

2011

A Tale of Two Paradigms: The Impact of Psychological Capital and Reinforcing Feedback on Problem Solving and Innovation

Fred Luthans

University of Nebraska-Lincoln, fluthans1@unl.edu

Carolyn M. Youssef

Bellevue University, carolyn.youssef@bellevue.edu

Shannon L. Rawski

University of Arkansas, rawskis@uwosh.edu

Follow this and additional works at: <http://digitalcommons.unl.edu/managementfacpub>



Part of the [Business Administration, Management, and Operations Commons](#), [Organizational Behavior and Theory Commons](#), and the [Performance Management Commons](#)

Luthans, Fred; Youssef, Carolyn M.; and Rawski, Shannon L., "A Tale of Two Paradigms: The Impact of Psychological Capital and Reinforcing Feedback on Problem Solving and Innovation" (2011). *Management Department Faculty Publications*. 130.
<http://digitalcommons.unl.edu/managementfacpub/130>

This Article is brought to you for free and open access by the Management Department at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Management Department Faculty Publications by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.



A Tale of Two Paradigms: The Impact of Psychological Capital and Reinforcing Feedback on Problem Solving and Innovation

Fred Luthans,¹ Carolyn M. Youssef,² and Shannon L. Rawski³

1 University of Nebraska–Lincoln

2 Bellevue University

3 University of Arkansas

Corresponding author — F. Luthans, Department of Management,
University of Nebraska–Lincoln, Lincoln, NE 68588-0491; email fluthans1@unl.edu

Abstract

This study drew from two distinct paradigms: the social cognitively based emerging field of positive organizational behavior or POB and the more established behaviorally based area of organizational behavior modification or OB Mod. The intent was to show that both can contribute to complex challenges facing today's organizations. Using a quasi-experimental research design (N = 1,526 working adults), in general both the recently recognized core construct of psychological capital (representing POB) and reinforcing feedback (representing OB Mod), especially when partially mediated through a mastery-oriented mindset, were positively related to problem solving performance, reported innovation, and subsequent psychological capital. The implications for theoretical understanding and practice conclude the article.

Keywords: psychological capital, reinforcing feedback, organizational behavior modification, positive organizational behavior, problem solving, innovation

Managing employee behavior has always been at the forefront of organizational research and practice. Behavioral management and modification have been pursued in psychological research for almost a century (Bandura,

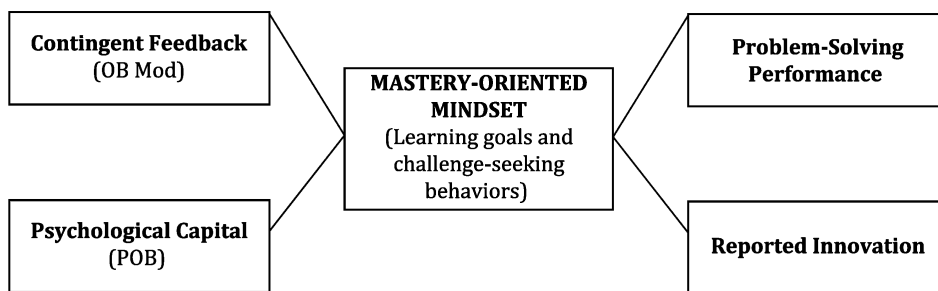


Figure 1. An integrated positivity model of two paradigms for problem solving and innovation.

1969; Pavlov, 1927; Skinner, 1938; Thorndike, 1913). Applied to organizational settings, Luthans (1973) developed and refined this behavioral paradigm into a five-step model of organizational behavior modification, or simply called OB Mod (Luthans & Kreitner, 1975, 1985). This OB Mod model provided a useful and effective framework for both research and application in order to identify, measure, analyze, contingently intervene in, and evaluate employees' performance-related behaviors. Research on this model in a wide range of organizational settings has clearly demonstrated a significant impact on performance improvement (See Stajkovic & Luthans, 1997 for a comprehensive review and meta-analysis and also see published studies over the years such as Luthans, Fox, & Davis, 1991; Luthans, Paul, & Baker, 1981; Luthans, Rhee, Luthans, & Avey, 2008; Peterson & Luthans, 2006; Stajkovic & Luthans, 2001, 2003).

In addition to this established research from the OB Mod approach coming from the behavioral paradigm, in this study we also draw from the emerging research in positive organizational behavior (POB) mainly coming from a distinctively different social cognitive paradigm (Luthans, 2002a, 2002b; Luthans & Avolio, 2009; Luthans & Youssef, 2007; Wright, 2003). Specifically, using positivity as the commonality and unifying theme in both paradigms, our purpose is to first develop theory-driven hypotheses and then empirically test through a quasi-experimental research design the impact of positive psychological capital or simply PsyCap (drawn from POB, see Luthans & Youssef, 2004; Luthans, Youssef, & Avolio, 2007) and positive contingent feedback (drawn from OB Mod) on employee problem solving performance, reported innovation, and subsequent positivity (i.e., PsyCap). Furthermore, PsyCap and contingent feedback drawn from their respective paradigms are conceptualized and integrated into an overall positive model shown in Figure 1. As shown, the PsyCap serves as a cueing mechanism, and the feedback a reinforcing mechanism for a unique mediating process of a mastery-oriented mindset, which in turn facilitates problem solving and reported innovation. We also proposed that these mechanisms may lead to an upward spiral of subsequent positivity.

Positive Organizational Behavior and Psychological Capital

Using the field of positive psychology (Seligman & Csikszentmihalyi, 2000; Snyder & Lopez, 2002) as a point of departure for application to the workplace, Luthans coined the term *positive organizational behavior*, or simply POB, and defined this new paradigm in OB as “the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today’s workplace” (Luthans, 2002b, p. 59). Emerging out of this field of POB has been what Luthans and colleagues have termed psychological capital, or PsyCap. This PsyCap was conceptualized as going beyond human capital (see Luthans & Youssef, 2004), and for a positive psychological resource to be included, it must be based on theory and research, have a valid measure, be open to development (i.e., state-like rather than trait-like), and have performance impact (Luthans, 2002a; Luthans, Youssef & Avolio, 2007). The positive psychological constructs of efficacy, optimism, hope, and resilience were determined to best meet the inclusion criteria, and the resulting multidimensional construct of PsyCap was defined as “an individual’s positive psychological state of development characterized by (a) having confidence (efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (b) making a positive attribution (optimism) about succeeding now and in the future; (c) persevering toward goals, and when necessary, redirecting paths to goals (hope) in order to succeed; and (d) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success” (Luthans, Youssef, & Avolio, 2007, p. 3).

PsyCap has been theoretically (Luthans, Youssef & Avolio, 2007) and empirically (Luthans, Avolio, Avey & Norman, 2007) supported as a second-order, core construct, meaning that PsyCap as a whole accounts for more variance in important work outcomes than each of its constituent positive psychological resources of efficacy, hope, optimism, and resiliency. A recent meta-analysis indicates that this PsyCap has a positive relationship with desirable employee attitudes, behaviors, and performance (Avey, Reichard, Luthans & Mhatre, 2011). Specifically, over the past few years, PsyCap has been shown to be developable in employees (Luthans, Avey, Avolio & Peterson, 2010; Luthans, Avey & Patera, 2008) and to cause performance (Luthans et al., 2010; Peterson, Luthans, Avolio, Walumbwa & Zhang, 2011). Further, PsyCap has been found to predict unique variance in important employee attitudes and behaviors over and above their demographics, core-self evaluations, personality traits, and person-organization and person-job fit (Avey, Luthans & Youssef, 2010). There is also a growing number of studies refining and expanding the positive impact of PsyCap on outcomes such as stress (Avey, Luthans & Jensen, 2009), well-being (Avey,

Luthans, Smith & Palmer, 2010), team effectiveness (Walumbwa, Luthans, Avey & Oke, 2011), and organizational change (Avey, Wernsing & Luthans, 2008). However, missing from this rapidly expanding research literature is the impact that PsyCap may have on problem-solving and innovation, and the role that PsyCap may have when integrated with OB Mod in positively impacting these complex areas of problem solving and innovation.

Positivity as an Antecedent, Cueing Mechanism

According to positive psychologist Barbara Fredrickson's (1998, 2001, 2009) widely recognized broaden-and-build theory, positivity and negativity affect people in different ways. Negativity leads people to respond in particular, narrow action tendencies such as the fight/flight response (Frijda, 1986). Positivity, on the other hand, broadens thought-action tendencies, which refer to both physical action as well as cognitive action (Fredrickson & Losada, 2005). Due to this positivity induced broadening of thought-action tendencies, an individual's physical, intellectual, social, and psychological resources are built up, and these new resources become available to the individual long after the initial positive experience occurs (Fredrickson, 1998). In other words, positivity allows a person to build up psychological resources, such as those found in PsyCap, that we propose can be drawn upon to help solve problems and exhibit innovation. Importantly, in addition, we propose that such positivity may facilitate employees' receptiveness to OB Mod reinforcers such as contingent performance feedback (discussed next).

When problems arise, most people react to the negativity of the situation, relying on narrow behavioral scripts and focusing on narrow details of the situation (e.g., see the classic work by Easterbrook, 1959). However, for those who regularly experience positivity and have built-up their psychological resources (i.e., PsyCap), Fredrickson's broaden-and-build theory would predict that they view problems from a broader perspective and are able to be more innovative and produce better and more solutions due to a heightened ability to integrate thoughts and ideas (Fredrickson, 1998; Isen, 1987; Isen & Daubman, 1984).

In addition to the overall impact of positivity, we propose that PsyCap and its constituent positive resources of efficacy, optimism, hope, and resilience are also likely to be related to innovation and the quality and quantity of problem solving in more specific ways. Underlying the core construct of PsyCap is a cognitive, agentic capacity representing "one's positive appraisal of circumstances and probability for success based on motivated effort and perseverance" (Luthans, Avolio, et al., 2007, p. 550). For example, this agentic capacity can be manifested in terms of a broader range of hope pathways (e.g., see Snyder, 2000), which can be particularly relevant for innovatively developing a wider range of higher quality solutions when faced with obstacles. It can also

motivate the perseverance and ability to resiliently bounce back in reaction to setbacks (e.g., see Masten, 2001), which may be a necessary mindset for effective problem solving. A positive, optimistic outlook can facilitate this broadening effect on problem solving (e.g., see Seligman, 1998) and can heighten the desire for success and confidence that one has what it takes to develop the necessary range of action plans needed to solve a problem (Bandura, 1997). Thus, the following is hypothesized:

Hypothesis 1a: PsyCap is positively related to problem solving performance.

Hypothesis 1b: PsyCap is positively related to reported innovation.

Contingent Positive Feedback as a Reinforcing Mechanism

The antecedent, cueing impact of positivity in general, and the positive nature of PsyCap in particular, on problem-solving performance and reported innovation, can also be extrapolated to the positivity of the contingent performance feedback provided to the problem solver. However, we believe the time has come to go beyond just this antecedent positive cueing and even beyond the recognized reinforcing impact of contingent performance feedback as found in the OB Mod literature (Stajkovic & Luthans, 1997). Although the behavioral management literature recognizes there may be an optimal ratio of positive to negative in areas such as feedback to employees (e.g., Daniels recommends a 4:1 rule of positive reinforcement to criticism, 2000, p. 74), for this study we draw from the recently emerging research in positive psychology. More specifically, in work relationships, a positive-to-negative ratio of about 3:1 has been empirically found to be optimal, or a tipping point between flourishing and languishing in work relationships (Fredrickson, 2009, Chapter 7). In other words, employees' performance will likely dramatically differ, both qualitatively and quantitatively, not just based on how much positive feedback they receive, but possibly even more based on the ratio of positive to negative feedback they receive.

We test this differential notion by uniquely conceptualizing and operationalizing reinforcing feedback in terms of the relative positive-to-negative ratio, rather than just an absolute or linear amount of positive feedback. We propose, although positive contingent performance feedback is invaluable in and of itself (ala OB Mod), both as a positive antecedent, cueing mechanism, and as a reinforcer, a more positive than negative ratio of feedback can help problem solvers overcome the common human negativity bias (Baumeister, Bratslavsky, Finkenauer & Vohs, 2001). This more positive than negative ratio for feedback can reach an optimal positivity tipping point, leading to more effective problem-solving performance and reported innovation. Thus, the following is hypothesized:

Hypothesis 2a: A more positive than negative ratio of contingent performance feedback is positively related to problem-solving performance.

Hypothesis 2b: A more positive than negative ratio of contingent performance feedback is positively related to reported innovation.

A Mastery-Oriented Mindset as a Mediating Process

Mastery orientation refers to learning goals and behavioral patterns that are characterized by challenge seeking and persistence in the face of obstacles (Dweck, 1986; Dweck & Leggett, 1988; Mueller & Dweck, 1998). In addition to the direct contribution of PsyCap and a more positive than negative ratio of contingent performance feedback to problem-solving performance and reported innovation hypothesized above, we also propose an indirect relationship, mediated through a mastery-oriented mindset, for several reasons. First, cognitive states of positivity, such as those created through high PsyCap and a more positive than negative ratio of contingent performance feedback, can facilitate the building of psychological resources that allow employees to seek challenges and fulfill learning goals, i.e., a mastery oriented mindset, even when problems arise. Second, the underlying agentic cognitive component of PsyCap can yield favorable appraisals of the probability for success in unique situations. These positive appraisals in turn can provide the additional motivation necessary for the challenge-seeking characteristic of such a mastery orientation. Similarly, we propose that the informative content of feedback recognized in the OB Mod literature (see Stajkovic & Luthans, 1997) can be particularly relevant in building the motivation for mastery orientation. This assures the feedback recipient of having what it takes to be effective and successful.

Third, PsyCap's constituent capacities can individually and in concert contribute the necessary specific support for mastery orientation, such as confidence in one's abilities, optimistic future expectancies, hopeful thinking, and resilient perseverance. The social support dimension of more positive than negative ratio of contingent performance feedback can also mobilize similar cognitive, as well as affective and social, resources that are supportive of a mastery-oriented mindset. This social support communicates to the feedback recipients that others also have a vested interest in their success. Contrary to mastery orientation is what Dweck and colleagues refer to as "performance goals." Although sounding desirable, this is a helpless orientation characterized by a narrow focus on immediate expectations, avoiding challenges, and having low persistence in the face of adversity (Dweck, 1986; Dweck & Leggett, 1988; Mueller & Dweck, 1998). We propose that those with low PsyCap will likely have such a helpless orientation, because they would lack the confidence, willpower, waypower, perseverance, and positive expectancies

necessary to seek challenges. For example, lack of optimism has been particularly associated with helplessness (Seligman, 1998). Taken together, based on these three mechanisms, the following is hypothesized:

Hypothesis 3a: PsyCap is positively related to mastery orientation.

Hypothesis 3b: The more positive than negative ratio of contingent performance feedback is positively related to mastery orientation.

We also propose that those with mastery-oriented goals in turn will have higher problem-solving performance and reported innovation because these goals encourage them to seek challenges in order to master skills. This mastery process would likely motivate people to exhibit “out-of-the-box” thinking, curiosity, exploration, and experimentation leading to more effective problem-solving performance and reported innovation. On the other hand, Dweck’s performance goals, despite the positive connotation of the term, are likely to negatively contribute to people’s problem-solving performance and reported innovation, because such goals lead them to choose easy tasks and avoid failure. In other words, similar to positivity, mastery orientation may have a broadening effect, while performance orientation may have a narrowing effect. This is also in line with the existing support for the fundamental differences between the positive impact of “approach goals” and the negative impact of “avoidance goals” (Carver & Scheier, 1999; Elliot & Sheldon, 1997; Elliot, Sheldon & Church, 1997). Thus, the following is hypothesized:

Hypothesis 4a: Mastery orientation is positively related to problem solving performance.

Hypothesis 4b: Mastery orientation is positively related to reported innovation.

Closing the Positivity Loop: The Upward Spiral of Positivity

In addition to the hypothesized positive relationship of PsyCap, more positive than negative ratio of contingent performance feedback, and mastery-oriented mindset with problem-solving performance and reported innovation, we propose these three factors can also increase future positivity (i.e., operationally defined here as PsyCap), triggering an upward spiral of flourishing and thriving (Cameron, Dutton & Quinn, 2003). Several processes can trigger this upward positivity spiral. First, as a developmental, state-like resource, PsyCap can be built and nurtured over time through increased confidence, hope, optimism, and resiliency (Luthans, Youssef, & Avolio, 2007). Specifically, overall PsyCap and its facets can be developed through intentional activities that leverage personal mastery, vicarious learning, social support, physiological and psychological

arousal, goal setting, contingency planning, positive attributions, and effective coping and risk-management strategies (Luthans et al., 2010). These intentional activities can increase levels of positivity and well-being in general (Lyubomirsky, 2007), and we propose the resultant increased cognitive, agentic capacity can facilitate more positive appraisals of future circumstances and success expectancies. In other words, positivity can beget more positivity. This can be explained by recognized contagion (Barsade, 2002), spillover (Judge & Illies, 2004), and crossover effects (Bakker, Westman & Van Emmerik, 2009) and is also in line with the existing support for happiness as a process, rather than a destination (Diener & Oishi, 2005; Lyubomirsky, Sheldon, & Schkade, 2005).

Beyond self-evaluation, feedback can provide an external resource for both the additional cognitive informative content, as well as the social persuasion and support necessary for developing future positivity (PsyCap). Specifically, we propose the more positive than negative ratio of contingent performance feedback can move recipients to distinctively higher levels of positivity. Finally, mastery has been supported as a critical factor in developing efficacy (Bandura, 1997), an integral component of PsyCap. A mastery orientation would likely create the right medium for the development of efficacy in general, through challenge-seeking behavior and perseverance, leading to the development of efficacy, and PsyCap in general. Thus, the following is hypothesized.

Hypothesis 5a: PsyCap is positively related to future PsyCap.

Hypothesis 5b: More positive than negative ratio of contingent performance feedback is positively related to future PsyCap.

Hypothesis 5c: Mastery orientation is positively related to future PsyCap.

Method

Procedure

The sample for this study consisted of a broad cross-section of 1,526 employees who agreed to participate in a large Midwestern university sponsored research project. The initial e-mail to all those who volunteered had them provide their consent on the IRB form and contained a link to the Time 1 online data collection. Upon following the link, participants were asked to read a short (one page) case study problem and provide solutions. When the participants were done providing solutions to this case problem, they were asked to complete a short survey assessing their demographics, psychological capital, and reported innovation.

Approximately 24 to 48 hours after completing the Time 1 survey, participants were e-mailed predetermined (according to various positive to negative

ratios) but randomly assigned feedback regardless of how they performed on the case problem in Time 1. They were also given the link to the Time 2 survey, where they were asked to solve another one-page case study problem. Importantly, however, participants were asked to choose the level of difficulty of this second case. All were told that the first case was of medium difficulty, and they were now asked to choose another medium level case or an easier or more difficult one. However, the participants were all given the same case study at Time 2 regardless of their choice. PsyCap and innovation were also assessed at Time 2.

Sample Demographics

Participants were 57.3% female. The sample was 81.9% Caucasian/White, 2.6% African American, 2.0% Hispanic, 10.2% Asian, and 3.4% other. The mean age was 37.04 years ($SD=14.81$). As to industry, 10.7% worked in manufacturing, 52.0% in service, 15.4% worked in knowledge jobs, and 21.9% in other. The sample consisted of 65.8% full-time employees, 23.6% part-time employees, 4% seasonal workers, and 6.6% were currently unemployed. The mean job tenure was 10.35 years ($SD=10.74$). In total, the large sample was heterogeneous but representative of a broad range of jobs and career stages. Importantly, these demographics were controlled for in the analysis.

The Case Problems and Measures

The researchers plus two outside experts on the case method unanimously selected from a variety of alternatives a case study relevant to the modern scene that involved some personnel dynamics (i.e., interpersonal conflict) in the form of the transfer of a regional star performer from China to the home office in France. This served as the problem for participants to provide alternative solutions at Time 1. The second case study selected for Time 2 used the same selection group and met the same criteria. It involved Generation Y in the work force and contained the same underlying general theme of interpersonal conflict. Both these problem cases were adapted and paraphrased from a pool of case studies published in the *Harvard Business Review* (Erickson, Alsop, Nicholson, & Miller, 2009; Nohria, Tsang, Javidan, & Champy, 2009).

Positive Feedback

As indicated, in this study positive feedback was uniquely operationalized from a positive psychological perspective as the ratio of positive-to-negative comments received by each participant. This ratio was randomly varied for the

study participants regardless of how they performed and was measured as the percentage of positive to total comments. Each participant received a total of eight comments, ranging from all positive (100%) to all negative (0%). Examples of positive feedback comments were "This solution will work" and "This is a good answer." An example of a negative feedback comment was "Your solution would not be effective."

Mastery Orientation

Mastery orientation was operationalized as the participant's Time 2 choice of a difficult, medium, or easy problem. Those who chose a difficult case were determined to have a higher mastery orientation.

Psychological Capital

Psychological capital was measured at Time 1 and Time 2 using the PCQ-24 (see Luthans, Youssef, & Avolio, 2007 for the complete instrument and Luthans, Avolio, et al., 2007 for validation analysis). It utilized a 6-point Likert scale (1=*strongly disagree* to 6=*strongly agree*). A sample item was "At the present time, I am energetically pursuing my work goals." The Cronbach alpha for the measure of psychological capital in this study was .81 for both Time 1 and Time 2.

Performance Assessment

Performance was operationalized in three ways. There were two quality assessments of performance in solving the case studies and one quantity assessment of performance. Importantly, Time 1 performance measures on the case were used as control variables.

Quality Assessments of Solutions

Quality was assessed both objectively and subjectively. The objective measure of quality was operationalized as the average word count of all solutions produced by each participant. As word count is, of course, only a proxy for actual quality of solutions, we supplemented this objective measure with a subjective evaluation rating of quality. These evaluations rated the solutions for quality by three independent trained coders, blind to the study purpose and hypotheses. Coders assessed each solution using a 6 point scale (0–5). The coding criteria were developed by the researchers and the two case method experts. For example, better quality solutions addressed the salient interpersonal issues in the problem and provided a clear plan for how to implement the solution. Lower quality answers did not address the interpersonal issues of the case nor any type of plan of implementation. The interrater reliability among the three

independent coders was .84 in Time 1 and .94 in Time 2. The average quality of all solutions produced by each participant was used as the quality of performance measure in the analysis.

Quantity Assessment Of Solutions

The quantity of solutions produced was assessed simply by counting how many solutions a participant submitted. There was ample room for participants to submit as many solutions as they desired. The maximum number of solutions submitted by any one participant in Time 1 was 5. In Time 2, the highest number of solutions given by any one participant was 9. Reported Innovation Reported innovation was measured using an 8-item scale adapted by Farmer, Tierney, and Kung-McIntyre (2003) from the source originality subscale of the Kirton Adaption-Innovation Inventory (KAI; Bobic, Davis, & Cunningham, 1999; Kirton, 1976). Participants were asked to indicate how much they agreed with statements such as "I would sooner create something than improve it" on a 6-point scale (strongly disagree to strongly agree). Cronbach's alpha for this innovation scale in this study was .71 in Time 1 and .75 in Time 2. Importantly, Time 1 innovation was used as a control variable.

Results

Hierarchical regression analysis was used to test the study hypotheses. We conducted path analysis using a series of multiple regressions with all the variables preceding each variable included in the analyses that uses it as a dependent variable. We took this approach rather than employing SEM software to better accommodate the demographics, some of which are categorical variables, and to stay with recognized conventions for testing mediated models using regression (i.e., Baron & Kenny, 1986).

Figure 2 shows the significant relationships found in this study. After controlling for demographics and Time 1 performance and innovation, as shown PsyCap was positively related to mastery orientation, Time 2 innovation, and Time 2 PsyCap, but not to any of Time 2 problem-solving performance dimensions. Thus, Hypotheses 1b, 3a and 5a were supported, but Hypothesis 1a was not. The more positive than negative ratio of contingent performance feedback was positively related to average solution word count, but not the other two dimensions of problem-solving performance. Thus, Hypothesis 2a was only partially supported. This same feedback was also related to Time 2 PsyCap and mastery orientation, but not to Time 2 Innovation. Thus, Hypotheses 3b and 5b were supported, but not Hypothesis 2b. Finally, mastery orientation was positively related to Time 2 innovation and average solution word count, but not

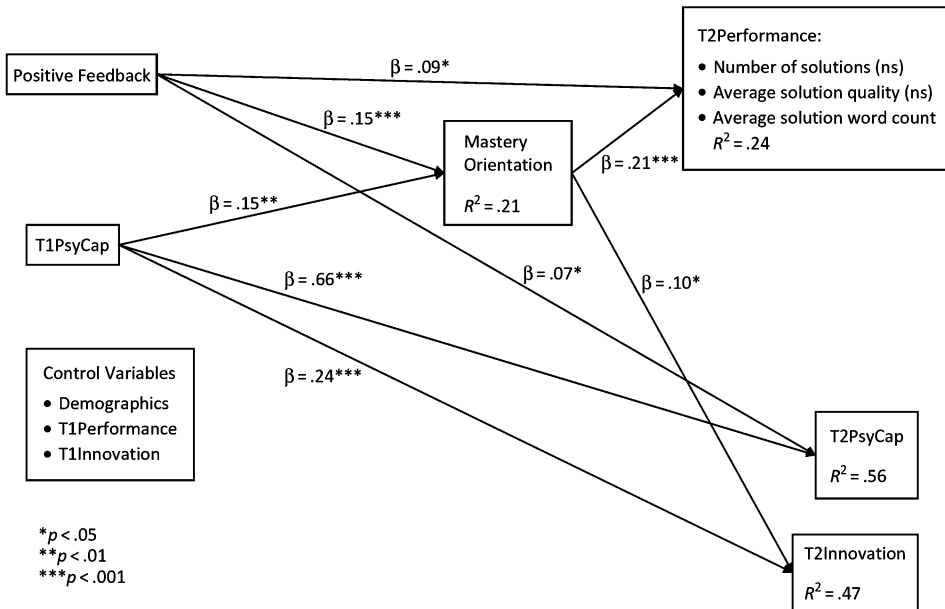


Figure 2. Significant results of study variable relationships.

to Time 2 PsyCap. Thus, Hypothesis 4b was supported, Hypothesis 4a was partially supported, and Hypothesis 5c was not supported. Following conventions for testing mediated models (Baron & Kenny, 1986), mastery orientation was supported as a partial mediator between Time 1 PsyCap and Time 2 Innovation, and between more positive than negative ratio feedback and average solution word count.

Discussion

Drawing from both the established behavioral paradigm (i.e., OB Mod, Luthans & Kreitner, 1975, 1985; Stajkovic & Luthans, 1997) and the social cognitive paradigm (i.e., positive organizational behavior or POB, Luthans, 2002a, 2002b; Luthans & Avolio, 2009; Luthans & Youssef, 2007; Wright, 2003), this quasi-experimental study found that positivity, operationalized as the now recognized multidimensional core construct of psychological capital (PsyCap; Luthans & Youssef, 2004; Luthans, Youssef, & Avolio, 2007) and feedback, operationalized

as the more positive than negative ratio of contingent performance feedback comments, are generally related to important challenging and complex processes facing employees in today's organizations. Specifically, PsyCap was hypothesized as an antecedent cueing mechanism for more effective problem solving and potential innovative behavior, both directly and mediated through mastery-oriented goals and challenge-seeking behavior. Extrapolating from the OB Mod literature, the higher positive than negative ratios of feedback were hypothesized as potential reinforcers, and their impact was also tested both directly and mediated through mastery orientation. Overall, although there were some exceptions for the direct effects of both positive feedback and PsyCap, as seen in Figure 2 the results generally supported the theory driven hypotheses. The findings highlight the untapped potential of integrating established behavioral management with emerging positivity development approaches, specifically the potential impact on problem-solving performance and reported innovation.

Several theoretical contributions and practical implications can be drawn from these findings. First, in line with the emerging positivity research, PsyCap and positively weighted contingent performance feedback may have an additive effect in achieving a "tipping point" positive-to-negative ratio (recognized in behavioral management as 4:1, Daniels, 2000, and in positive psychology at about 3:1, Fredrickson & Losada, 2005). This offers managers and organizations with the evidence-based value of creating positive environments where the recognized role of more positive than negative feedback can be realistically applied and also leveraged further through the development and management of employees' PsyCap.

Second, using Fredrickson's (1998, 2001, 2009) broaden-and-build theory as a point of departure, the results of this study suggest the broadened thought-action repertoires and expanded inventory of psychological resources due to positivity can be particularly relevant for problem-solving performance and potentially enhanced innovation. This confirms the commonsense, conventional wisdom that employees are more creative when in a positive environment and mindset. Indeed, widely recognized positive culture companies such as Southwest Airlines and the software development firm SAS have successfully capitalized on such an environment for many years.

Third, the findings of this study provide a newly tested mediating mechanism for positivity, namely mastery orientation. Agentic, mastery-oriented learning goals and challenge-seeking behavior would seem to be critical for effective problem solving and innovation. Psychological capital and positive ratio feedback represent a new approach for building such mastery, which in turn may enhance the creative, innovative dimensions of performance. This finding can help managers design more focused approaches for developing creativity in their employees. In addition to developing employees' psychological capital

and providing them with higher positive-to-negative ratios of feedback, the results of this study also point to the importance of helping them develop a mastery orientation and mindset.

Fourth, this study presents preliminary evidence for an upward spiral (contagion) of positivity. Specifically, Time 1 PsyCap was positively correlated to and accounted for unique variance in Time 2 PsyCap. Relatedly, this study also sheds light on the PsyCap development process. Even after accounting for demographics and Time 1 performance and innovation, both Time 1 PsyCap and positively dominant feedback accounted for unique variance in Time 2 PsyCap. This finding highlights the integral role that positive feedback may play in PsyCap development. For example, positive feedback can provide both the social persuasion necessary for efficacy building (Bandura, 1997) and the social support assets that have been found to be so critical in developing resilience (Masten, 2001). Among the strengths of this study's design is the unique contribution of drawing from two paradigms (often pitted against one another over the years) to derive and test a new conceptual model that relates positive contingent feedback, psychological capital, and mastery orientation with a positive impact on problem-solving performance and innovation. The large, heterogeneous sample also provides for greater generalizability than smaller, more homogenous samples. The quasi-experimental design, random assignment and time separation in collecting independent and dependent variables helps minimize common method bias issues in the relationship between predictor and outcome variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and allows for at least cautious causal inferences. Controlling for demographics and Time 1 performance and reported innovation also gives more credibility to the contribution of the study variables.

Regarding limitations, conceptually, there is an ongoing debate regarding the position of PsyCap on the trait-state continuum (see Luthans & Youssef, 2007 for an extensive treatment of this issue). Despite the strong relationship between Time 1 and Time 2 PsyCap, other variables accounted for unique variance, supporting the emerging experimental support for the state-like nature and developmental potential of PsyCap (Luthans, Avey, & Patera, 2008; Luthans et al., 2010). One particularly unique finding was that despite the extensive support for mastery as a recognized mechanism for developing the efficacy constituent of PsyCap, in this study mastery did not predict Time 2 PsyCap. A possible explanation may be the relatively short length of the study. Replications of this study should leverage longitudinal designs or growth models, where participants can be given adequate time to develop mastery before PsyCap is reassessed. Despite time separation, the relationship between PsyCap and innovation may be an artifact of same source bias.

In conclusion, the results suggest that positivity in general and psychological capital in particular may play an important role in learning goal or mastery

orientation and innovation, and potentially, problem solving. These organizational behavior outcomes are especially impactful in these economic times, when layoffs and crises disrupt organizations and make interpersonal conflicts an everyday challenge, and problem-solving effectiveness and innovation can greatly contribute to competitive advantage. While the established behavioral approaches such as OB Mod have clearly been shown to increase performance, combining positively weighted feedback with other positive constructs such as PsyCap may leverage OB Mod's effect on performance to even higher levels and potentially contribute to complex processes such as problem solving and innovation. Positivity allows employees to transcend negative experiences in the workplace (or elsewhere), making the tried-and-true behavioral techniques even more effective.

References

- Avey, J. B., Luthans, F., & Jensen, S. (2009). Psychological capital: A positive resource for combating stress and turnover. *Human Resource Management, 48*, 677–693.
- Avey, J. B., Luthans, F., Smith, R., & Palmer, N. (2010). Impact of positive psychological capital on employee well-being over time. *Journal of Occupational Health Psychology, 12*, 17–28.
- Avey, J. B., Luthans, F., & Youssef, C. M. (2010). The additive value of positive psychological capital in predicting work attitudes and behaviors. *Journal of Management, 36*, 430–452.
- Avey, J. B., Reichard, R., Luthans, F., & Mhatre, K. (2011). Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors and performance. *Human Resource Development Quarterly, 22*, 127–152.
- Avey, J. B., Wernsing, T. S., & Luthans, F. (2008). Can positive employees help positive organization change? *The Journal of Applied Behavioral Science, 44*, 48–70.
- Bakker, A. B., Westman, M., & Van Emmerik, I. J. H. (2009) Advances in crossover theory. *Journal of Managerial Psychology, 12*, 206–219.
- Bandura, A. (1969). *Principles of behavior modification*. New York, NY: Holt, Rinehart, & Winston.
- Bandura, A. (1997). *Self-efficacy*. New York, NY: Freeman.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research. *Journal of Personality & Social Psychology, 51*, 1173–1182.
- Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly, 47*, 644–675.
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology, 5*, 323–370.

- Bobic, M., Davis, E., & Cunningham, R. (1999). The Kirton adaptation-innovation inventory. *Review of Public Personnel Administration, 19*, 18–31.
- Cameron, K. S., Dutton, J., & Quinn, R. (Eds.). (2003). *Positive organizational scholarship*. San Francisco, CA: Berrett-Koehler.
- Carver, C. S., & Scheier, M. F. (1999). Themes and issues in the self-regulation of behavior. In R. S. Wyer, Jr. (Ed.), *Perspectives on behavioral self-regulation: Advances in social cognition* (Vol. 12; 1–105). Mahwah, NJ: Erlbaum.
- Daniels, A. R. (2000). *Bringing out the best in people: The astonishing power of positive reinforcement* (2nd ed.). New York, NY: McGraw-Hill.
- Diener, E., & Oishi, S. (2005). The nonobvious social psychology of happiness. *Psychological Inquiry, 16*, 162–167.
- Dweck, C. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040–1048.
- Dweck, C. & Leggett, E. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*(2), 256–273.
- Easterbrook, J. A. (1959). The effect of emotion on cue utilization and the organization of behavior. *Psychological Review, 66*, 83–201.
- Elliot, A.J., & Sheldon, K.M. (1997). Avoidance achievement motivation: A personal goals analysis. *Journal of Personality and Social Psychology, 73*, 171–185.
- Elliot, A. J., Sheldon, K. M., & Church, M. A. (1997). Avoidance personal goals and subjective well-being. *Personality and Social Psychology Bulletin, 23*, 915–927.
- Erickson, T., Alsop, R., Nicholson, P., & Miller, J. (2009). Gen Y in the workforce. *Harvard Business Review, 87*(2), 43–49.
- Farmer, S. M., Tierney, P., & Kung-McIntyre, K. (2003). Employee creativity in Taiwan: An application of role identity theory. *Academy of Management Journal, 45*, 1137–1148.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology, 2*, 300–319.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*, 218–226.
- Fredrickson, B. L. (2009). *Positivity*. New York, NY: Crown Publishers.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist, 60*, 678–686.
- Frijda, N. J. (1986). *The emotions*. Cambridge: Cambridge University Press.
- Isen, A. M. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology, 52*, 1122–1131.
- Isen, A. M., & Daubman, K. A. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology, 47*, 1206–1217.
- Judge, T. A., & Illies, R. (2004). Affect and job satisfaction. *Journal of Applied Psychology, 89*, 661–673.

- Kirton, M. (1976). Adaptors and Innovators: A description and a measure. *Journal of Applied Psychology, 61*, 266–629.
- Luthans, F. (1973). *Organizational behavior*. New York, NY: McGraw-Hill.
- Luthans, F. (2002a). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior, 23*, 695–706.
- Luthans, F. (2002b). Positive organizational behavior: Developing and managing psychological strengths. *Academy of Management Executive, 16*, 57–72.
- Luthans, F., Avey, J. B., Avolio, B. J., & Peterson, S. J. (2010). The development and resulting performance impact of positive psychological capital. *Human Resource Development Quarterly, 21*, 41–67
- Luthans, F., Avey, J. B., & Patera, J. L. (2008). Experimental analysis of a webbased intervention to develop positive psychological capital. *Academy of Management Learning and Education, 7*, 209–221.
- Luthans, F., & Avolio, B. J. (2009). The “point” of positive organizational behavior. *Journal of Organizational Behavior, 30*, 291–307.
- Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology, 60*, 541–572.
- Luthans, F., Fox, M., & Davis, T. (1991). Improving the delivery of quality service: Behavioral management techniques. *Leadership and Organizational Development Journal, 12*(2), 3–6.
- Luthans, F., & Kreitner, R. (1975). *Organizational behavior modification*. Glenview, IL: Scott Foresman.
- Luthans, F., & Kreitner, R. (1985). *Organizational behavior modification and beyond*. Glenview, IL: Scott Foresman.
- Luthans, F., Paul, R., & Baker, D. (1981). An experimental analysis of the impact of contingent reinforcement on salespersons' performance behavior. *Journal of Applied Psychology, 66*, 314–323.
- Luthans, F., Rhee, S., Luthans, B. C., & Avey, J. (2008). Impact of behavioral performance management in a Korean application. *Leadership and Organization Development Journal, 29*, 427–443.
- Luthans, F., & Youssef, C. M. (2004). Human, social, and now positive psychological capital management. *Organizational Dynamics, 33*, 143–160.
- Luthans, F., & Youssef, C. M. (2007). Emerging positive organizational behavior. *Journal of Management, 33*, 321–349.
- Luthans, F., Youssef, C. M., & Avolio, B. J. (2007). *Psychological capital: Developing the human competitive edge*. Oxford: Oxford University Press.
- Lyubomirsky, S. (2007). *The how of happiness: A new approach to getting the life you want*. New York, NY: Penguin.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*, 111–131.

- Masten, A. S. (2001). Ordinary magic: Resilience process in development. *American Psychologist, 56*, 227–239.
- Mueller, C., & Dweck, C. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology, 75*(1), 33–52.
- Nohria, M., Tsang, K., Javidan, M., & Champy, J. (2009). From regional star to global leader. *Harvard Business Review, 87*(1), 33–39.
- Pavlov, I. (1927). *Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex*. Oxford: Oxford University Press.
- Peterson, S. J., & Luthans, F. (2006). The impact of financial and non-financial incentives on business-unit outcomes over time. *Journal of Applied Psychology, 91*, 156–165.
- Peterson, S. J., Luthans, F., Avolio, B. J., Walumbwa, F. O., & Zhang, Z. (2011). Psychological capital and employee performance: A latent growth modeling approach. *Personnel Psychology, 64*, 427–450.
- Podsakoff, R. M., MacKenzie, S. C., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*, 879–903.
- Seligman, M. E. P. (1998). *Learned optimism*. New York, NY: Pocket Books.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology. *American Psychologist, 55*, 5–14.
- Skinner, B. (1938). *The behavior of organisms*. New York, NY: Appleton-Century-Crofts.
- Snyder, C. R. (2000). *Handbook of hope*. San Diego, CA: Academic Press.
- Snyder, C. R., & Lopez, S. (Eds.). (2002). *Handbook of positive psychology*. Oxford: Oxford University Press.
- Stajkovic, A., & Luthans, F. (1997). A meta-analysis of the effects of organizational behavior modification on task performance, 1975–95. *Academy of Management Journal, 40*, 1122–1149.
- Stajkovic, A., & Luthans, F. (2001). Differential effects of incentive motivators on work performance. *Academy of Management Journal, 44*, 580–590.
- Stajkovic, A., & Luthans, F. (2003). Behavioral management and task performance in organizations: Conceptual background, meta-analysis, and test of alternative models. *Personnel Psychology, 56*, 155–194.
- Thorndike, E. (1913). *Educational psychology: The psychology of learning* (Vol. 2). New York, NY: Columbia University Teachers College.
- Walumbwa, F. O., Luthans, F., Avey, J. B., & Oke, A. (2011). Authentically leading groups: The mediating role of collective psychological capital and trust. *Journal of Organizational Behavior, 32*, 4–24.
- Wright, T. A. (2003). Positive organizational behavior. *Journal of Organizational Behavior, 24*, 437–442.