretically affected by cultural variables (Lord & Brown, 2001). Research has shown that individuals from Eastern cultures are more sensitive to failure than those from Western cultures (Heine et al., 2001; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). For example, Japanese participants may engage in self-criticism to a greater extent than Americans when responding to a failure situation (Kitayama et al., 1997). Owing to the intense self-blame and negative affect that may encourage more rumination following significant personal failures, occupational progress failure might have a greater adverse influence on informal leadership in Eastern cultures than what we found in these U.S. samples.

CONCLUSIONS

This research provides a first step toward a theory of how failure events interact with employees' traits to influence their intrapsychic states and subsequent leadership behavior. More generally, it calls for a new emphasis on would-be leaders' cognitive processes that influence how they are perceived as leading among peers, specifically highlighting the role of ruminative thinking in linking occupational progress failure events with informal leadership behavior. Considering the growing evidence linking a wide range of work experiences to employees' ruminative thinking, persistent ruminative thinking and its attendant psychosomatic symptoms may prove to be an important explanatory mechanism for theories of leadership.

REFERENCES

Albert, K. 2015. Who earns occupational certifications? Evidence from a national survey. *Academy of Management Proceedings*, 2015: 14472.

ASCP Board of Certification Research and Development Committee. 2015. Impact of time lapse on ASCP Board of Certification Medical Laboratory Scientist (MLS) and Medical Laboratory Technician (MLT) examination scores. *Laboratory Medicine*, 46: e53–e58.

Berk, R. A., Barnes, G., Ahlman, L., & Kurtz, E. 2010. When second best is good enough: A comparison between a true experiment and a regression discontinuity quasi-experiment. *Journal of Experimental Criminology*, 6: 191–208.

Brosschot, J. F., Gerin, W., & Thayer, J. F. 2006. The perseverative cognition hypothesis: A review of worry, prolonged stress-related physiological activation, and health. *Journal of Psychosomatic Research*, 60: 113–124.

Brosschot, J. F., Pieper, S., & Thayer, J. F. 2005. Expanding stress theory: Prolonged activation and perseverative cognition. *Psychoneuroendocrinology*, 30: 1043–1049.

Browne, M. W., & Cudeck, R. 1993. Alternative ways of assessing model fit. In K. Bollen & J. Long (Eds.), *Testing structural equation models*: 136–162. Newbury Park, CA: Sage.

Brunstein, J. C., & Gollwitzer, P. M. 1996. Effects of failure on subsequent performance: The importance of self-defining goals. *Journal of Personality and Social Psychology*, 70: 395–407.

Colquitt, J. A. 2001. On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology*, 86: 386–400.

Conway, M., Csank, P. A. R., Holm, S. L., & Blake, C. K. 2000. On assessing individual differences in rumination on sadness. *Journal of Personality Assessment*, 75: 404–425.

Cook, T. D., Shadish, W. R., & Wong, V. C. 2008. Three conditions under which experiments and observational studies produce comparable causal estimates: New findings from within-study comparisons. *Journal of Policy Analysis and Management*, 727: 724–750.

Creed, P. A., Wamelink, T., & Hu, S. 2015. Antecedents and consequences to perceived career goal–progress discrepancies. *Journal of Vocational Behavior*, 87: 43–53.

Cronbach, L. J., & Furby, L. 1970. How we should measure "change": Or should we? *Psychological Bulletin*, 74: 68–80.

Dane, E. 2018. Where is my mind? Theorizing mind wandering and its performance-related consequences in organizations. *Academy of Management Review*, 43: 179–197.

Day, D. V., Gronn, P., & Salas, E. 2004. Leadership capacity in teams. *Leadership Quarterly*, 15: 857–880.

Deichmann, D., & van den Ende, J. 2013. Rising from failure and learning from success: The role of past experience in radical initiative taking. *Organization Science*, 25: 670–690.

DeRue, D. S., & Ashford, S. J. 2010. Who will lead and who will follow? A social process of leadership identity construction in organizations. *Academy of Management Review*, 35: 627–647.

DeRue, D. S., Nahrgang, J. D., & Ashford, S. J. 2015. Interpersonal perceptions and the emergence of leadership structures in groups: A network perspective. *Organization Science*, 26: 1192–1209.

Dong, Y., Seo, M. G., & Bartol, K. M. 2014. No pain, no gain: An affect-based model of developmental job experience and the buffering effects of emotional intelligence. *Academy of Management Journal*, 57: 1056–1077.

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. 2006. The mini-IPIP scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment*, 18: 192–203.

Dragoni, L., Tesluk, P. E., Russell, J. E. A., & Oh, I. 2009. Understanding managerial development: Integrating developmental assignments, learning orientation, and access to developmental opportunities in predicting managerial competencies. *Academy of Management Journal*, 52: 731–743.

Emmons, R. A. 1992. Abstract versus concrete goals: Personal striving level, physical illness, and psychological well-being. *Journal of Personality and Social Psychology*, 62: 292–300.

Emmons, R. A., & King, L. A. 1988. Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology*, 54: 1040–1048.

Firoozabadi, A., Uitdewilligen, S., & Zijlstra, F. R. H. 2018. Should you switch off or stay engaged? The consequences of thinking about work on the trajectory of psychological well-being over time. *Journal of Occupational Health Psychology*, 23: 278–288.

Frese, M. 1985. Stress at work and psychosomatic complaints: A causal interpretation. *Journal of Applied Psychology*, 70: 314–328.

Galbraith, S., Daniel, J. A., & Vissel, B. 2010. A study of clustered data and approaches to its analysis. *Journal of Neuroscience : The Official Journal of the Society for Neuroscience*, 30: 10601–10608.

Ganster, D. C., Fox, M. L., & Dwyer, D. J. 2001. Explaining employees' health care costs: A prospective examination of stressful job demands, personal control, and physiological reactivity. *Journal of Applied Psychology*, 86: 954–964.

Geisler, F. C., & Kubiak, T. 2009. Heart rate variability predicts self-control in goal pursuit. *European Journal of Personality*, 23: 623–633.

Gerpott, F. H., Lehmann-Willenbrock, N., Voelpel, S. C., & van Vugt, M. 2019. It's not just what is said but also when it's said: A temporal account of verbal behaviors and emergent leadership in self-managed teams. *Academy of Management Journal*, 62: 717–738.

Goldberg, L. R. 1999. A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde F. De Fruyt & F. Ostendorf (Eds.), *Personality psychology in Europe*, vol. 7: 7–28. Tilburg, Netherlands: Tilburg University Press.

Halliday, J. L. 1941. The concept of psychosomatic rheumatism. *Annals of Internal Medicine*, 15: 666–677.

Hannah, S. T., Schaubroeck, J. M., & Peng, A. C. 2016. Transforming followers' value internalization and role self-efficacy: Dual processes promoting performance and peer norm enforcement. *Journal of Applied Psychology*, 101: 252–266.

Heine, S. J., Kitayama, S., Lehman, D. R., Takata, T., Ide, E., Leung, C., & Matsumoto, H. 2001. Divergent consequences of success and failure in Japan and North America: An investigation of self-improving motivations and malleable selves. *Journal of Personality and Social Psychology*, 81: 599–615.

Hirsh, J. B., & Inzlicht, M. 2008. The devil you know: Neuroticism predicts neural response to uncertainty. *Psychological Science*, 19: 962–967.

Hogg, M. A. 2001. A social identity theory of leadership. *Personality and Social Psychology Review*, 5: 184–200.

Hu, J., Zhang, Z., Jiang, K., & Chen, W. 2019. Getting ahead, getting along, and getting prosocial: Examining extraversion facets, peer reactions, and leadership emergence. *Journal of Applied Psychology*, 104: 1369–1386.

Johnson, J. A. 2014. Measuring thirty facets of the Five Factor Model with a 120-item public domain inventory: Development of the IPIP-NEO-120. *Journal of Research in Personality*, 51: 78–89.

Jones, N. P., Papadakis, A. A., Orr, C. A., & Strauman, T. J. 2013. Cognitive processes in response to goal failure: A study of ruminative thought and its affective consequences. *Journal of Social and Clinical Psychology*, 32: 482–503.

Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. 2002. Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, 87: 765–780.

Kanfer, R., & Ackerman, P. L. 1989. Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology*, 74: 657–690.

Kahneman, D. 1973. *Attention and effort*. Englewood Cliffs, NJ: Prentice-Hall.

Kinnunen, U., Feldt, T., & de Bloom, J. 2019. Testing cross-lagged relationships between work-related rumination

and well-being at work in a three-wave longitudinal study across 1 and 2 years. *Journal of Occupational and Organizational Psychology*, 92: 645–670.

Kitayama, S., Markus, H. R., Matsumoto, H., & Norasak-kunkit, V. 1997. Individual and collective processes in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, 72: 1245–1267.

Klein, P. G., Mahoney, J. T., McGahan, A. M., & Pitelis, C. N. 2019. Organizational governance adaptation: Who is in, who is out, and who gets what. *Academy of Management Review*, 44: 6–27.

Kluger, A. N., & DeNisi, A. 1996. The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119: 254–284.

Knapik, J. J., Rieger, W., Palkoska, F., Van Camp, S., & Darakjy, S. 2009. United States Army physical readiness training: Rationale and evaluation of the physical training doctrine. *Journal of Strength and Conditioning Research*, 23: 1353–1362.

Koch, I., Poljac, E., Müller, H., & Kiesel, A. 2018. Cognitive structure, flexibility, and plasticity in human multi-tasking—An integrative review of dual-task and task-switching research. *Psychological Bulletin*, 144: 557–583.

Koole, S. L., Smeets, K., van Knippenberg, A., & Dijksterhuis, A. 1999. The cessation of rumination through self-affirmation. *Journal of Personality and Social Psychology*, 77: 111–125.

Kuhl, J. 1987. Action control: The maintenance of motivational states. In F. Halisch & J. Kuhl (Eds.), *Motivation, intention, and volition*: 279–291. Berlin, Germany: Springer-Verlag.

Lam, S. S. K., & Schaubroeck, J. 2000. Reactions to being promoted and to being passed over: A quasi-experiment. *Academy of Management Journal*, 43: 66–78.

Lavallee, L. F., & Campbell, J. D. 1995. Impact of personal goals on self-regulation processes elicited by daily negative events. *Journal of Personality and Social Psychology*, 69: 341–352.

Lehmann, C. M., & Heagy, C. D. 2017. A case study of fraud concerns at a homeowners' association. *Issues in Accounting Education Teaching Notes*, 32: 42–56.

Leroy, S. 2009. Why is it so hard to do my work? The challenge of attention residue when switching between work tasks. *Organizational Behavior and Human Decision Processes*, 109: 168–181.

Lord, R. G., & Brown, D. J. 2001. Leadership, values, and subordinate self-concepts. *Leadership Quarterly*, 12: 133–152.

Lord, R. G., Foti, R. J., & De Vader, C. L. 1984. A test of leadership categorization theory: Internal structure,

information processing, and leadership perceptions. *Organizational Behavior and Human Performance*, 34: 343–378.

Lord, R. G., & Hall, R. 2005. Identity, deep structure and the development of leadership skill. *Leadership Quarterly*, 16: 591–615.

Lord, R. G., Hannah, S. T., & Jennings, P. L. 2011. A framework for understanding leadership and individual requisite complexity. *Organizational Psychology Review*, 1: 104–127.

Martin, L. L., Shrira, I., & Startup, H. M. 2004. Rumination as a function of goal progress, stop rules, and cerebral lateralization. In C. Papageorgiou & A. Wells (Eds.), *Depressive rumination: Nature, theory and treatment*: 153–176. Hoboken, NJ: Wiley.

Martin, L. L., & Tesser, A. 1989. Toward a motivational and structural theory of ruminative thought. In J. S. Uleman & J. A. Bargh (eds.), *Unintended thought*: 306–326. New York, NY: Guilford Press.

Martin, L. L., & Tesser, A. 2006. Extending the goal progress theory of rumination: Goal reevaluation and growth. In L. J. Sanna & E. C. Ho (Eds.), *Judgments over time: The interplay of thoughts, feelings, and behaviors*: 145–162. New York, NY: Oxford University Press.

Matthews, G., & Wells, A. 2004. Rumination, depression, and metacognition: The S-REF model. In C. Papageorgiou & A. Wells (Eds.), *Depressive rumination: Nature, theory, and treatment:* 125–151. Chichester, U.K.: Wiley.

McCullough, M. E., Bono, G., & Root, L. M. 2007. Rumination, emotion, and forgiveness: Three longitudinal studies. *Journal of Personality and Social Psychology*, 92: 490–505.

Mikulincer, M. 1989. Cognitive interference and learned helplessness: The effects of off-task cognitions on performance following unsolvable problems. *Journal of Personality and Social Psychology*, 57: 129–135.

Moberly, N. J., & Watkins, E. 2010. Negative affect and ruminative self-focus during everyday goal pursuit. *Cognition and Emotion*, 24: 729–739.

Morgeson, F. P., Mitchell, T. R., & Liu, D. 2015. Event system theory: An event-oriented approach to the organizational sciences. *Academy of Management Review*, 40: 515–537.

Motowidlo, S. J., & Van Scotter, J. R. 1994. Evidence that task performance should be distinguished from contextual performance. *Journal of Applied Psychology*, 79: 475–480.

Ottaviani, C., Thayer, J. F., Verkuil, B., Lonigro, A., Medea, B., Couyoumdjian, A., & Brosschot, J. F. 2016. Physiological concomitants of perseverative cognition: A systematic review and meta-analysis. *Psychological Bulletin*, 142: 231–259.

Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. 1990. Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *Leadership Quarterly*, 1: 107–142.

Reiter-Palmon, R. 2003. Predicting leadership activities: The role of flexibility. *Individual Differences Research*, 1: 124–136.

Roberts, H., Watkins, E. R., & Wills, A. J. 2013. Cueing an unresolved personal goal causes persistent ruminative self-focus: An experimental evaluation of control theories of rumination. *Journal of Behavior Therapy and Experimental Psychiatry*, 44: 449–455.

Schafer, J. L., & Graham, J. W. 2002. Missing data: Our view of the state of the art. *Psychological Methods*, 7: 147–177.

Schaubroeck, J. M., Peng, A., & Hannah, S. T. 2016. The role of peer respect in linking abusive supervision to follower outcomes: Dual moderation of group potency. *Journal of Applied Psychology*, 101: 267–278.

Schwartzer, R. 1996. Thought control of action: Interfering self-doubts. In I. G. Sarason, G. R. Pierce, & B. R. Sarason (Eds.), *Cognitive interference: Theories, methods, and findings*, 99–115. New York, NY: Routledge.

Selig, J. P., & Preacher, K. J. 2008, June. *Monte Carlo method for assessing mediation: An interactive tool for creating confidence intervals for indirect effects* [Computer software]. Retrieved from http://quantpsy.org/medmc/medmc.htm

Shepherd, D. A., Patzelt, H., & Wolfe, M. 2011. Moving forward from project failure: Negative emotions, affective commitment, and learning from the experience. *Academy of Management Journal*, 54: 1229–1259.

Slaughter, J. E., & Kausel, E. E. 2009. The neurotic employee: Theoretical analysis of the influence of narrow facets of neuroticism on cognitive, social, and behavioral processes relevant to job performance. In J. Martocchio & H. Liao (Eds.), *Research in personnel and human resources management*, Vol. 26: 265–341. Bingley, U.K.: Emerald Insight.

Thompson, T., Webber, K., & Montgomery, I. 2002. Performance and persistence of worriers and non-worriers following success and failure feedback. *Personality and Individual Differences*, 33: 837–848.

Tyler, T. R., & Blader, S. L. 2000. *Cooperation in groups: Procedural justice, social identity, and behavioral engagement*. Philadelphia, PA: Psychology Press.

van Knippenberg, D., & Hogg, M. A. 2003. A social identity model of leadership effectiveness in organizations. *Research in Organizational Behavior*, 25: 243–295.

Verkuil, B., Brosschot, J. F., Gebhardt, W. A., & Thayer, J. F. 2010. When worries make you sick: A review of perseverative cognition, the default stress response and somatic health. *Journal of Experimental Psychopathology*, 1: 87–118.

Verkuil, B., Brosschot, J. F., Meerman, E. E., & Thayer, J. F. 2012. Effects of momentary assessed stressful events and worry episodes on somatic health complaints. *Psychology & Health*, 27: 141–158.

Vohs, K. D., Park, J. K., & Schmeichel, B. J. 2013. Self-affirmation can enable goal disengagement. *Journal of Personality and Social Psychology*, 104: 14–27.

Wellman, N., Newton, D. W., Wang, D., Wei, W., Waldman, D. A., & LePine, J. A. 2019. Meeting the need or falling in line? The effect of laissez-faire formal leaders on informal leadership. *Personnel Psychology*, 72: 337–359.

Whiteman, R. C., & Mangels, J. A. 2016. Rumination and rebound from failure as a function of gender and time on task. *Brain Sciences*, 6, 7: 1–26.

Wrosch, C., Scheier, M. F., Miller, G. E., & Carver, C. S. 2003. Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Personality and Social Psychology Bulletin*, 29: 1494–1508.

Zaccaro, S. J., Gilbert, J. A., Thor, K. K., & Mumford, M. D. 1991. Leadership and social intelligence: Linking social perspectives and behavioral flexibility to leader effectiveness. *The Leadership Quarterly*, 2: 317–342.

Zhou, L., Wang, M., & Vancouver, J. B. 2019. A formal model of leadership goal striving: Development of core process mechanisms and extensions to action team context. *The Journal of Applied Psychology*, 104: 388–410.

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