

A Framework for Leader Effectiveness in Virtual Teams

Gabi Eissa

Oklahoma State University

Corey Fox

Oklahoma State University

Brian D. Webster

Oklahoma State University

Joongseo Kim

Oklahoma State University

Due to technological advancements, organizations have more tools for employee development at their disposal. Technology has been utilized by organizations in training and development programs for leaders to enhance their skills and abilities. We argue that the success of these programs is due in part to individual differences and that an individual's success in these programs has subsequent influence over malleable individual characteristics. We integrate the literature on individual differences, training and development in a virtual setting, and leadership effectiveness in virtual teams to propose a framework on how these variables interact to achieve success.

INTRODUCTION

A vast amount of research in the management literature has recognized the importance of leadership at various levels in the organization and the impact that leadership has on an organization's success (Bono & Judge, 2004; Hogan & Kaiser, 2005; Koene, Vogelaar, & Soeters, 2002; Smith, Carson, & Alexander, 1984; Thomas, 1988). An important area of research in this stream has focused on identifying key personality traits as well as behaviors of successful leaders. Even though some consistencies exist in regards to various traits studies, some traits and constructs appear more frequent than others (Bono & Judge, 2004). Another important, but completely separate, stream of research in the management literature has focused on how technology plays a role in organizational effectiveness and functioning (e.g., Zaccaro & Bader, 2003; Zigurs, 2003; Hertel, Geister & Konradt, 2005; Cascio & Shurygailo, 2003).

Despite the popularity of research on leadership and the growing use of online information and business technology, leadership training and development using a virtual environment, has received scant attention in the leadership literature (Fiedler, 1996). Particularly, little evidence exists that examines leaders' individual differences and the influence of these differences on a leader's performance in training and development utilizing virtual programs. Furthermore, the subsequent impact of this virtual leadership

training on a leader's effectiveness has also been understudied (Kayworth & Leidner, 2001; Ziguers, 2003). As such, the purpose of this study is to investigate (1) the relationship between a leader's individual differences (viz., openness to experience, conscientiousness, neuroticism) and their performance in virtual training and development programs, (2) how virtual training and development programs may influence certain leaders' malleable dispositions (psychological capital in particular), and (3) the impact of leaders' dispositions, as well as their success in a virtual training and development environment, on leadership effectiveness and success in a virtual team.

Virtual Leadership Training and Development

In order to be an effective leader, leaders need to obtain the necessary skills required to perform their jobs. One way they can do this is to participate in training and development programs. Avolio and colleagues define leadership training and development as any program that aims to enhance "knowledge, skills, ability, motivation, and/or perceived self-concept to enable them to exercise positive influence in the domain of leadership" (Avolio, et. al., 2009, p. 769). The authors argue that training and development has a significant positive effect on various outcomes, including job performance, across various levels of analysis in organizations.

With the advent of new technologies, organizations can integrate technology and traditional organizational activities such as training and development. Virtual training is a relatively new phenomenon in management and is important because it offers organizations attractive benefits versus more traditional methods of training and development. We define virtual training & development as a training and development program administered through an electronic medium. Electronic, or virtual training, has become increasingly popular for organizations since it cuts the costs associated with training seminars (i.e. travel and lodging). In addition, virtual training saves on time and increases accessibility (Luthans, Avey, & Patera, 2008) as well as allows the organization to have some flexibility with respect to training schedules. With the organization able to offer training and development access over the internet or through unique computer programs, less time and financial resources are spent traveling to traditional seminars and members at all levels of the organization can have access to the training. Furthermore, several studies have discovered training in a virtual environment and a traditional training environment leads to similar real world performance (Rose, Attree, Brooks, Parslow, & Penn, 2000; Rose, Attree, Brooks, Parslow, Penn, Ambihapahan, 1998; Piccoli, Ahmad, Ives, 2001). As a result of the effectiveness and minimal resources required, virtual training has become of great importance to practitioners and academics alike.

Personality and Success in a Virtual Training and Development Program

In general, leaders come in a variety of dispositional shapes and sizes and we argue in this paper that these dispositions play an important role in the success of the leader in a virtual training and development program. Indeed, research has demonstrated a relationship between personality and both job performance and training proficiency (Barrick & Mount, 1991); however no such studies, to our knowledge, have investigated whether these relationships are consistent when the *context* of the training program changes. Therefore, we explore leaders' individual differences related to enduring personality traits such as those discussed in terms of the Big Five Model (Goldberg, 1990) and how these traits influence a leader's success in a virtual training environment. Additionally, we also examine how the success (or lack thereof) influences more malleable individual characteristics like a leader's psychological capital (hereafter referred to as PsyCap). We propose that more malleable individual differences will influence how effective a leader can be in a virtual team environment. We refer to leadership effectiveness with respect to how well a leader performs as *the* leader of a virtual team in accomplishing a particular task, as well as how the team members perceive their leaders to perform within their own team. These two factors represent a leader's effectiveness, which is important for the organization because leader effectiveness may relate to outcomes such as job satisfaction and citizenship behaviors of team members (Judge & Piccolo, 2004; Purvanova, Bono & Dzieweczynski, 2006).

Our research intends to make several contributions to the literature of leadership. First, this study is one of the first, to our knowledge, to argue that leaders' individual differences impact leader performance in virtual training and development. Second, we examine the importance of leader success in a virtual training and development environment with respect to malleable leader individual differences. Third, we explore the dynamics of leaders' individual differences (via PsyCap) and its effect on the effectiveness of the leader in a virtual context.

Figure 1 (See Appendix) represents the theoretical framework developed in this study. The subsequent sections provide explanations and the supporting arguments and research explaining each component of our framework.

THEORY AND PROPOSITIONS

Personality and Leadership Training and Development

Although a vast amount of research has been dedicated to investigate the relationships between personality traits, such as the Big Five Model (Goldberg, 1990) and leadership, we know very little about how these personality traits impact a leader's success in virtual leadership training and development programs. While previous research has suggested there is a link between personality and performance in more traditional training and development programs (Barrick & Mount, 1991), no work has attempted to translate this into a virtual context. The Big Five personality dimensions include Extraversion, Agreeableness, Neuroticism, Conscientiousness, and Openness to experience. Here, we argue that several of these Big Five personality traits are antecedents to how leaders perform in virtual leadership training and development, which we argue affects leadership effectiveness. In particular, we focus on three personality traits which we believe are most likely to influence success in a virtual training environment, namely openness to experience, conscientiousness, and neuroticism. Although, extraversion and agreeableness have been shown to contribute to leader effectiveness (DeRue, Nahrgang, Wellman & Humphrey, 2011), we exclude them from our framework because they are dimensions that invoke interpersonal, relational, emotional attributes and are unlikely to be as affective in a virtual team setting as they are in a traditional, face-to-face training environment. Furthermore, extraversion has been suggested to contribute to effectiveness from an individual standpoint; however has minimal influence in a group setting (DeRue et al 2011). This suggests that extraversion is unlikely to contribute to leader effectiveness in a virtual group environment.

Openness to Experience

Openness to experience represents individuals that are characterized as being nonconforming, imaginative, unconventional, creative, and adapt well to change. Furthermore, individuals who are characterized by this type of personality are more likely to possess divergent thinking (McCrae, 1990; Judge, Heller & Mount, 2002). Barrick and Mount (1991) suggest that openness to experience is related to training proficiency. They explain that individuals who are high in this personality dimension have a greater tendency to adapt to new learning experiences versus those who are low in such dimension.

Numerous other researchers have shown that openness to experience is positively related to the learning process and experience itself (e.g., Ryman & Biersner, 1975; Goldstein, 1986; Barrick & Mount, 1991). Sanders and Vanouzas (1983) suggest the attitudes and expectations of individuals are highly related to the individuals' tendency to partake in a new learning experience. Barrick and Mount argue that "it is possible that openness to experience is actually measuring the ability to learn as well as motivation to learn" (1991, p. 20). Since virtual leadership training is a relatively new and different style of training and development, we believe that individuals who are open to experiencing learning in new environments are more likely to embrace training and development and hence will perform better than those that are not as open to new experiences. Therefore, we propose the following:

Proposition 1: Leader openness to experience is positively related to the performance of leaders in virtual leadership training and development programs.

Conscientiousness

Conscientiousness represents individuals that are characterized as being persistent organized, dependable, purposeful, disciplined, and achievement-oriented. Furthermore, individuals who are characterized by this type of personality are more likely to possess high tendencies for job involvement, which indicates that these individuals are more likely to obtain formal and informal work rewards, including promotions, recognition, and a strong sense of personal accomplishment (Judge et al., 2002). Judge, Bono, Ilies, and Gerhardt (2002) have shown that Conscientiousness is highly related to the effectiveness of the leader. Kirkpatrick and Locke suggest that “leaders must be tirelessly persistent in their activities and follow through with their programs” (1991, p. 51).

A variety of research has demonstrated that conscientiousness is positively related to job performance (e.g., Barrick & Mount, 1991). Also, research has demonstrated that Conscientiousness is positively related to cooperation in teams (e.g., LePine & Van Dyne, 2001). Perhaps one explanation for these positive relationships is that these individuals pay more attention to work details (Barrick & Mount, 1991). Indeed, individuals who are high in Conscientiousness are less likely to shirk on work responsibilities (Bono & Judge, 2004), thus, they are more willing to participate in work situations that may enhance their work performance—which may include engaging in work learning experiences such as virtual training sessions. Virtual training and development programs require the self-discipline and hard work that Conscientiousness represents, in order to get any meaningful return from the programs. Often times virtual training and development programs require the individual to take an active role in their own learning, whereas in traditional training environments other individuals (e.g. the boss or the trainers) may require the individual to do the work. Based on this, we propose the following:

Proposition 2: Leader conscientiousness is positively related to the performance of leaders in virtual leadership training and development programs.

Neuroticism

Neuroticism represents individuals that are characterized as being low in emotional stability experience negative affectivity (i.e. feelings such as anxiety, insecurity, and hostility). Furthermore, individuals who are characterized by this type of personality lack self-esteem and self-confidence (McCrae & Costa, 1991). Barrick and Mount (1991) argue that individuals who score high in Neuroticism are less likely to engage in learning experiences. One potential explanation to this notion is that since these individuals are pessimistic and negative in nature, they are more likely to not believe in their ability to complete certain tasks.

A large portion of research has demonstrated that Neuroticism is negatively related to different leadership styles (e.g., Judge & Bono, 2000). Judge et al. (2002) argue that these individuals are more likely to experience negative events as opposed to those who are not as neurotic. The reason behind this, they explain, is that these individuals put themselves into situations that promote mostly negative emotions, thus they are less likely to engage in situations that may help them overcome such affect. We believe that neurotic individuals might be more likely to think they cannot learn or gain from training they are not familiar with, such as that in a virtual context. They also might be more likely to get frustrated easily with technology and hence disengage from new learning experiences. Based on this, we propose the following:

Proposition 3: Leader neuroticism is negatively related to the performance of leaders in virtual leadership training and development programs.

Training and Development Programs and Other Individual Differences

Essentially, leader effectiveness can be thought of as the ability to get a team to accomplish a shared goal or objective (Judge et al., 2002). Leader effectiveness depends not only on abilities but also is affected by individual differences and how well those differences, amongst other things, match with the

situation facing the leader (Fiedler, 1996). Thus far, we have proposed that certain distinct personality traits (viz., Openness to experience, Conscientiousness, and Neuroticism) are highly related to the performance of leaders in a training and development programs. Next, we suggest that the performance of leaders who have taken part in training, will affect leader's Psychological Capital (PsyCap).

PsyCap

PsyCap is a relatively new construct embedded in the positive organizational behavior literature encompassing four components—self-efficacy, hope, optimism, and resilience. PsyCap is important for leaders and teams since it is an individual capacity which has the potential to provide competitive advantage (Luthans & Youssef, 2004; Luthans, Youssef, & Avolio, 2007). A distinguishing characteristic of PsyCap is that it is state-like and not as enduring an attribute as personality (i.e. the Big Five). Thus, PsyCap is an element of an individual that can be developed and changed over time (Luthans, 2002). Although PsyCap has been shown to be correlated with certain aspects of personality, it has also been shown to explain unique variance in organizational outcomes (Avey, Luthans, & Youssef, 2010).

PsyCap includes self-efficacy, hope, optimism, and resilience. *Self-efficacy* is an individual's confidence in their ability to complete a specified task. Efficacy is strongly influenced by previous successes and is domain specific. Self-efficacious individuals set high goals for themselves, thrive on challenges, are highly self-motivated, invest effort towards their goals, and persevere (Luthans et al., 2007). *Hope* is conceptualized as the cognitive ability to set realistic, yet challenging, goals and then developing paths and controlling behavior in order to attain these goals. Hopeful leaders can motivate subordinates through their energy levels and determination and are able to explain their actions in a trust building manner, which in turn encourages buy in from subordinates (Luthans et al., 2007). *Optimism* is the expectation of positive and desirable future outcomes. However, within the construct of PsyCap, optimism must be flexible and realistic. An optimistic individual attributes positive outcomes to personal abilities and factors which they have control of and view negative outcomes as caused by external forces (Luthans et al., 2007). Finally, *Resilience* is the ability to come back from adversity or failure or to push forward in the face of difficulty (Luthans et al., 2007). In an increasingly competitive corporate environment, resilient leaders are able to set themselves apart as consistent performers and achievers by always pushing ahead with new solutions when times are difficult. Research on two components of PsyCap, self-efficacy and optimism, found that these qualities were positively related to leadership ratings by peers. Leadership efficacy and optimism were also found to be strongly related to performance capability (Chemers, Watson, & May, 2000). Luthans and colleagues (2007) found that PsyCap was positively related to both performance and employee satisfaction.

We go one step further and argue that virtual training and development and PsyCap are highly related. Sogunro (1997) found evidence that after training sessions, participants perceived that their leadership capabilities had increased and that there was a resulting change in leader's attitudes and efficacy. Similarly, training has been shown to increase an individual's self-efficacy towards that specific task (Aguinis & Kraiger, 2009). We argue that because perceived skills have been shown to increase after training sessions, leaders that partake in training programs will have greater competence (self-efficacy) in their leadership skills. Furthermore, when leaders are more efficacious, they are naturally more optimistic in terms of their future performance. We also believe that greater optimism will result in a more directed effort to design paths to achieve goals (hope) even in the face of challenges (resiliency). Taken together, we propose the following:

Proposition 4: Performance in virtual leadership training and development will be positively related to leader PsyCap.

PsyCap and Leadership Effectiveness in Virtual Teams

Virtual Teams

The unprecedented technological advancements in the business world have made virtual teams a viable, and sometimes preferred, option for numerous organizations as they look to expand beyond their traditional boundaries and access a vast pool of previously unattainable resources (Avolio & Kahai, 2003; Bell & Kozlowski, 2002; Cascio & Shurygailo, 2003; Ebrahim, Ahmed, & Taha, 2009; Martins, Gilson, & Maynard, 2004; Powell, Piccoli, & Ives, 2004). A virtual team is a collection of geographically dispersed individuals working interdependently on shared tasks across organizational boundaries, linked together by information technology (Powell et al., 2004). Virtual teams are often formed on an “as needed basis” to perform a specific task and once the team accomplishes its task, the team is dissolved.

The previous definition makes salient the important notion that virtual teams are different than traditional work teams. Indeed, recent reviews find two features, consistently mentioned, which differentiate virtual teams from traditional face-to-face teams. Those two features are spatial distance between members and the medium of communication used for team interaction (Bell & Kozlowski, 2002; Ebrahim et al., 2009). These issues create challenges for virtual leaders such as developing and shaping team processes, monitoring and managing team performance (Bell & Kozlowski, 2002), building trust and team cohesion as well as team communication (Ebrahim et al., 2009; Zaccaro & Bader, 2003), and establishing norms, practices, and boundaries (Cascio & Shurygailo, 2003).

Since virtual teams present several unique challenges not faced in traditional work teams (Bell & Kozlowski, 2002; Zigurs, 2003), they require a different skill set from leaders to ensure their ultimate effectiveness (Cascio & Shurygailo, 2003). While a wide range of prescriptions are offered for the challenges virtual team leaders face, three in particular frequently appear. First, leaders need to be able to craft communication guidelines in order for the team to effectively transmit their intentions through technology. This involves frequent interactions with team members in order to achieve the following functions: clarify team member roles, specify appropriate behaviors, structure work processes, provide feedback, and enunciate direction (Avolio, & Kahai, 2003; Bell & Kozlowski, 2002; Hertel, Geister, & Konradt, 2005; Zaccaro & Bader, 2003; Zigurs, 2003). Second, leaders of virtual teams need to motivate team members toward the team goal through non face-to-face interaction (Ebrahim et al., 2009; Hertel et al., 2005; Zaccaro & Bader, 2003). Finally, leaders need to build team cohesion and trust to ensure the team’s effectiveness (Cascio & Shurygailo, 2003; Ebrahim et al., 2009; Powell et al., 2004).

Prior empirical research has found that the core elements of PsyCap have been associated with positive affect (Barsade & Gibson, 2007). Russ and Isen (1999) provide evidence that positive affect has been shown to lead to creative problem solving. Also, optimistic individuals are more likely to respond to challenging situations by adapting (Carver, Scheier, Miller, & Fulford, 2009). It has also been shown that a hopeful individual is concerned with others achieving their goals and they attempt to form meaningful connections between others by building trust so as to achieve a desired outcome (Rand & Cheavens, 2009).

As discussed previously in this paper, virtual leadership encompasses many unique challenges; specifically, communication and cohesion building challenges. Because these challenges are different than the challenges traditional teams face, traditional methods of overcoming such challenges will not be sufficient. We argue that these problems can be solved with creative solutions implemented by individuals that exhibit the values which are inherent in PsyCap. Therefore we propose the following:

Proposition 5: Leader’s PsyCap will be positively related to their effectiveness in a virtual team environment.

To complete our model, one might expect that training and development may in fact increase effectiveness through new experiences and the learning processes. In our case, when leaders engage in virtual training and development, they are expected to enhance and boost the performance of their teams as well as their own performance. As previously stated, virtual training and development provides

numerous outstanding benefits compared to traditional training and development methods. Thus, in addition to the impact that virtual training and development has on leadership and team effectiveness through PsyCap, we also argue that virtual training and development may have a *direct* effect on virtual leadership and team effective. Therefore, we propose the following:

Proposition 6: Performance in virtual leadership training and development will be positively related to virtual leadership and team effectiveness.

Proposition 7: PsyCap will mediate the relationship between performance in virtual leadership training and development and virtual leadership and team effectiveness.

GENERAL DISCUSSION

Theoretical and Practical Implications

Over the past few years, research in various fields and disciplines has dedicated considerable time and effort to the investigation of leadership in terms of certain traits, attitudes, and behavior. With advances in technology, research in management has seen the birth of a new phenomenon which focuses on studying how technology impacts organizations. Today, studying an organization that operates in a virtual context will be incomplete without knowledge of how its leaders behave and interact with team members in order to guarantee an organization's success.

The purpose of this study was to develop a model that investigates organizations that utilize technology in order to improve their organization. Particularly, we looked at relationships between leaders' personality traits and their impact on the leader's performance in virtual training and development. Furthermore, we explored how virtual training and development influences leaders' malleable dispositions as well as the effectiveness of their leadership in teams.

Given that virtual organizations and teams are becoming increasingly popular with continuous technological improvements and advancements, we believe research on virtual teams and virtual leadership training programs deserves more attention. This research, particularly, our theoretical model, may provide initial steps into expanding and developing a new research stream aimed at studying how technology in the form of virtual training can significantly impact organizations and the members that operate within them.

From a practical standpoint, our research has several implications. First, organizations may target certain individuals (i.e. those that are high in openness to experience, conscientiousness, and low in neuroticism) to participate in cost effective virtual leadership training. This not only will save organizations time and money in providing training to leaders, but will also increase the probability that the leaders participating in training will learn from their training experiences. This may have implications for future performance as well. Second, since research has shown that PsyCap can be developed (Luthans, Avey, Avolio, Norman, & Combs, 2006), we believe that organizations can be confident when implementing programs that aim to develop employees' PsyCap that future performance will benefit from such programs.

Future Directions

As stated above, a natural next step for advancing this study should involve an empirical examination of the proposed framework and the relationships addressed. Although each of the variables in our model has been demonstrated to have an impact on traditional organizations, research that takes these variables to a different context is still in its infancy. We suggest that additional research should build on our model by adding more variables, in terms of antecedents, mediators, or moderators. Future research should also benefit from understanding how these variables influence each other over time. Consequently, it is rather important to not only explore how effectively and efficiently each of these variables influences organizational outcomes, but also how effectively and efficiently they function together.

CONCLUSION

Our research looks to add to the literature on leadership training and development and the effectiveness of leaders in virtual teams. We have argued that individual personality characteristics play an important role in the success leaders have in training and development programs and, consequently, the success of leaders in a virtual environment. We believe that the popularity of virtual training programs, as well as boundary-less organizations, makes a virtual context an increasingly attractive context for future management research and, hence, have proposed a theoretical model to help with research in this area. By undertaking our research utilizing a virtual context, we hope to encourage additional research in this new and increasingly popular domain.

REFERENCES

- Aguinis, H., & Kraiger, K. (2009). Benefits of training and development for individuals and teams, organizations, and society. *Annual Review of Psychology, 60*, 451-474.
- Avey, J., Luthans, F., & Youssef, C. (2010). The Additive Value of Positive Psychological Capital in Predicting Work Attitudes and Behaviors. *Journal of Management, 36*, 216-228.
- Avolio, B., & Kahai (2003). Adding the "E" to E-Leadership: How it May Impact Your Leadership. *Organizational Dynamics, 31*, 325-338.
- Avolio, B., Reichard, R., Hannah, S., Walumbwa, F., & Chan, A. (2009). A meta-analytic review of leadership impact research: Experimental and quasi-experimental studies. *The Leadership Quarterly, 20*, 764-784.
- Barrick, M., & Mount, M. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44*, 1-26.
- Barsade, S., & Gibson, D. (2007). Why does affect matter in organizations? *Academy of Management Perspectives, 21*, 36-59.
- Bell, B., & Kozlowski, S. (2002). A typology of virtual teams: Implications for effective leadership. *Group & Organization Management, 27*, 14-29.
- Bono, J. E., & Judge, T. A. (2004). Personality and transformational and transactional leadership: A meta-analysis. *Journal of Applied Psychology, 89*, 901-910.
- Carver, C., Scheier, M., Miller, C., & Fulford, D. (2009). Optimism. In S. Lopez & C. R. Snyder (Eds.), *Oxford Handbook of Positive Psychology* (Second ed., pp. 303-312). New York: Oxford University Press.
- Cascio, W., & Shurygailo, S. (2003). E-leadership and virtual teams. *Organizational Dynamics, 31*, 362-376.
- Chemers, M., Watson, C., & May, S. (2000). Dispositional affect and leadership effectiveness: A comparison of self-esteem, optimism, and efficacy. *Personality and Social Psychology Bulletin, 26*, 267-277.
- DeRue, S., Nahrgang, J., Wellman, N. & Humphrey, S. (2011). Trait and behavioral theories of leadership: An integration and meta-analytic test of their relative validity. *Personnel Psychology, 64*: 7-52.

- Ebrahim, N., Ahmed, S., & Taha, Z. (2009). Virtual Teams: a Literature Review. *Australian Journal of Basic and Applied Sciences*, 3, 2653-2669.
- Fiedler, F. (1996). Research on Leadership Selection and Training: One View of the Future. *Administrative Science Quarterly*, 41, 241-250.
- Goldberg, L. R. (1990). An alternative "description of personality": The Big-Five factor structure. *Journal of Personality and Social Psychology*, 59, 1216-1229.
- Goldstein, L. (1986). Training in organizations: Needs assessment, development, and evaluation (2nd edition). Monterey, CA: Brooks/Cole.
- Hertel, G., Geister, S., & Konradt, U. (2005). Managing virtual teams: A review of current empirical research. *Human Resource Management Review*, 15, 69-95.
- Hogan, R., & Kaiser, R. (2005). What we know about leadership. *Review of General Psychology*, 9, 169-180.
- Judge, T. A., & Bono, J. E. (2000). Five-factor model of personality and transformational leadership. *Journal of Applied Psychology*, 85, 751-765.
- Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, 87, 765-780.
- Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *Journal of Applied Psychology*, 87, 530-541.
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validities. *Journal of Applied Psychology*, 89, 755-768.
- Kayworth, T., & Leidner, D. (2001). Leadership effectiveness in global virtual teams. *Journal of Management Information Systems*, 18, 7-40.
- Kirkpatrick, S. A., & Locke, E. A. (1991). Leadership: Do traits matter? *Academy of Management Executive*, 5, 48-60.
- Koene, B., Vogelaar, A., & Soeters, J. (2002). Leadership effects on organizational climate and financial performance: local leadership effect in chain organizations. *The Leadership Quarterly*, 13, 193-215.
- LePine, J. & VanDyne, L. (2001). Voice and cooperative behavior as contrasting forms of contextual performance: Evidence of differential relationships with Big Five personality characteristics and cognitive ability. *Journal of Applied Psychology*, 86: 326-336.
- Luthans, F. (2002). Positive Organizational Behavior: Developing and Managing Psychological Strengths *Academy of Management Executive*, 16, 57-72.
- Luthans, F., Avey, J., Avolio, B., Norman, S. & Combs (2006). Psychological capital development: Toward a micro-intervention. *Journal of Organizational Behavior*, 27: 387-393.

- Luthans, F., Avey, J., Clapp-Smith, R., & Li, W. (2008). More evidence on the value of Chinese workers' psychological capital: A potentially unlimited competitive resource? *The International Journal of Human Resource Management*, *19*, 818-827.
- Luthans, F., Avey, J. B., & Patera, J. L. (2008). Experimental analysis of a web-based training intervention to develop positive psychological capital. *Academy of Management Learning & Education*, *7*(2), 209-221.
- Luthans, F., Avolio, B., Avey, J., & Norman, S. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, *60*, 541-572.
- Luthans, F., & Youssef, C. (2004). Human, social, and now positive psychological capital management: investing in people for competitive advantage. *Organizational Dynamics*, *33*, 143-160.
- Luthans, F., Youssef, C., & Avolio, B. (2007). *Psychological capital: developing the human competitive edge*. New York: Oxford University Press.
- Martins, L., Gilson, L., & Maynard, M. (2004). Virtual teams: What do we know and where do we go from here? *Journal of Management*, *30*, 805-835.
- McCae, R. (1990). Traits and trait names: How well is Openness represented in natural languages? *European Journal of Personality*, *4*: 119-129.
- McCrae, R. & Costa, P. (1991). The NEO personality inventory: Using the five-factor model in counseling. *Journal of Counseling and Development*, *69*: 367-372, 375-376.
- Piccoli, G., Ahmad, R. & Ives, B. (2001). Web-based virtual learning environments: A research framework and a preliminary assessment of effectiveness in basic IT skills training. *MIS Quarterly*, *25*(4): 401-426.
- Powell, A., Piccoli, G., & Ives, B. (2004). Virtual teams: a review of current literature and directions for future research. *ACM SIGMIS Database*, *35*(1).
- Purvanova, R. K., Bono, J. E., & Dziewieczynski, J. (2006). Transformational leadership, job characteristics, and organizational citizenship performance. *Human Performance*, *19*, 1-22.
- Rand, K., & Cheavens, J. (2009). Hope Theory. In S. Lopez & C. R. Snyder (Eds.), *Oxford Handbook of Positive Psychology* (Second ed., pp. 323-334). New York: Oxford University Press.
- Rose, F. D., Attree, E. A., Brooks, B. M., Parslow, D. M., Penn, P. R., & Ambihaipahan, N. (2000). Training in virtual environments: transfer to real world tasks and equivalence to real task training. *Ergonomics*, *43*(4), 494-511.
- Rose, F., Attree, E., Brooks, B., Parslow, D., Penn, P. & Ambihaipahan, N. (1998). Training in virtual environments: Transfer to real world tasks and equivalence to real task training. *Ergonomics*, *43*(4): 494-511.
- Rose, F., Brooks, B. & Attree, E. (2000). Virtual reality in vocational training of people with learning disabilities. *Proceedings of the International Conference on Disability, Virtual Reality and Associated Technologies, ICDVRAT2000* (pp. 129-136). Reading, UK: University of Reading.

Russ, S., & Isen, A. (1999). On the relationship between affect and creative problem solving. In S. W. Russ (Ed.), *Affect, creative experience, and psychological adjustment*. Ann, Arbor, Psychology Press.

Ryman, D. & Biersner, R. (1975). Attitudes predictive of driving success. *Personnel Psychology*, 28: 265-281.

Sanders, P., & Yanouzas, J. N. (1983). Socialization to Learning. *Training and Development Journal*, 37(7), 14-21.

Smith, J., Carson, K., & Alexander, R. (1984). Leadership: It can make a difference. *The Academy of Management Journal*, 27, 765-776.

Sogunro, O. (1997). Impact of training on leadership development. *Evaluation Review*, 21, 713-737.

Thomas, A. (1988). Does leadership make a difference to organizational performance? *Administrative Science Quarterly*, 33, 388-400.

Zaccaro, S., & Bader, P. (2003). E-Leadership and the Challenges of Leading E-Teams: Minimizing the Bad and Maximizing the Good. *Organizational Dynamics*, 31, 377-387.

Zigurs, I. (2003). Leadership in virtual teams: oxymoron or opportunity? *Organizational Dynamics*, 31, 339-351.

APPENDIX

FIGURE 1

