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CEO Positive Psychological Traits, Transformational Leadership, and Firm Performance in High-Technology Start-up and Established Firms[†]

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This study examines the relationships among positive psychological traits (hope, optimism, resiliency), transformational leadership, and firm performance in high-technology start-up (n = 49) and established firm (n = 56) contexts, using structural equation modeling. Results reveal that the positive psychological traits of CEOs positively relate to transformational leadership ratings. Furthermore, the extent to which leaders are rated as transformational fully mediates the relationship between the leaders' positive psychological traits and their firms' performance. Last, transformational leadership is more strongly related to firm performance in start-up than in established firms. Implications for theory and practice are discussed.

Keywords: *transformational leadership; positive psychology; CEO traits; firm performance*

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Prior studies on transformational leadership have produced a consistent pattern of positive relationships between transformational leadership and performance and other measures of organizational-level effectiveness (for a review of this literature, see Judge & Piccolo, 2004). However, although the effects of transformational leadership on group and organizations are well documented, there has been surprisingly little empirical research that investigates what determines or predicts transformational leadership (Lim & Ployhart, 2004). Consequently, organizations could benefit from a strong theoretical model, allowing them to understand how transformational leadership behaviors are manifested in organizations.

Drawing on hope theory (Snyder et al., 1991), optimism theory (Scheier & Carver, 1985), and resiliency theory (Masten, 2001; Masten & Reed, 2002), the present study examines the positive psychological traits of hope, optimism, and resiliency in chief executive officers (CEOs) as potential antecedents to transformational leadership, which then, in turn, relates to their firms' performance. Transformational leaders have been described as those who inspire confidence, communicate a positive vision, and emphasize their followers' strengths (Bass, 1985, 1998). Based on this core premise, we suggest that such leaders who think positively about what the future holds will engage in transformational leadership behaviors. Accordingly, those individuals who can harness their own positive psychological capabilities such as being hopeful, optimistic, and resilient will be most likely to demonstrate a transformational style of leadership. In addition, we also assess whether the strength of relationship between transformational leadership and firm performance differs between start-up firms and more established firms, wherein leadership style may have stronger effects in more dynamic, smaller firms than in larger, more stable firms.

In sum, we hope to extend research on transformational leadership by examining potential determinants of transformational leadership, investigating how transformational leadership predicts organizational-level outcomes and determining whether the strength of this relationship differs across start-up and established firm contexts.

Theoretical Background and Hypotheses

Positive Psychological Traits

Positive psychological traits represent the extent to which individuals tend to be hopeful, optimistic, and resilient in general. Although other positive psychological capacities have been identified, we focus on hope (Snyder et al., 1991), optimism (Scheier & Carver, 1985), and resiliency (Block & Kremen, 1996). We also theorize these capacities as traits, individuals' enduring, stable, and cross-situational tendencies to experience such capacities, rather than as states, individuals' experiences of such capacities during particular times, events, or contexts (e.g., Luthans & Youssef, 2007). We focus on these three positive psychological traits in part because theory and research suggest these capacities to be positively related to enduring outcomes such as job performance and problem solving (Luthans, Avolio, Walumbwa, & Li, 2005; Peterson & Byron, in press; Peterson & Luthans, 2003). They have also been suggested to play important roles in leadership development (Luthans & Avolio, 2003). We describe each of the positive psychological traits below.

Hope. Perhaps the most widely accepted definition of hope is Snyder et al.'s (1991) definition of hope as a cognitive construct consisting of two components, pathways and agency. *Pathways* reflect individuals' perceptions of themselves as being capable of producing plausible routes to desired goals. *Agency* is a motivational component that propels individuals along their imagined pathways to goal achievement. Together, the pathways and agency components help people to achieve their goals by providing both the means and the motivation to do so (Snyder et al., 1991). Those lower in hope lack the ability to conceive of strategies to meet goals and to overcome obstacles and the motivation to pursue the strategies that lead to goal achievement. Hope has psychometrically sound measurement indices (Snyder et al., 1991) and has been shown to relate to work performance (Adams et al., 2002; Luthans et al., 2005; Peterson & Byron, in press; Peterson & Luthans, 2003; Snyder, 1995; Youssef & Luthans, in press).

Optimism. Optimistic people have a generalized belief that good things, rather than bad things, will occur (Scheier & Carver, 1985). They do not reflect heavily on failures and are likely to make external attributions for disappointing outcomes and internal attributions for positive outcomes (Seligman, 1998). As a result, optimists build positive expectancies that motivate their goal pursuits and approach coping behavior in the future, whereas pessimists are hindered by self-doubt and negative expectancies (Carver & Scheier, 2002). Moreover, optimism can be validly and reliably measured (Lopez & Snyder, 2003; Scheier & Carver, 1985) and has a recognized performance impact in work settings (Luthans et al., 2005; Seligman, 1998; Youssef & Luthans, in press).

Resiliency. Resiliency is defined as "the capacity to modify responses to changing situational demands, especially frustrating or stressful encounters" (Tugade & Fredrickson, 2004, p. 322). Resilient individuals are more prone to positive emotionality (e.g., Block & Kremen, 1996) and have a greater ability to rebound from negative circumstances, especially when they recognize threats (Masten, 2001). Like hope and optimism, resilience is measurable (e.g., Block & Kremen, 1996; Wagnild & Young, 1993) and has been shown to be applicable and related to performance in the workplace (Coutu, 2002; Luthans et al., 2005; Luthans, Vogelgesang, & Lester, 2006; Waite & Richardson, 2004).

Distinguishing hope, optimism, and resiliency. To date, research has found that hope, optimism, and resiliency are distinguishable (e.g., Bryant & Cvengros, 2004; Carifio & Rhodes, 2002; Luthans, Avolio, Avey, & Norman, 2007; Magaletta & Oliver, 1999). However, they also share some characteristics that make it necessary to elaborate on some of the similarities and differences among them to make the case for their being distinctive positive constructs and thus the utility of including all three in the current study.

Hope, optimism, and resilience are similar in that they are all positive capacities that share self-directed motivating mechanisms and processes that may have an impact on job performance and desired work attitudes. However, key differences also exist. For example, hope draws its uniqueness from the equal, additive, and iterative contributions of its agency and pathways components (Snyder, 1995). Although the agency component of hope is shared with optimism, the pathways component is distinctive of hope. The distinctiveness of optimism can be mainly found in its conceptual explanation of positive and negative events.

Although hope primarily focuses on internal, self-directed agency and pathways, optimism adopts a broader perspective. The attribution mechanisms of optimism, especially for negative events and failures, are not limited to the self but also include external causes such as other people or situational factors (Seligman, 1998). Thus, optimism can help protect even a very hopeful individual from striving for unrealistic goals by mitigating guilt and personal responsibility when the constant emergence and escalation of blockages and problems threaten to render a goal unachievable.

Finally, resilience differs from hope and optimism because unlike hope and optimism, which are proactive in nature (i.e., cognitions and feelings about the future), resilience recognizes the need to take both proactive *and* reactive measures in the face of adversity. Reactively, resilience uniquely recognizes the potential that setbacks, traumas, and even positive but overwhelming events can have a destructive impact, even on the most hopeful and optimistic individuals, and hence the need to bounce back.

Positive Psychological Traits and Transformational Leadership

Transformational leadership consists of four dimensions (Bass, 1998): charisma or idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. *Idealized influence* refers to the extent to which a leader's followers seek to identify with the leader and emulate him or her. *Inspirational motivation* refers to a leader's ability to motivate and inspire his or her followers by articulating a strong vision for the future. *Intellectual stimulation* emphasizes the leader's ability to expand the followers' use of their potential. Finally, *individualized consideration* refers to how attentive a leader is to his or her followers' needs for achievement, growth, and support. We explicate below how hope, optimism, and resiliency should serve as antecedents of transformational leadership and each of its four dimensions.

Hope and transformational leadership. As implied in the name, transformational leaders bring about positive changes for their organization (Bass, 1998). Hope may be linked to transformational leader behaviors because more hopeful leaders, by definition, are more likely to believe that they can realize change and that they can develop strategies to effect change (Snyder & Shorey, 2003). Individuals who are less adept at facing the challenges of change may be less likely to be successful as transformational leaders. Considering each of the four dimensions of transformational leadership in turn, we will explain why more hopeful leaders will be more likely to be considered transformational leaders by their followers.

First, people higher in hope envision the means to overcome adversity and, thus, more readily experience positive emotion and are less likely to react to negative feedback with ruminations and self-doubt (Michael, 2000). Hopeful people have a high degree of confidence in their ability to effect change, given the multiple pathways they know they can create and their agency control over the situation (Snyder et al., 1991). Because more hopeful leaders tend to have and display confidence in their ability to meet organizational goals, their followers are likely to perceive strong ability on the part of leaders. For example, Snyder and Shorey (2003) suggest that followers perceive high-hope individuals as better equipped to lead because they are able to clearly conceptualize goals and articulate those goals to others.

In addition, Peterson and Byron (in press) found that higher-hope management executives were able to devise more and better solutions to a work-related problem. As such, if followers perceive hopeful leaders as being more able to lead, then, as Mayer, Davis, and Schoorman (1995) suggest, trust in their leader should follow. Thus, hopeful leaders will be more effective in soliciting from their followers trust, respect, and "buy-in," which are key components of the idealized influence dimension of transformational leadership.

Second, this confidence is likely to allow them to inspire and motivate their followers with their vision of the future. Similarly, hope theory dictates that more hopeful people interpret failure differently than do those who are less hopeful. Indeed, scholars have demonstrated that such individuals are more likely to view impediments as opportunities for creativity than are those with less hope who see challenges as barriers to success (Snyder et al., 1991). For these reasons, it seems likely that more hopeful leaders will be better at inspirational motivation. Furthermore, the commitment to goals that is derived from hope is consistent with both the idealized influence and inspirational motivation dimensions of transformational leadership because leaders who consistently persevere will be seen as confident visionaries and will, thus, be more inclined to serve as role models (Bass, 1998).

Third, because challenging employees is related to intellectual stimulation, it follows that those individuals who thrive on challenge will make better transformational leaders. Furthermore, pathways thinking will encourage leaders to contemplate multiple alternative strategies when considering how to achieve a given goal and to pursue alternative strategies when one proves difficult (Luthans & Youssef, 2007). Finally, hope not only assists leaders in establishing their own pathways toward goal attainment but also provides the clarity regarding the necessary pathways needed for subordinates to attain goals.

Last, pathways thinking prompts leaders to contemplate multiple alternative strategies when considering how to achieve a given goal and to pursue alternative strategies when one proves difficult. Because different employees respond to different management styles, transformational leaders must adopt the response that is most appropriate for dealing with specific individuals. Hopeful leaders will have imagined numerous pathways for responding to any scenario or employee emotional state (Luthans & Youssef, 2007) and have at their fingertips a wide arsenal from which to suitably respond. Once a clear path has been tailored to the specific needs of each subordinate, leaders can then provide the needed individualized consideration to help them attain their goals.

Optimism and transformational leadership. More optimistic leaders are likely to envision and portray a positive future to their followers. Because transformational leadership requires that leaders have a positive and inspirational vision for the future of the organization (Bass, 1998), it seems likely that more optimistic leaders will more likely be transformational leaders. Their belief that good things will happen may also foster their belief that change is possible and positive—a requirement of transformational leadership behavior.

Given that optimistic people seek out more pleasant scenarios and ignore negative stimuli, research on optimism has found that people higher in optimism experience positive moods more often (e.g., Segerstrom, Taylor, Kemeny, & Fahey, 1998; Wengler & Rosen, 1995) and are less likely to experience negative emotional states. Even in the face of stressful circumstances, they remain upbeat and enthusiastic about the future (Fitzgerald, Tennen,

Affleck, & Pransky, 1993; Segerstrom et al., 1998). They are also more likely to believe they can exert control over the future (Fitzgerald et al., 1993). Leaders who have these qualities are likely to inspire confidence in their followers, an important element of idealized influence. With these strong convictions, they may be able to convince others that positive change is possible and motivate them to work toward change.

Second, it seems likely that leaders would need to have a positive outlook for the future to be inspiring and motivational toward others. Conversely, leaders who have a bleak and pessimistic outlook would likely have difficulty inspiring their followers. In addition to their more positive outlook in general, optimists have been found to approach problems differently than do the less optimistic. Optimists exhibit more active and adaptive coping skills and are less likely to adopt avoidant coping styles when faced with problems (Brissette, Scheier, & Carver, 2002). It seems likely that when optimistic leaders use active and creative approaches toward problem solving, they motivate and challenge their followers to do the same, thereby providing both inspirational motivation and intellectual stimulation to their followers. Last, optimists have been shown to have more satisfying and stronger relationships with others—at least in part because of their beliefs that others provided them with needed support (Srivastava, McGonigal, Richards, Butler, & Gross, 2006). Although admittedly a less supported link, it seems plausible that leaders who have stronger relationships with their followers and feel more supported by them will be more likely to, in turn, provide needed support and individualized consideration to them.

Resiliency and transformational leadership. Because transformational leadership centers on bringing about positive changes for one's organization (Bass, 1998), more resilient leaders may be better equipped for inevitable setbacks or failures. First, resilient individuals not only cultivate positive emotions in themselves but also are skilled at eliciting positive emotions in close others (Werner & Smith, 1992). The spreading of resilience, especially during trying times, may help to motivate and inspire others. Conger and Kanungo (1987) argued that leaders utilize emotions to arouse certain feelings and motivation in followers. Accordingly, more resilient leaders are likely to be higher in inspirational motivation because they tend to experience and elicit positive emotion in others, which likely increases followers' confidence in their ability to enact the leader's vision.

Similarly, more resilient leaders' confidence and demonstrated capabilities in rebounding from setbacks are likely to lead their followers to hold them in high regard. More resilient individuals have been found to experience higher well-being (Tugade & Fredrickson, 2004), and other research suggests that well-being may provide leaders with "a clear moral compass that is independent of the situational factors of the present moment's managerial challenge" (Hinds, 2005). Therefore, their clear and confident vision of the future is likely to be positively related to idealized influence. Conversely, less resilient leaders, who appear either emotionally unfulfilled or ambivalent concerning life paths, are unlikely to be emulated or well regarded.

Because resilient leaders are more confident in their ability to deal with failure, they may be more likely to encourage employees to take risks and to pursue innovative and creative activities. For example, the intellectual stimulation dimension, which refers to leaders' ability to motivate followers to meet their potential, may be enhanced by leaders' resiliency. Moreover, because resilient individuals are said to have a more flexible repertoire of coping

responses available to them (Feldman & Gross, 2001), resilient leaders should be able to guide employees in coping with failure and setbacks. This flexibility may allow them to adaptively respond to their followers. For these reasons, we believe resilient leaders will demonstrate individualized consideration by tailoring their leadership style to the specifics of the situation and the individual. We advance the following hypothesis:

Hypothesis 1: Leaders with greater positive psychological traits of hope, optimism, and resiliency are rated as more transformational leaders.

Transformational Leadership as a Mediator

Although little research has focused on the influence of a leader on group or organizational processes and outcomes (Conger, 1999), studies that have examined the relationship between transformational leadership and organizational outcomes have been generally supportive. As discussed above, transformational leadership has been shown to be positively related to firm performance and other measures of organization-level effectiveness (Judge & Piccolo, 2004).

Building on these works, and consistent with recent suggestions to develop process models linking traits to work outcomes (Barrick, Mount, & Judge, 2001), we propose that transformational leadership mediates the relationship between positive psychological traits and firm performance. We suggest that positive psychological traits of hope, optimism, and resiliency jointly have a positive, indirect effect on firm performance through the leader's tendency to engage in transformational leadership behaviors. We believe that transformational leadership serves as a mediator because transformational leaders require the "pathways" and "agency" (the two key components of hope), the general state of vigor and enthusiasm (key components of optimism), and the ability to rebound from setbacks (resiliency) to create and pursue high expectations for themselves, their followers, and the organization to which they belong. We suggest that the leaders' personality transmits effects on firm performance by way of personality's influence on their behavior, employing a personality-behavior-performance framework (e.g., Stewart, Fulmer, & Barrick, 2005). Our second prediction follows from these considerations.

Hypothesis 2: Transformational leadership mediates the relationship between leader positive psychological traits and firm performance.

Transformational Leadership and Firm Performance in Start-Up and Established Firms

As suggested above, both positive psychological traits and transformational leadership are believed to have the greatest potential for producing positive outcomes such as performance when conditions are less favorable and more trying (Bass, 1998; Luthans & Youssef, 2007). Therefore, we consider whether there are differences in the relationship between transformational leadership and firm performance for start-up firms and established firms in the high-technology sector. Specifically, we propose that transformational leadership is more

strongly related to firm performance in start-up firms than in established firms because, as studies have shown (e.g., Waldman, Ramirez, House, & Puranam, 2001), the success of start-up firms is more uncertain and challenging than that of more established firms. In addition, research by Miller and Toulouse (1986) found that the relationships between CEO personality and organizational characteristics were stronger in small firms and in dynamic environments when compared to larger, more static environments. More specific to leadership style, Bass, Avolio, Jung, and Berson (2003) found that transformational leadership was more effective in dynamic and complex or turbulent environments. Similarly, Lim and Ployhart (2004) found that transformational leaders were more effective in maximum performance contexts than in typical performance contexts.

In addition to empirical support, the idea that transformational leadership has more potential to affect performance in start-up firms than in more established ones has theoretical support. According to Bass (1998) transformational leaders are likely to find more ready acceptance in organizations in which there is receptivity to change and a propensity for risk taking, such is often found in more newly established firms. In contrast, in organizations bound by traditions, rules, and sanctions, leaders who question the status quo may be viewed as unsettling and therefore less appropriate for the stability and continuity of the existing structure (Bass, 1998). Thus, firms open to creative suggestions, innovation, and risk taking (e.g., start-up firms) may be more conducive to transformational leadership than organizations that are structured, stable, and orderly (e.g., established firms). On the basis of this theoretical reasoning, we propose the following hypothesis:

Hypothesis 3: The relationship between transformational leadership and firm performance is stronger for start-up firms than for established firms.

Method

Sample

The sample was initially composed of 121 CEOs of technology firms located in the southwestern United States. The CEOs were members of a consortium of technology firms whose leaders come together twice a year to discuss current industry trends and challenges. Participation in the study was voluntary. However, 16 CEOs did not complete all the measures and were excluded in the final sample for this study. This translated into an effective response rate of 87%.

CEOs were separated into two groups: (a) 49 start-up firm leaders and (b) 56 established firm leaders. In start-up firms, CEOs' average age was 42.60 years. We distinguished firms as start-up or established using several criteria consistent with previous research, including their size, age, and sales (e.g., Baum, Calabrese, & Silverman, 2000). Start-up firms were defined as meeting the following criteria: (a) in product development mode, (b) in business less than 5 years, (c) no public offering, (d) annual sales of less than \$1 million, and (e) fewer than 100 employees. Established firms were defined as those with more than 100 employees, existing for more than 5 years, and having sales in excess of \$3 million. They had worked, on average, 3.6 years with the company, ranging from 6 months to 5 years. In all, 79% were males,

and 86% were White. In the established firms, CEOs' average age was 46.90 years. Their average tenure at the company was 7.80 years, ranging from 3 to 11 years. Of these, 84% were male, and 81% were White.

Procedure

Three sources of data were included in the present study. First, target leaders completed the measures of positive psychological traits (i.e., hope, optimism, and resiliency). Second, followers of each target leader were randomly selected and asked to describe the transformational leadership behavior of their leader. On average, each leader had three followers who rated his or her behavior. Ratings were aggregated across raters. Third, firm performance data were gathered from company records and placed in a database that was maintained by the technology consortium. These performance data were obtained at three points in time: (a) during the same year as survey administration, (b) 1 year after the administration of the survey measures, and (c) 2 years after the administration of the survey measures. However, performance data at Time 1 were used as a control. The test-retest reliability of performance measures at Time 2 and Time 3 was .95 and across the three points in time was .92.

Surveys were distributed to the leaders by the first author during the break-out sessions at the technology consortium. All respondents completed the survey and were assured by the investigators that their responses would remain confidential. Confidential surveys were also distributed to followers via a Web-based survey with the following instruction:

Your CEO has enlisted the help of an outside research team to find out how you perceive his/her leadership style. As such, we would like your help in completing a short survey. All information gathered in this assessment will be kept confidential. The responses you give will be seen only by the research team and not by your CEO or any member of your organization. We will be giving the CEO only an aggregated summary of the results which reveal how his/her leadership is currently perceived by other members of the organization. As such, please answer the questions as honestly as possible.

The CEO's administrative assistants independently provided us with e-mail addresses for up to four followers with whom the CEO interacted on a weekly basis. Each CEO had a minimum of two followers responding, and most had three. The result was 315 follower responses, representing an overall response rate of 89%. The response rate was relatively high because of the personal e-mail sent by each CEO, which strongly encouraged participation.

Measures

Positive psychological traits. We measured hope ($\alpha = .76$) using the eight-item Trait Hope Scale developed by Snyder et al. (1991). Responses were recorded on an 8-point Likert-type scale (1 = *definitely false* to 8 = *definitely true*). A sample item is "I meet the goals I set for myself." The scale has been found to be both temporally stable (average test-retest coefficient of .85) and internally consistent ($\alpha = .74$ to .88). In addition, the hope scale has demonstrated

convergent validity in terms of its relationships with other related measures (Snyder et al., 1991) and discriminant utility in predicting goal-related outcomes beyond variances attributable to other measures (Snyder, 1994).

Optimism was measured using a six-item scale ($\alpha = .71$) drawn from the Life Orientation Test by Scheier and Carver (1985), anchored on a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). Sample items include "I always look on the bright side of things" and "I'm optimistic about what will happen to me in the future."

Resiliency was measured using the six-item Psychological Resilience Scale ($\alpha = .82$; Wagnild & Young, 1993), which participants responded to using a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). Sample items include "When I have a setback at work, I have trouble recovering from it and moving on" (reverse scored) and "I usually take stressful things at work in stride."

Because we argue that hope, optimism, and resiliency converge to form a higher-order factor positive psychological trait, we conducted two separate confirmatory factor analyses (CFAs) to examine the plausibility of this higher-order factor using AMOS maximum likelihood procedure (Arbuckle & Wothke, 1999). In the first CFA, we directly loaded items on one single positive psychological trait factor, $\chi^2(43, N = 105) = 233.89, df = 110, p < .01$; comparative fit index (CFI) = .87, root mean square error of approximation (RMSEA) = .10. In the second CFA (i.e., higher-order CFA), items were loaded on their respective factors (e.g., hope, optimism, resiliency) and then linked to a higher-order latent factor psychological positive trait factor, $\chi^2(46, N = 105) = 175.42, df = 107, p < .01$; CFI = .95, RMSEA = .06. These fit statistics represent a dramatic improvement over the single one-factor model and suggest that the higher-order factor model explains the relationship among the three lower level measures of hope, optimism, and resiliency.

Transformational leadership. We used 20 items from the Multifactor Leadership Questionnaire (MLQ) Form 5X Short (Bass & Avolio, 2004) to measure transformational leadership. The MLQ Transformational Leadership scale is composed of four components: attributed idealized influence ($\alpha = .81$), behavioral idealized influence ($\alpha = .82$), intellectual stimulation ($\alpha = .88$), and individualized consideration ($\alpha = .91$), with a composite reliability of .84 for the combined sample. Consistent with past research, we treated these dimensions as indicators of transformational leadership (e.g., Antonakis, Avolio, & Sivasubramaniam, 2003). Ratings were completed on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*frequently, if not always*). A sample item is "Articulates a compelling vision of the future."

Consistent with our level of theorizing (also see Bono & Judge, 2003; Shamir, Zakay, Breinin, & Popper, 1998; Wang & Walumbwa, 2007), we measured transformational leadership as aggregate of individual-level ratings. To justify the aggregation of individual ratings of transformational leadership, we examined within-group agreement (James, Demaree, & Wolf, 1993) and between-group differences (Bliese, 2000). The average within-group agreement (r_{wg}) was .89, ranging from .76 to .97. The intraclass correlation coefficient (ICC(1)) was .09 and ICC(1) .81. The F test for the group effect was also significant, $F(104, 210) = 1.65, p < .001$, providing further support for aggregating individual-level ratings.

Firm performance. The measure of firm performance was performance-to-plan. Performance-to-plan represents the degree to which an executive achieved targeted net income goals for the year, calculated in terms of the percentage of net income goals met. Data were collected for each year between 2004 and 2006 during which the targeted CEO was in place. In the present study, the percentage of targeted goals attained by CEOs ranged from 31% to 116%. Generally speaking, the CEOs set these goals. However, these goals were not set independently. One of the services provided by consortium is to provide peer-oriented guidance on how to set appropriate targets. In particular, the consortium provided the CEO's with a comparative analysis of their goals to similar firms. Therefore, the CEOs had access to information and assistance in setting reasonable goals for themselves. Once the performance-to-plan goals were vetted and set, we obtained the data directly from the consortium database.

Analytic Approach

We used a two-step process structural equation modeling (SEM) to test our hypotheses with AMOS maximum likelihood procedure (Arbuckle & Wothke, 1999). In the first step, we used two tests to verify the distinctiveness of positive psychological trait from transformational leadership. In the second step, we used a model comparison procedure to evaluate different proposed structural models.

To further differentiate positive psychological trait from transformational leadership, we compared the correlations of each of these variables with firm performance following Cohen and Cohen (1983) test of the differences between two Pearson (r) correlations from the same sample. Support for the distinctiveness of positive psychological trait from transformational leadership would be obtained if the two correlations are unequal.

In the final test of differentiation, we performed a hierarchical regression analysis to examine the contribution of transformational leadership on firm performance beyond what positive psychological trait offered. Law, Wong, and Mobley (1998) suggested that because latent models are defined in terms of the commonality among the dimensions, there has to be evidence that the dimensions are correlated to justify the summing of component dimensions into a single overall representation of those dimensions. In the present study, the average correlation coefficient among hope, optimism, and resiliency was .53, whereas the average correlation coefficient among the five factors of transformational leadership was .87, suggesting that the measures are empirically related. Thus, we felt it was appropriate to sum up the dimensions of each construct into a single overall representation of positive psychological trait and transformational leadership, respectively. To conduct the analysis, we first entered positive psychological trait into a regression equation model predicting firm performance, followed by transformational leadership in Step 2. If the change in R^2 after including transformational leadership into the regression equation in Step 2 were significant, it would imply that transformational leadership explained additional variance in firm performance beyond what the positive psychological trait explained, thus supporting its distinctiveness.

Results

We first examined a dimensional level CFA including all the variables in the study (e.g., positive psychological trait, transformational leadership, and firm performance) latent variables. We used multiple indicators to represent the latent variables by averaging items for each subscale (in the case of positive psychological trait and transformational leadership). For example, for positive psychological trait, we used hope, optimism, and resiliency as its indicators. For transformational leadership, we used the five dimensions as its indicators. And for firm performance, we used the performance measures for Year 2 and Year 3 as its indicators. The fit statistics for this three-factor model were as follows: $\chi^2(23, N = 105) = 41.94$, $df = 32$, $p < .05$; CFA = .99, RMSEA = .05. Against this model, we tested an alternative two-factor model (Model 2) in which we merged positive psychological trait with transformational leadership factors to form a single factor and firm performance as another factor, $\chi^2(21, N = 105) = 91.26$, $df = 34$, $p < .05$; $\Delta\chi^2 = 49.22$; CFA = .94, RMSEA = .12. The results indicate that the three-factor model fit our data best. The difference in chi-square between the three- and two-factor model is 49.32, which is distributed as chi-square with $(34 - 32 = 2)$ degrees of freedom. The fact that this value is statistically significant further suggests that the three-factor model is significantly better than the second-order model. Thus, our results provide empirical evidence of the distinctiveness of positive psychological trait, transformational leadership, and firm performance.

Next, we compared the correlations of positive psychological trait and transformational leadership with firm performance following the Cohen and Cohen (1983) test of the differences between two Pearson (r) correlations from the same sample. The t -statistic for the difference between positive psychological trait performance and transformational leadership performance was 2.81 ($df = 102$, $p < .01$). In the final test of differentiation between positive psychological trait and transformational leadership, results showed that the change in variance explained (ΔR^2) when transformational was introduced into the equation after positive psychological trait in predicting firm performance was .39 ($p < .001$). We thus concluded that positive psychological trait was distinct from transformational leadership, as measured by MLQ Form 5X Short.

Descriptive Statistics

Descriptive statistics and zero-order correlations among the study variables are provided in Table 1.

Tests of Hypotheses

We followed the procedure suggested by Holmbeck (1997) to test our hypotheses, again using the same indicators as above. According to Holmbeck, a model is first run to test the direct effects of the independent variable (e.g., positive psychological trait) on the dependent variable (firm performance). If the resulting path coefficient is significant, then a second

Table 1
Means, Standard Deviations, and Correlations

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Hope	7.50	0.94	.76				
2. Optimism	4.02	0.53	.42**	.71			
3. Resiliency	4.28	0.65	.60**	.56**	.82		
4. Transformational leadership	3.42	0.65	.41**	.18*	.37**	.84	
5. Firm performance	0.00	0.87	.42**	.19*	.28**	.54**	—

* $p < .05$, two-tailed. ** $p < .01$, two-tailed.

model is tested, linking the independent variable to the mediator (e.g., transformational leadership) and the mediator to the dependent variable. If these two paths are also significant, then a χ^2 value of this model is obtained and a third model is run. The third model is similar to a second model, except that the direct effect path is added back into the model. A χ^2 difference test is then calculated between the χ^2 of this model and the χ^2 value of the second model. A nonsignificant difference between these two models suggests that the complete mediation is present. Figure 1 shows the results, and we discuss below each prediction in more detail. Where relevant, we also explore alternative models.

Figure 1 (Model 1) indicates that the path from positive psychological trait to firm performance is positive and significant ($\beta = .33, p < .01$), controlling for previous performance. Of course, this must be the case if transformational leadership mediates the impact of positive psychological trait on firm performance, as suggested by Hypothesis 2. The fit indices for this structural model provided a good fit to the data, $\chi^2(13, N = 105) = 20.70, df = 8, p < .01$; CFI = .97, RMSEA = .06.

Hypothesis 1 suggested that positive psychological trait would be positively related to transformational leadership behavior. As shown in Figure 1 (Model 2), results reveal that the path from positive psychological trait to transformational leadership was positive and significant ($\beta = .50, p < .01$), providing support for Hypothesis 1. The fit indices for this structural model provided a good fit to the data, $\chi^2(24, N = 105) = 57.33, df = 42, p < .01$; CFI = .99, RMSEA = .04. The standardized factor loadings for all the indicators were significant ($p < .001$), ranging from .67 to .97.

Hypothesis 2 articulated that transformational leadership would mediate the relationship between positive psychological trait and firm performance. This hypothesis was tested through a series of nested model comparisons. Given that model modification or respecification is a rather controversial issue in the structural equation literature, we did not correlate any of the error terms in our structural equation analyses. Glomb, Munson, Hulin, Bergman, and Drasgow (1999) suggested that sometimes sacrificing fit is worthwhile given the goal of increasing information and reducing uncertainty with reasonable parsimony models of the phenomena under study. Table 2 provides a summary of the models and results.

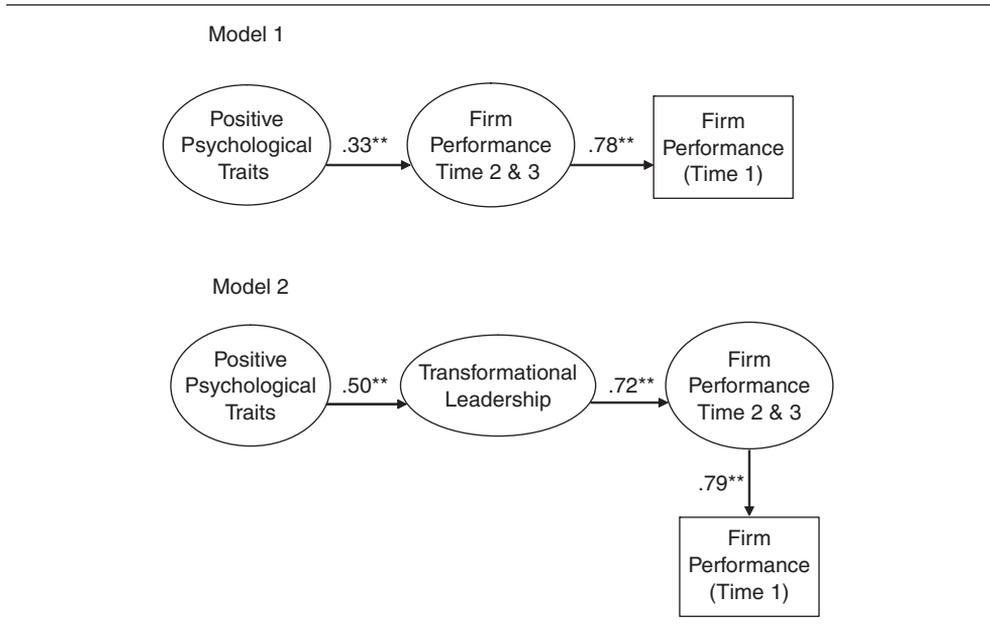
Model 1 represents a fully mediated model. We specified paths from positive psychological trait to transformational leadership and from transformational leadership to firm performance.

Table 2
Comparison of Structural Equation Modes

Model and Structure	χ^2	<i>df</i>	$\Delta\chi^2$	<i>p</i> Value	CFI	RMSEA
1: PPT → TFL → performance ^a	57.33	42		.05	.99	.04
2: PPT → TFL → performance PPT → performance	54.62	41	2.71	.05	.99	.04
3: TFL → PPT → performance	104.67	42		.05	.95	.12
4: PPT → performance TFL → performance	56.62	41		.05	.97	.05

Note: CFI = comparative fit index; RMSEA = root mean square error of approximation; PPT = positive psychological traits; TFL = transformational leadership. *n* = 105 organizations. Firm performance at Time 1 is included as a control variable in all the analyses.
a. Fully mediated model.

Figure 1
Hypothesized Relationships



Note: Firm performance at Time 1 is included as a control variable.
***p* < .001, two-tailed.

This model does not have a direct path from positive psychological trait to firm performance. Table 2 shows that this model demonstrated a good fit for the data ($\chi^2 = 57.33$, *df* = 42, *p* < .05; CFA = .99, RMSEA = .04).

Against this fully mediated model, we tested a model in which we added a direct path from psychological trait to firm performance ($\chi^2 = 54.84$, $df = 41$, $p < .05$; $\Delta\chi^2 = 2.49$; CFI = .98; $\Delta\chi^2 = 2.71$; RMSEA = .05). Hypothesis 2 would receive support if the fit of the model would not be improved by the addition of direct path from positive psychological trait to firm performance. Table 2 shows that the addition of this path did not improve model fit, and the chi-square difference between our fully mediated model (Model 1) and Model 2 was not significant. Under rules of model parsimony, the fully mediated model (Model 1) better fit our data. Thus, we concluded that transformational leadership fully mediated the relationship between positive psychological trait and firm performance.

Models 3 and 4 are alternative models that are not nested within the above two models but are used to assess the effects of changing the order of constructs. In Model 3, we modeled the influence of transformational leadership on firm performance as mediated by positive psychological trait. The fit indices of this model ($\chi^2 = 104.67$, $df = 42$, $p < .05$; CFI = .95, RMSEA = .12) were poorer compared to the fully mediated model (Model 1). In Model 4, we tested a model in which positive psychological trait and transformational leadership directly influenced firm performance. This model had a good fit for the data ($\chi^2 = 54.62$, $df = 41$, $p < .05$; CFI = .98, RMSEA = .05). However, the path from positive psychological trait to firm performance was not significant. Taken together, these results suggest that the fully mediated model (Model 1) best represented our data.

Hypothesis 3 put forth that transformational leadership would have a greater impact on firm performance for start-up firms than for established firms. We used two strategies to test this hypothesis. First, we examined the extent to which the hypothesized relationship provided equally good fit to the data across the two firms (start-up vs. established firms) following Byrne's (2001) multigroup approach. We first tested separate baseline models for each firm, and then nested models were evaluated as part of each multigroup analysis: (a) unrestricted model with no equality constraints (Model 1) and (b) a restricted model with factor loadings, factor variance, and the covariances constrained equal (invariant) between firms (Model 2). We then assessed the change (Δ) in chi-square. A nonsignificant chi-square difference would provide support for generalizability of the model across firms.

The results suggest that the hypothesized model had adequate fit in both firms (start-up firms baseline model $\chi^2 = 50.43$, $df = 19$; CFI = .94, RMSEA = .08; established firms baseline model $\chi^2 = 15.88$, $df = 19$; CFI = .99, RMSEA = .02). However, a closer look at fit statistics suggests that the model performed better in established firms, as indicated by lower chi-square and the RMSEA. The fit statistics of the unrestricted (Model 1) and restricted (Model 2) models were as follows: unrestricted ($\chi^2 = 76.38$, $df = 38$; CFI = .97, RMSEA = .06) and restricted ($\chi^2 = 83.47$, $df = 46$; CFI = .97, RMSEA = .06). The comparison of the chi-square values yielded a nonsignificant chi-square difference (a χ^2 difference value of 7.09 with 8 degrees of freedom), suggesting that the factor loadings, variances, and covariance are invariant across firms.

Next, we performed a Fisher's z test to assess if there were significant differences between the structural parameters of transformational leadership in the start-up firms compared to established firms. Results of the significance test (Fisher's z test) revealed that transformational leadership had a greater effect on start-up firms (unstandardized coefficient = 0.87, $SE = 0.11$, $p < .01$) than on established firms (unstandardized coefficient = 0.49, $SE = 0.13$, $p < .01$). The

significant difference between the structural parameters of start-up firms and established firms was .38 (z value = 2.23, $p < .05$). Hypothesis 3 is supported by our data.

Discussion

The aim of the present study was to examine the form and strength of the relationship among leaders' positive psychological traits, their subordinate-rated transformational leadership behaviors, and firm performance in start-up and established firms. We found that more hopeful, optimistic, and resilient leaders from these firms were rated as more transformational. In addition, our results supported our contention that transformational leadership is the means by which CEOs' positive psychological traits transmit effects on firm performance.

We found that transformational leadership had a stronger, more positive effect on firm performance in start-up than in established firm contexts. However, it is important to point out that the correlation between transformational leadership and firm performance in start-up ($r = .59$) and established ($r = .51$) firms is relatively high, especially given that the data are not same source. Although these correlations seem relatively high, they are significantly different. Previous research has reported similar high correlations between transformational leadership and performance. For example, Lim and Ployhart (2004) reported a correlation (r) of .60 between transformational leadership and team performance in maximum contexts.

Theoretical Contributions

The results of the present study have several theoretical implications. First, to our knowledge, this is the first study to establish a relationship between positive psychological traits—conceptualized in this study as a higher-order factor of hope, optimism, and resiliency—and transformational leader behaviors. In fact, the standardized path coefficient for the positive psychological traits examined in this study and subordinate-rated transformational leadership was .52, a stronger relationship than often seen in studies examining trait leadership effects. Consistent with the urging of Bono and Judge (2004), it appears that narrower and conceptually linked traits, such as hope, optimism, and resiliency, hold significant promise for understanding the roots of transformational leader behaviors.

In addition, this study helps to establish a process model of positive psychological traits, transformational leadership, and firm performance while taking into consideration the role of context. Scholars examining the role of personality in organizations have argued that research on this topic should examine the process by which traits relate to behaviors and outcomes and take into consideration the effects of situational factors (e.g., Barrick et al., 2001). Our finding that transformational leader behaviors mediate the relationship between firm leaders' positive psychological traits and their firm's performance helps to establish how leaders' traits affect organizational outcomes through their behaviors. In addition, because this study examines the moderating effect of a contextual factor, namely, whether the leader's firm was a start-up firm or an established firm, our findings speak to the need to simultaneously consider both person and situational factors when studying leadership. Our findings extend previous leadership research by suggesting that future research should consider

contextual variables when testing the impact of transformational leadership on organizational performance (Antonakis et al., 2003).

Last, the finding that leaders' positive psychological traits indirectly affect organizational performance has implications for the nascent fields of positive organizational scholarship and positive organizational behavior. Scholars of positive organizational behavior (Luthans & Youssef, 2007) and positive organizational scholarship (Cameron, Dutton, & Quinn, 2003) have argued that the positive psychological capacities of employees have the potential to enrich organizations by increasing individual and organizational effectiveness. Our findings suggest that transformational leadership is one such potential mechanism through which a core positive psychological trait can impact firm performance.

Limitations and Future Research Directions

There are some limitations of this study. First, we predicted that the CEOs' transformational leadership would be directly related to firm performance. Although we based our model on other conceptual models of transformational leadership that have also considered the direct effects of transformational leadership on firm performance, it could be argued that an intervening variable, such as subordinates' work effort or management team performance, should be considered. Future research that examines similar relationships with lower-level managers might consider other outcomes, such as team-level outcomes or business-unit performance.

Second, the present study examined the effects of the positive psychological traits of hope, optimism, and resiliency on transformational leadership and firm performance within the context of only one industry—technology firms. We do not know the extent to which these results generalize to other industries. However, our finding that transformational leadership had differential effects in technology start-up firms than in established firms would likely be stronger when examining other or multiple industries. Because the technology industry is arguably one of the more volatile and rapidly changing industries, even established firms in this industry are likely in less stable environments than are established firms in other industries. Therefore, it follows that, if anything, the present study underestimates the potential for transformational leadership to have differential effects in newer versus more established firms.

Third, we measured firm performance by considering the extent to which the firms met their targeted performance levels. As pointed out by one of the reviewers, other, more objective measures of performance, such as net income, may also be useful to consider. Although we controlled for past performance, we cannot rule out the possibility that past performance influenced the goal levels set by the CEOs. However, this would likely disattenuate—not augment—the effect sizes found in this study. Future research using different performance measures is needed to further extend these findings.

Last, although we compared two models using SEM, alternate, equivalent models may fit the data equally as well. This statistical method offers no guarantees that other relationships among the study variables might not be feasible. For example, rather than being an outcome, firm performance might influence how hopeful, optimistic, and resilient the firm's leader is. However, three factors argue against this possibility. First, we measured firm performance while and after collecting data on the leader's hopefulness, optimism, and resiliency. Second,

we conceptualized and measured hope, optimism, and resiliency as traits, rather than states, because traits are considered more enduring and stable than are states. The measures of traits hope, optimism, and resiliency used in the present study have been shown to have satisfactory test–retest reliability in numerous other studies (e.g., Peterson & Luthans, 2003; Snyder et al., 1991). Last, research examining the issue of temporal precedence of related concepts has found that variables such as hope, optimism, and resiliency both precede and result in successful work and nonwork outcomes (Lyubomirsky, King, & Diener, 2005).

Practical Implications

The results of the present study suggest that managers and leaders should seek to cultivate positive psychological capacities such as hope and optimism in themselves and possibly in others. Furthermore, although we assessed hope, optimism, and resiliency as traits rather than states, some research has suggested that these traits are alterable with significant interventions—people can become more hopeful, optimistic, and resilient (e.g., McDermott & Snyder, 1999; Snyder, 2000). The potential malleability of hope, optimism, and resiliency means that companies may be able to improve their performance by increasing the hope, optimism, and resiliency of their leaders. In fact, several researchers have developed guidelines for enhancing hope, optimism, and resiliency (Luthans et al., 2005; Snyder, 2000).

In addition, our study suggests that companies that have the most turbulent and unknown futures are those that may have the most to gain from leadership development. This is somewhat paradoxical given that the uncertainty and volatility of these firms may allow them to invest less in programs to enhance their leaders' skills. However, we should note that although the relationship between transformational leadership and firm performance was not as great in established firms, the relationship was still statistically significant and of a non-trivial magnitude. Although we did not assess or evaluate the effects of leadership development programs in this study, such programs, when grounded in research, can affect important outcomes for companies. Taken together, it seems that both established and more newly created firms may be able to improve their performance by seeking to increase the transformational leadership behaviors of their leaders.

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