THE IMPACT OF LEADERSHIP STYLE AND STRESS ON CREATIVE PERFORMANCE DURING THE DIFFERENT STAGES OF THE CREATIVE PROCESS

A Thesis in Psychology

by

Jeffrey B. Lovelace

© 2011 Jeffrey B. Lovelace

Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Science

May 2011
The thesis of Jeffrey B. Lovelace was reviewed and approved* by the following:

Samuel T. Hunter  
Assistant Professor of Psychology  
Thesis Adviser

James L. Farr  
Professor of Psychology

Jose Soto  
Assistant Professor of Psychology

Melvin M. Mark  
Professor of Psychology  
Department Head

*Signatures are on file in the Graduate School
Abstract

Using the CIP model of leadership as a framework, this study focused on the examination of two main questions. First, when engaging in different tasks along the creative process, does leadership style influence the creative performance of subordinates? Second, how does the level of stress, to which subordinates are exposed, moderate the relationship between leadership style and creative performance? To examine these questions, this study utilized a laboratory-based design, where 336 participants engaged in three unique creative tasks. The results indicated that charismatic leaders influence creative performance above and beyond pragmatic and ideological leaders on middle stage creative tasks. Higher levels of stress decreased individual creative performance in terms of quality. Also, stress had the least amount of impact on those individuals with a pragmatic leader. Implications and directions for future research are discussed.
## TABLE OF CONTENTS

List of Tables ........................................................................................................... v
List of Figures .......................................................................................................... vi
Acknowledgements .................................................................................................. vii

Introduction ............................................................................................................. 1

Literature Review .................................................................................................... 3
  Creativity .................................................................................................................. 3
  Leadership ................................................................................................................ 6
  Context ..................................................................................................................... 12

Method ..................................................................................................................... 15
  Participants .............................................................................................................. 15
  Procedure .............................................................................................................. 16
  Manipulations ....................................................................................................... 18
  Measures ............................................................................................................... 20
  Analysis .................................................................................................................. 25

Results ..................................................................................................................... 25
  Manipulation Check ............................................................................................. 26
  Covariates ............................................................................................................. 29
  Dependent Variables .......................................................................................... 29
  Exploratory Variables ......................................................................................... 32

Discussion ............................................................................................................... 34
  Study Findings ..................................................................................................... 34
  Theoretical Implications ..................................................................................... 38
  Practical Implications ......................................................................................... 39
  Limitations ........................................................................................................... 40
  Future Research .................................................................................................. 41
  Conclusions .......................................................................................................... 42

References ............................................................................................................... 51

Appendix A: Covariates ......................................................................................... 61

Appendix B: Dependent Measures ......................................................................... 64

Appendix C: Manipulation Checks ......................................................................... 66

Appendix D: Condition Scripts ............................................................................... 68
  Charismatic Leadership Condition High Stress .................................................. 68
  Charismatic Leadership Condition Low Stress ............................................... 75
  Ideological Leadership Condition High Stress ................................................. 81
  Ideological Leadership Condition Low Stress ............................................... 88
  Pragmatic Leadership Condition High Stress .................................................... 94
  Pragmatic Leadership Condition Low Stress ................................................... 100

iv
LIST OF TABLES

1. Means, Standard Deviations, and Intercorrelations for Study Variables ..........................44
2. Repeated Measures Analysis for Creative Outcomes Quality and Originality ..........................45
3. Summary of Multivariate Analysis of Variance for Exploratory Variables Perceptions of the Leader ...........................................................................................................46
4. Summary of Multivariate Analysis of Variance for Exploratory Variables Power Bases ...47
5. Summary of Multivariate Analysis of Variance for Exploratory Variables Perceptions of Tasks ......................................................................................................................................48
LIST OF FIGURES

1. Estimated Marginal Means of Quality of Creative Performance by Leader Condition........49
2. Estimated Marginal Means of Originality of Creative Performance by Leader Condition by Creative Task ..........................................................49
3. Estimated Marginal Means of Quality of Creative Performance by Stress Condition........50
4. Estimated Marginal Means of Quality of Creative Performance by Leader Condition by Stress Condition.................................................................50
ACKNOWLEDGEMENTS

I would like to acknowledge Dr. Sam Hunter, my thesis advisor, for his tireless efforts to guide and develop me throughout this process. Additionally, I would like to recognize Dr. Jim Farr and Dr. Jose Soto for their keen insights and recommendations during the execution of this study. I also want to thank the undergraduates in Pennsylvania State University’s Leadership and Innovation Lab for their dedication to this study from data collection through the coding process. Last, I want to thank my wife, Shanann Lovelace, and son, Vander, for their constant support through the late nights and many hours spent on this thesis.
The Impact of Leadership Style and Stress on Creative Performance Across the Different Stages of the Creative Process

In today's rapidly changing and highly competitive global environment, the ability of organizations to facilitate creative performance in their employees is critical to organizational survival and overall success (Atwater & Carmeli, 2009; Mumford & Licuanan, 2004; Tierney, Farmer, & Graen, 1999). As a result of this requirement for greater creative production, organizations pay more attention to and place higher premiums on innovation in the workplace (Byrne, Mumford, Barrett, & Vessey, 2009; Hunter, Cassidy, & Ligon, in press). To better understand the creative process, researchers have examined multiple variables and their roles in facilitating creativity. Variables have included constructs such as climate, team influences, and motivation (Amabile, 1996; Hunter, Bedell-Avers, & Mumford, 2007). Despite demonstrating significant influence on the work environment and creativity, leadership has not received as much attention as other variables (Byrne et al., 2009; Wang & Casmir, 2007).

Facilitating and maintaining creative performance is a significant issue for many leaders (Atwater & Carmeli, 2009). From the quickly developing technological marketplace to the complex combat zones of Iraq and Afghanistan, leaders are called upon to inspire new and creative solutions to solve dynamic problem sets. This ever-increasing responsibility on leaders makes it all the more important to understand the process by which leaders influence the creativity of subordinates (Byrne et al., 2009; Redmond, Mumford & Teach, 1993; Wang & Casmir, 2007).

While limited, there is growing evidence that leadership behaviors, styles, and attributes influence creative performance (Redmond et al., 1993; Oldham & Cummings, 1996; Teirney et al., 1999; Atwater & Carmeli, 2009; Elenkov & Manev, 2009). Central to
the present study is that not all leaders use the same approach to achieve successful creative outcomes. In particular, an emerging model of leadership suggests that many outstanding leaders differ not in their ability to achieve creative outcomes, but in methods they utilize to attain creative success (Mumford, 2006; Bedell, Hunter, Espejo, and Boatman, 2006; Bedell-Avers, Hunter, & Mumford, 2008). Different leaders employ and focus on different behaviors and tactics that lead to successful creative performance on the aggregate. These differences in leadership style influence performance in varying ways at different stages of the creative process. Consequently, tasks oriented toward specific stages of the creative process might be better suited to certain leadership styles. As such, this study first tests whether certain leadership styles in the charismatic, ideological, and pragmatic (CIP) model of leadership differ in their inspiration of higher levels of creative performance during specific stages of the creative process.

The second focus of the study emerges from the realization that performance is a function of both the person and the situation. As an illustration, Byron, Khazanchi and Nazarian (2010) conducted a meta-analysis examining the effect of stress on creativity and found that the effect of stress on creative performance depends on the level of the stress stimuli and the type of stress involved. Generally, the researchers found that low stress-inducing scenarios increased creative performance and high stress-inducing scenarios decreased creative performance. Additionally, subordinates give greater latitude to leaders and seek greater levels of comfort and guidance during times of stress. Accordingly, this study examines the following question: How does creative performance vary across different levels of stress and, more centrally, are these relationships different for varying styles of leadership?
In sum, this study addresses two primary questions. First, when engaging in differing creative processes, does leadership style influence the creative performance of subordinates? Second, how does the level of stress associated with a task impact the relationship between leadership style and creative performance? We begin the discussion on creativity with an emphasis on the leader’s role in the creative process and the impact of the environment on creativity. Next, we discuss the CIP model and define the leadership styles used in this study. Finally, the significance of context is discussed in relation to both the creative process and leader behavior.

Creativity

In today’s competitive marketplace, creativity and innovation often determine the success or failure of an organization (Mumford & Licuanan, 2004; Mumford, Hunter, Eubanks, Bedell, & Murphy, 2007; Tushman, Anderson, & Murphy, 1997). Organizations that fail to navigate successfully the creative process and introduce new products to meet consumer demands will be left behind (Tushman & O’Reilly, 1997; Tushman, et al., 1997). The rapid development of new technologies, the increasing dependence on technology in our daily lives, and the growing global environment demonstrate that creativity is essential to the overall progress of civilization (Florida, 2002). Creativity is not limited to a specific work context, and creative work can occur in any job that involves a particular kind of task (Byrne et al., 2009; Hennessey & Amabile, 2010). As a result, creativity is quickly being considered a core competency by all types of organizations dealing with issues like globalization and rapid technological change within different work contexts (Byrne et al., 2009; Choi, Anderson, & Veillette, 2009).
Most scholars agree that creativity is defined as a product or process that is both novel and useful (Amabile, 1983; Woodman, Sawyer, & Griffin, 1993). At the most basic level, creative performance begins with the individual who is the key to seeking out and manipulating knowledge and concepts (Redmond et al., 1993; Byrne et al., 2009). Amabile, Conti, Coon, Lazenby, and Herron (1996) explain that creativity acts as a springboard for innovation which requires creative ideas from internal and external sources. Innovation, therefore, is appropriately defined as the successful implementation of creative ideas. Ultimately, to achieve innovative products organizations must produce creative ideas which they must transition into innovative output. Therefore, creative performance requires success across a series of processes to achieve innovation.

The process approach to creativity has a long history, beginning with the work of Dewey (1910) and driven largely by the work of Wallas (1926). More recently, Mumford and colleagues have proposed the eight step process model for creative thinking (Baughman & Mumford, 1995; Hunter, Freidrich, Bedell, & Mumford, 2006; Mumford et al., 1991, 1997). The eight core processes are problem construction, information gathering, concept selection, conceptual combination, idea generation, idea evaluation, implementation planning, and monitoring. The processes of this model represent different stages along the creative process meant to help our understanding of creative cognition in organizations. Although presented as eight discrete linear stages, they are better represented as a series of dynamic, interrelated activities. For reasons of parsimony, some researchers have conceptualized the eight processes using the heuristic of early, middle, and late stage activities (Hunter et al., in press) – an approach consistent with other process models of creativity (Amabile, 1996).
The leadership implications of viewing creativity as a process, rather than a singular phenomenon, are noteworthy for several reasons. First, a process perspective on creative performance implies that innovation will require success across many different individual, team, and organizational activities (Mumford & Hunter, 2005). That is, for innovative products to make it to market, organizations must succeed at early processes such as opportunity recognition, middle stage processes such as idea generation, and late stage processes such as implementation planning. Taken a step further, early models of leadership express that leaders vary with regard to their success across contexts (e.g., Fiedler, 1964, 1967; House, 1971). It stands to reason, then, that leaders may be more or less successful in the management of these varying creative processes – a contention observed in some studies of leading for innovation (e.g., Mumford et al., 2006). Thus, understanding which leadership styles are most effective for the facilitation of varying creative processes will prove useful.

While the creative process model provides an indication of what activities are necessary for innovation, it is important to note that performance across these activities is impacted by a number of organizational factors (Woodman et al., 1993). In their assessment of workplace climate for creativity, Amabile et al. (1996) found support for encouragement of creativity, autonomy, resources, pressures, and organizational impediments as the main conceptual categories of work environment factors that influence creativity. Due to their position of authority within a given organization, leaders are uniquely placed to influence all these factors. Therefore, leaders within organizations must react accordingly to the perceived need for creative performance today by finding methods
to supplement, maintain, and even increase the creative performance of their employees (Atwater & Carmeli, 2009).

A limited number of studies have examined the impact of leadership on creativity. Redmond et al. (1993) found that leader behavior contributed to problem construction and self-efficacy which led to subordinate creativity. Choi et al. (2009) examined how leader behavior can have detrimental effects on creativity finding that aversive leadership and unsupportive organizational climate were negatively related to creativity. Atwater and Carmeli (2009) found that leader member exchange (LMX) had a positive relationship with an employee's feeling of energy which led to high involvement in creative work. Elenkov and Manev (2009) found a direct relationship between visionary-transformational leadership and the rate of innovation adoption in companies across 27 countries in the European Union. Although other examples exist, the above should suffice to make the basic point: leadership impacts creative performance. The primary question that remains; however, is how do leaders facilitate innovation? Therefore, we turn to a discussion on leadership and its role in eliciting creative performance.

**Leadership**

A main focus of this study is to examine how certain leadership styles influence creative performance during specific tasks. The CIP model of leadership was developed based on the work of Max Weber (1924) who presented the three forms of management authority: traditional, rational, and charisma (Hunter, Pesin, Thoroughgood, Johnson, & Ligon, in press). Mumford and colleagues’ CIP model of outstanding leadership used Weber’s framework to identify three classifications of leaders: charismatic, ideological, and
pragmatic (Mumford, 2006; Caughorn, 2010; Friedrich, 2010; Mumford, Antes, Caughron, & Friedrich, 2008). The CIP theory generally proposes that there is no single method to be an effective leader. Rather, leadership styles vary and individuals can be successful without, for example, being loved or admired by their subordinates and instead achieve success via rational appeals (Strange & Mumford, 2002; Mumford, Strange, & Bedell, 2006).

Mumford, Scott, and Hunter (2006) proposed that the three leadership styles differ in a number of ways – ways that are most pronounced and evident during crises where sensemaking is sought by subordinates. According to the theory, leaders apply a prescriptive mental model that establishes the framework necessary to direct sensemaking activities. These prescriptive mental models have seven factors that differentiate charismatic, ideological, and pragmatic leaders: time orientation, type of experience available, nature of outcomes sought, type of outcomes sought, focus in model construction, locus of causation, and general controllability of causation (Mumford et al., 2006). Each leadership style and the specific behaviors they display are discussed below.

Charismatic leadership. Charismatic leaders are future-goal oriented, stressing the importance of their vision of the future (Mumford et al., 2004; Mumford et al., 2006). More specifically, they help their followers understand the problems they face by providing a sense of identity, establishing a perception of shared experiences and a shared future, and laying out a pathway to solve the problems, enabling followers to make decisions in accordance with the shared vision (Bedell, Hunter, Angie, & Vert, 2006). Bedell-Avers et al. (2008) explains that charismatic leaders depend on a future-oriented vision, finding success in ordered environments, stressing positive experiences, targeting the masses, and attempting to influence followers’ actions and not necessarily their understanding of a
situation. Generally, charismatic leaders’ strengths are identified by their ability to communicate using follower-based appeals with well-developed engagement skills using emotional persuasion, eloquence, and focusing on followers’ social and personal needs (Mumford et al., 2006).

**Ideological leadership.** Bedell-Avers et al. (2008) summarizes ideological leader behavior as typically emerging in chaotic situations, focusing on a past vision, using negative experiences like past failures, appealing to a core group of followers, and attempting to influence the basic causes of a situation. Ideological leaders, like charismatic leaders, are characterized by their ability to make strong follower based appeals. In some cases, ideological leaders may even make stronger appeals than charismatic leaders because they are based on shared beliefs and values. Ideological leaders establish an emotionally salient vision that is based on traditional values established on shared beliefs (Bedell et al., 2006). The power of shared ideals for ideological leaders lies in their ability to share their direction with key lieutenants increasing their ability to influence, and, when skilled at problem solving, their ability to conceptually integrate change and crisis with shared ideals (Mumford et al., 2006).

**Pragmatic leadership.** Pragmatic leaders create solutions based on the threats and opportunities presented by the situation (Mumford et al., 2004). Bedell-Avers et al. (2008) explained that pragmatic leaders stress neither goals nor causes, usually arising in stable environments with local opportunities, focusing on problem-solving instead of a specific vision, using both positive and negative experiences, and usually appealing to elites that understand the problem. The success of pragmatic leaders is often found in their ability to develop viable solutions to problems (Bedell et al., 2006). They do not have the
emotional impact of charismatic and ideological leaders, but their success in problem-solving often leads to tremendous influence in organizations (Mumford et al., 2006). Pragmatic leaders depend on logic as opposed to emotionally evocative arguments to influence/develop their support base (Mumford, Antes, Caughron, & Friedrich, 2008).

*CIP model of leadership and creative performance.* Previous research on various other theories and models of leadership consistently demonstrate that leadership style has a direct effect on subordinate task performance, which includes creative task performance (Tierney et al., 1999; Atwater & Carmeli, 2009; Choi et al., 2009; Elenkov & Manev, 2009; Lyons & Schneider, 2009). An essential premise of the CIP model of leadership is that different styles of leadership can be equally effective. Several studies examined the leadership styles of the CIP model of leadership and found evidence to support the assertion that multiple styles of leadership have the potential to lead to outstanding results and that the results do not differ on the aggregate (Mumford & Van Doorn, 2001; Mumford et al., 2006; Mumford, Gaddis, Strange, & Scott, 2006; Bedell-Avers et al., 2008). Thus, we contend that averages across tasks will show no performance differences on the quality and originality of subordinate creative performance, leading to hypothesis 1:

*Hypothesis 1: There will not be significant difference for the overall creative performance (on quality and originality) of individuals in different leadership conditions.*

As previously explained, there are clear differences in the techniques and approaches used by each of the three CIP leadership styles. Thus, while overall
performance levels are not predicted to differ across the CIP leadership styles, the types of behavior they emphasize and engage in are theorized to differ substantially.

Establishing that CIP leadership styles have similar overall results, Mumford et al. (2006) examined the differences between charismatic, ideological, and pragmatic leaders; as well as, their creative problem solving strategies and leader performance by conducting a thorough historiometric analysis of leader biographies. They found that leaders apply different skills and approaches in solving novel problems for organizations. Charismatic leaders focused on idea generation, pragmatic leaders focused on problem analysis, and ideological leaders focused on idea evaluation. Each leader’s ability to integrate ideas and potential solutions with external demands was the critical determinant of performance, not leadership style.

Similarly, Bedell-Avers et al. (2008) examined individual leader’s ability to solve creative problems while evaluating quality and originality in different domains. They found that leadership style did not impact overall problem-solving performance. Meaning, different types of leaders are able to solve problems successfully using different methods. However, researchers did find that different conditions facilitated high quality and original solutions from charismatic, ideological, and pragmatic leaders. Pragmatic leaders typically produced solutions of average quality and originality across conditions; whereas, ideological and charismatic leaders produced high quality and original solutions contingent upon the situation/domain. Overall, the current literature indicates that charismatic, ideological, and pragmatic leadership are not associated with different aggregate levels of performance, but context does matter with regard to the quality and originality of outcomes in relation to leadership style. Different types of leaders use different methods.
and focus on different areas/tasks that correspond to different steps along the creative process.

While Mumford et al. (2006) and Bedell-Avers et al. (2008) focus on leadership style and the leader's performance, this study aims to understand further the influence of each leadership style on the creative performance of subordinates. Overall creative performance of leaders appears to be fairly consistent across the CIP leadership styles based on the literature. However, Mumford et al. (2006) also evaluated leaders' performance in regard to the eight core processes involved in creative thought and found differences in the performance level of the leaders at specific stages of the creative process (Mumford et al., 1991; Hunter et al., 2006).

For the present study, the eight core processes are organized into three different stages: early stage, middle stage, and late stage creative performance. Early stage creative performance includes problem identification, information gathering, and concept selection. Middle stage creative performance consists of conceptual combination and idea generation. Last, late stage creative performance is composed of idea evaluation, implementation planning, and monitoring. Mumford et al. (2006) explained that pragmatic leaders focus on problem analysis translated to higher performance on problem identification, information gathering, and concept selection. Ideological leaders also outperformed charismatic leaders on these processes. Results indicated that charismatic leaders focus on their future oriented vision was heavily dependent on idea generation which resulted in higher scores during the middle stage of creative performance compared to ideological and pragmatic leaders. Ideological leaders’ tendency to be more evaluative led to higher scores on idea evaluation and solution monitoring. Therefore, when specific leadership styles are applied
to specific stages of the overall creative processes, results will differ – hence the development of the following set of hypotheses.

*Hypothesis 2a*: Participants led by a pragmatic leader will display the highest level of creative performance (on quality and originality) on early stage creative tasks, followed by ideological leaders and then charismatic leaders.

*Hypothesis 2b*: Participants led by a charismatic leader will display the highest level of creative performance (on quality and originality) on middle stage creative tasks, followed by ideological leaders and then pragmatic leaders.

*Hypothesis 2c*: Participants led by an ideological leader will display the highest level of creative performance (on quality and originality) on late stage creative tasks, followed by charismatic leaders and then pragmatic leaders.

**Context**

Crisis, as a contextual variable, is often associated with emergence of, and desire for, leadership. It is generally accepted that outstanding leadership styles emerge when there is a crisis situation (Beyer, 1999; Mumford, Scott, & Hunter, 2006). Bligh, Kohles, and Meindl (2004) provided a practical example of charismatic leadership emerging after the attacks on the United States on September 11th, 2001. Their analysis of public speeches and the media’s portrayal of President Bush prior to and following the attacks demonstrated an increase in charismatic characteristics. It is important to understand that the context of the situation can impact how the leader’s message is perceived by subordinates which consequently has major implications on the influence that leader may
or may not have with their subordinates. The influence and impact of the leader directly affects performance outcomes.

While Bedell-Avers et al. (2008) found that leadership style did not result in differences in overall problem-solving performance, the researchers did find that the situation mattered with respect to the production of high quality and original problem solutions, especially for charismatic and ideological leaders. Hunt, Boal, and Dodge (1999) found that in the absence of a crisis condition the effects of certain leadership styles decay faster than others. The context of the situation influenced the length of influence for certain leadership styles. In a meta-analysis examining the relationship of stressors and creative performance, Byron, Khazanchi, and Nazarian (2010) found that the relationship is more complicated than simply saying stressors increase or decrease creative performance. Basically, low-stress conditions increase creative performance and high-stress inducing tasks decrease performance.

In their examination of creativity, Oldham and Cummings (1996) showed several contextual characteristics had a significant impact on performance. When referring to creative outcomes specifically, results indicated that individuals demonstrated the most creative work when they had high levels of creativity-relevant personal characteristics, worked on complex and challenging jobs, and had supportive supervisors that operated in a non-controlling manner. Further, Oldham and Cummings identified that contextual variables that limit or restrict an individual’s excitement for a task have a negative impact on an individual’s intrinsic motivation and subsequently their creative performance (Amabile, 1983; Amabile, Hadley, & Kramer 2002). More specifically, Shalley, Zhou, and Oldham (2004) identified time deadlines and goals as contextual variables that impact
creative performance by lowering an individual’s intrinsic motivation (Amabile, 1996). Additionally, Andrew and Smith (2006) found that when marketing professionals experienced time pressure they produced less creative ideas. Also, Andrews and Farris (1972) found that, while some time pressure was actually associated with higher levels of creative performance, when the time pressure reached an undesirable level it had a negative impact on creative performance.

Therefore, the evidence demonstrates that context of the situation has a major impact on creative performance. Higher levels of stress influence individual intrinsic motivation and have a negative impact on creative performance. Considering stress as a specific contextual variable leads to the next hypothesis.

_Hypothesis 3: There will be an overall main effect in creative performance for task stress such that participants in the lower-stress condition will perform at a higher level than those in the higher-stress condition._

Further, context must be considered when analyzing the influence of leadership styles on different performance outcomes. More specifically, this study examines how stress conditions impact the effects of leadership styles on creative performance outcomes. Mumford (2006) explains that charismatic leaders’ messages focus on appealing to the masses, ideological leaders’ messages focus on appealing to a more dedicated and smaller group, and pragmatic leaders often appeal to a very small group of elite individuals. Additionally, pragmatic leaders often gain trust from within the organization based on the consistency of performance over time. Therefore, the manipulation of the perception of
available time given for each creative task may vary based on each leadership condition – hence hypothesis four.

_Hypothesis 4: There will be an interaction between leadership condition and stress condition such that charismatic leaders will show the least amount of change in creative performance followed by ideological leaders with pragmatic leaders showing the largest decrease in creative performance._

**Method**

**Present Study**

The present study examined how different leaders influence the performance of subordinates during the early, middle, and late stages of the creative process. Additionally, the study analyzed the effects of stress on the participants in each leadership condition. This study utilized a 3 X 2 X 3 mixed model design. More specifically, leadership condition (charismatic, ideological, and pragmatic) and stress condition (low stress and high stress) were between subject factors while the varying types of creative tasks (early, middle, and late stage tasks) were within subject factors.

**Participants**

Participants from a northeastern university were recruited from the psychology department’s subject pool and were randomly assigned into conditions. Conducting a power analysis using G*Power (effect size =.25, error probability =.05, and power =.95) indicated that a total of 251 participants were needed for the study. There were 336 individuals that participated in the study. The average age of the participants was 18.86.
The participants were 74.7% female and 25.3% male. The ethnicity of the participant sample was of 76.0% Caucasian, 9.6% Asian, 7.2% African American, 6.9% Hispanic, and .3% Pacific Islander.

Procedures

The participants were introduced to the study by a confederate playing the role of an experimenter. There were 3-12 participants per session at one of two locations. The performance difference between the two locations was not significant at the.05 level. Therefore, the data was collapsed across locations. Participants were randomly assigned to one of the three leadership conditions. Each participant was only exposed to one leadership condition. The participants were also randomly assigned to a low stress or high stress condition. During each session participants were instructed that interaction with other participants was not permitted.

The experimenter provided a general introduction to the participants and guided them through filling out their initial survey. Following completion of the initial survey, participants completed a series of divergent thinking tasks. Participants were then introduced to their leader, who was also a study confederate. The leader provided a basic description of the situation and the general subject matter of the three creative tasks which the participants would be required to complete. In the low-stress condition it was explained that they were allotted 10 minutes for each task. In the high-stress condition participants were initially told that they would be allotted 15 minutes for each task. Before the task began, however, the experimenter interrupted the leader and asked to see the leader outside the lab room for a moment. The leader then returned to the room and
informed the participants that due to an external error in scheduling they would not have as much time to complete the three exercises. They had five minutes less, but they still had to complete all tasks. Regardless of the stress condition, all the participants had 10 minutes for each exercise. Prior to the start of each task, participants were reminded of the time requirements.

Next, the participants were led through three creative tasks by the leader. The leader demonstrated the behaviors and characteristics of one of the three CIP styles of leadership. The differences between leadership styles detailed in the literature were incorporated into the scripts for each leadership condition (Bedell Avers et al., 2008; Hunter et al., in press; Mumford, 2006; Mumford & Strange, 2002). These differences depicted the varied approaches each leader utilized to lead participants through the study's creative tasks. For additional information see Appendix D for the complete script for each study condition. Each leadership manipulation is labeled with the various mental model factors used by the different types of leaders. The stress manipulations are also detailed in the scripts.

The three creative tasks that the participants completed as part of the study each represented activities that occur during a specific stage of the creative thought process (early, middle, and late stage tasks). Each task was independent from the other tasks to allow task order to be rotated during each session to ensure task order did not confound the results of the study. After completion of the creative tasks, the experimenter returned to the room and the participants were required to fill out a final survey that consisted of several manipulation checks and exploratory variables. Participants were then debriefed and thanked for their participation.
Manipulations

Confederates were trained to execute the specific manipulations for each leadership styles under the CIP model. Only female confederates were used to act as the leader to avoid confounding the study results with leader gender. Prior to piloting the study, scripts for each creative task and each leader condition were previewed to 12 leadership and creativity researchers to serve as an additional construct validity check. First, the researchers were asked to categorize the specific stage of the creative process that each task prompt represented (early, middle, and late). Second, the researchers were given blind copies of the excerpts of the scripts for each leadership condition and asked to categorize the excerpts according to the leadership style (charismatic, ideological, and pragmatic) that each represented. Based on their responses, slight adjustments were discussed and implemented for the creative tasks description and for the leadership condition scripts. Pilot studies were conducted to further refine the scripts and to ensure the manipulations in the study were salient enough to have an impact on participants. Though not statistically significant due to low sample sizes, results during piloting showed the anticipated pattern. Once the scripts were finalized we began data collection.

Task Manipulation. Participants engaged in three main tasks. Each task was specifically designed to represent activities that occur during one of the three stages of the creative process. The early stage task required participants to complete an exercise focused on problem identification, information gathering, concept selection, and conceptual combination. The middle stage task required participants to address a situation through idea generation and idea evaluation. The late stage task required participants to concentrate on implementation planning and monitoring for a specific crisis. Participants
were given specific instructions detailing the requirements and limitations of their responsibilities to ensure they focused on only the activities related to a specific stage described in the task. Each task was autonomous to enable task order to be randomized.

**Leadership Style Manipulation.** The work by Mumford and colleagues on the CIP model of leadership served as the basis for the leadership styles used in this study. The three leadership styles described by the CIP model (charismatic, ideological, and pragmatic) were used to exhibit three theoretically outstanding leadership styles which research indicates are equally effective on overall ratings for creative performance. Specific behaviors, detailed in the literature, that differentiate the leadership styles were integrated into the scripts developed for the present study. The behaviors used to distinguish the leaders were time orientation of the leader (future, present, or past), types of experiences used by the leader (only positive, only negative, or both), types of outcomes sought by the leader (positive, transcendental, or flexible), and use of emotions by the leader (emotional or rational). Confederates memorized the scripts to emulate each leadership style during designated sessions with participants. Each confederate emulating the leader’s role in the study randomly rotated between the three different leadership styles. There were three trained confederates that led participants throughout the study. Each participant was only exposed to one leadership style.

**Stress Manipulation.** Similar to the crisis manipulation in Hunt et al. (1999), the expected time available for the completion of the required tasks was manipulated in this study. The intent behind the manipulation was to create two stress conditions. In the lower stress condition participants were informed from the beginning of the study that they had 10 minutes to complete each of the tasks. In the higher stress condition
participants were initially informed that they had 15 minutes to complete each task. However, before they were allowed to start the first task the experimenter interrupted the session and asked to see the leader. When the leader returned to the room they explained to the participants that due to an external source error there were only 10 minutes for each task. It was explained to the participants that they were still expected to perform each task to standard. Participants were reminded of time requirements before beginning each task.

The stress manipulation check results were examined during pilot testing. While not statistically significant, the results showed trending information that those in the high-stress condition found the tasks more stressful than those in the low-stress condition.

Measures

Covariates

Participants were asked to complete several questions on personal and demographic information to control for possible individual differences during the study. Barron and Harrington (1981) explained that it is important to account for differences in levels of intelligence and for other individual demographic differences like age and gender. They identify the possibility that these individual differences may cause creative performance to vary. Mumford, Marks, Connelly, Zaccaro, and Johnson (1998), for example, found correlations between intelligence and divergent thinking consequence tasks, a method to gauge individual creative ability. As a result, information requested from participants included current GPA, SAT scores for math and verbal, participant gender, age, and academic major. The intent for collecting the information on individual differences was to account for likely sources of variance to ensure the variance detected
was a result of the study manipulations. See Appendix A for a full list of covariate items used for each scale.

*Personality.* Feist (1998) pointed out that personality psychology and the study of creativity both stress the uniqueness of the individual. Additionally, Feist clearly demonstrated that personality variables cause variation in creative performance. Also, in their literary review, Barron and Harrington (1981) highlighted numerous studies that clarified and supported the need to account for the variance in creative performance produced by personality differences. To control for the variance produced as a result of individual differences in personality it is important to measure personality differences. Therefore, all participants completed scales measuring the Big Five personality variables (Goldberg, 1998). The variables measured included extraversion, agreeableness, conscientiousness, openness, and neuroticism. Each variable was measured using a 1-5 scale with responses ranging from disagree strongly (1) to agree strongly (5). The scale has an established Cronbach’s alpha ≥ .79 for all five sub-scales.

*Creative Potential* Participants were evaluated on their creative potential using two different methods. First, they were required to complete a self-report measure of creative performance using four items on a 1-5 scale (Shalley et al., 2004). Second, participants also completed a series of divergent thinking tasks which asked the participant to come up with as many solutions as possible to a unique problem (Baer, 1993). Divergent thinking tasks are reliable and valid indicators of creative performance (Hunter et al., in press; Kim, 2008; Merrifield, Guilford, Christiensen, and Frick, 1962). The two tasks provide different methods of measuring an individual’s creative ability which ensure that creative potential, or lack thereof, does not confound the study’s results.
Liking. Next, Hunter et al. (2007) recommend accounting for liking as a control variable in leadership studies. Liking can impact the ratings that a subordinate gives a rater. Liking was evaluated by adapting three items from Wayne and Ferris’ (1990) liking scale. Participants were asked to rate three items on a 1-5 (strongly agree to strongly disagree) Likert scale. Three example items are: “Working for my leader is a pleasure,” “I like my leader very much as a person,” and “I think my leader would make a good friend.” The Cronbach’s $\alpha$ for the scale is .94.

Need for Structure. Thompson, Naccarato, and Parker (1989) constructed a scale measuring personal need for structure. Individuals with high or low need for structure respond differently to situations. Their responses indicated varying states of comfort which impacted performance outcomes and perceptions of their leader. The scale for personal need for structure was recorded using a 1-5 scale ranging from “strongly disagree” to “strongly agree.” Example items include items like “I like to have a place for everything and everything is in its place” and “I enjoy being spontaneous”.

Need for Leadership. Multiple studies examined the relationship between a subordinate’s need for leadership and leader effectiveness; all recognize that a subordinate’s need for leadership impacts the ability of the leader to influence effectively performance outcomes (e.g. Knickerbocker, 1948; House, 1971; Kerr & Jermiers, 1978; Seers & Graen, 1984, & de Vries, Roe, & Taillieu, 2002). Vries et al. (2002) developed a scale to measure participants’ need for leadership. The scale uses a 1-5 scale ranging from “strongly disagree” to “strongly agree” and has a Cronbach’s $\alpha$ of .93. The scale includes 17 items like “I need my supervisor to set goals” or “I need my supervisor to motivate me.”
Dependent Variables

There are two primary dependent variables used in the study which are ratings of quality and originality in regard to subordinate creative performance on the three creative tasks. Specifically, the products generated by study participants were coded on a 1-5 scale with separate ratings for quality and originality. This technique is based on the work of Redmond et al. (1993). Four coders were trained to evaluate the participants’ products to ensure that there was inter-rater reliability (inter-rater reliabilities for ratings of quality and originality on three separate tasks were above .81).

Additionally, several exploratory variables were collected to gain a better understanding of the mechanisms that enhance or diminish a leader’s influence on creative performance. These exploratory variables were collected when participants completed a final survey with questions about the confederate leader. The items were presented as “leadership development tools” for the leader’s personal development. Specifically, participants completed items that gauged perceptions of competence in task, relationship, and change behaviors based on Yukl’s (2007) taxonomy. Using a 1-5 scale ranging from strongly disagree to strongly agree, 31 total items were utilized. Additionally, participants answered questions on the final survey about their willingness to follow the leader. The scale includes six items using a 1-5 scale (Cushenbery, Thoroughgood, Hunter, 2009). Last, the participants were asked to answer a series of questions adapted from the Yukl, Kim, and Falbe (1996) measuring power tactics utilized. The scale includes questions on legitimate, reward, expert, and referent power based on a 1-4 Likert type responses. Additionally, questions on the importance of the task and the enjoyment of implementation
were also adapted from the Yukl et al. (1996) scale and included. See Appendix B for specific dependent variable items used.

Manipulation Checks

Participants were asked a series of questions to assess whether or not the study manipulations had their desired impact. On the final survey, participants answered questions about the leader they worked with during the study. The scale was adapted from Hunter et al. (in press) and designed to evaluate a person’s leadership style and help categorize them as charismatic, ideological, or pragmatic according to the behaviors dictated by the CIP model. There are 11 questions that can be grouped into three different categories. First, there are questions that indicate the time orientation of the leader (future, present, or past). Second, the questions indicate the type of experience the leader used to support their vision/focus (only positive, only negative, or both). Next, the questions deal with the type of outcomes sought by the leader (positive, transcendental, or flexible). Last, the questions focus on the type of appeal that the leader used to gain support (emotional or rational). Each area has several questions that were answered using a 1-5 Likert scale ranging from “never” to “nearly always displays” a certain behavior.

Also, a panel of leadership researchers was given each leadership condition script and asked to identify the type of leadership style being utilized. The results were compared with the intended leadership style to ensure the proper leadership style was evident. The same technique was used to ensure the planned task manipulations were effective. A panel of creativity researchers was given the three creativity tasks and asked to classify them as early, middle, or late stage tasks under the creative process model.
Additionally, participants completed a perceived stress scale, designed for this study, during the final survey meant to demonstrate the increased perceptions of stress created by the stress manipulation. Using the manipulation check from Hunt et al. (1999) as an example, a two item scale was utilized to evaluate the stress condition in the study. The 1-5 Likert scale captured perceptions of time pressure and stress. See Appendix C for specific manipulation check items.

**Analyses**

First, a repeated measures analysis of variance (RM ANOVA) was conducted to examine the effect of the leadership condition and stress condition on the quality and originality ratings of subordinate performance on the three creative tasks. Additionally, means and standard error were calculated to examine significant differences on leadership conditions on the separate creative tasks, for different stress conditions by creative task, and for different leadership conditions by stress conditions by creative task. Also, a multivariate analysis of variance (MANOVA) was conducted to examine the exploratory variables focusing on perceived leader competence, power, and liking.

**Results**

Means, standard deviations, and intercorrelations are presented in Table 1. While there were moderate to high correlations between the ratings for quality and originality for each task (.65, .49, and .67), the literature stipulates that they still represent unique components of creativity and should be addressed separately (Bessemer & O’Quin, 1999). The results of this study support this concept based on differences found between groups.
Manipulation Checks

Several manipulation checks were inserted in the final survey to ensure that the leadership condition and stress condition had the desired impact on the participants. First, there was a series of 10 questions adapted from Hunter et al. (in press) related directly to the behaviors exhibited by the session leader. These behaviors are tied to the items that delineate the leadership styles within the CIP model. They can be divided in 4 sub-categories: time orientation of the leader, type of experience used by the leader, type of outcomes sought by the leader, and type appeal used by the leader.

Charismatic leaders are described in the literature as future oriented. However, in the study they were perceived as primarily focused on the present \((M = 3.74, SE = .08)\), then the future \((M = 3.54, SE = .08)\), and then the past \((M = 2.89, SE = .10)\). Charismatic leaders primarily rely on using positive prior experiences. This was reflected in the participants’ perceptions; positive experiences used \((M = 2.76, SE = .11)\), used both positive and negative experiences used \((M = 2.46, SE = .10)\), and negative experiences used \((M = 2.39, SE = .11)\).

Charismatic leaders seek positive outcomes. Their subordinates’ perceptions indicated a focus on transcendental outcomes \((M = 4.05, SE = .09)\), then positive outcomes \((M = 3.76, SE = .12)\), and then flexible outcomes \((M = 3.46, SE = .10)\). Last, charismatic leaders are known for using emotional appeals. The perception of the subordinates in this study was that the
charismatic leaders primarily used rational appeals ($M = 3.54, SE = .11$) and then emotional appeals ($M = 3.45, SE = .10$).

Ideological leaders are described in the literature as past oriented. However, in the study they were perceived as primarily focused on the present ($M = 3.80, SE = .08$), then the future ($M = 3.58, SE = .08$), and then the past ($M = 2.89, SE = .11$). Ideological leaders primarily rely on using negative prior experiences. This was not seen in the participants’ perceptions; positive experiences used ($M = 3.17, SE = .11$), negative experiences used ($M = 3.05, SE = .11$), and used both positive and negative experiences used ($M = 3.01, SE = .11$). Ideological leaders seek transcendental outcomes. Their subordinates’ perceptions indicated a focus on positive outcomes ($M = 3.95, SE = .10$), then transcendental outcomes ($M = 3.72, SE = .10$), and then flexible outcomes ($M = 3.29, SE = .11$). Ideological leaders are also known for using emotional appeals. However, the perception of the subordinates in this study was that the ideological leaders primarily used rational appeals ($M = 3.48, SE = .11$) then emotional appeals ($M = 3.36, SE = .12$).

Pragmatic leaders are described in the literature as present oriented. This was reflected in the results. They were perceived as primarily focused on the present ($M = 3.60, SE = .08$), the future ($M = 3.42, SE = .09$), and then the past ($M = 3.08, SE = .10$). Pragmatic leaders primarily rely on using both positive and negative prior experiences. This was seen in the participants’ perceptions; both positive and then negative experiences used ($M = 2.62, SE = .10$), then positive experiences used ($M = 2.60, SE = .10$), and negative experiences used ($M = 2.53, SE = .10$). Pragmatic leaders seek flexible outcomes. Their subordinates’ perceptions indicated a focus on positive outcomes ($M = 3.73, SE = .10$), then transcendental outcomes ($M = 3.62, SE = .10$), and then flexible outcomes ($M = 3.09, SE = .10$). Pragmatic
leaders are known for using rational appeals. The perception of the subordinates in this study was that pragmatic leaders primarily used rational appeals \((M = 3.33, SE = .10)\) then emotional appeals \((M = 2.91, SE = .11)\).

The results of the manipulation checks for the different leadership conditions were not consistently successful and also included a lot of variability. The participants either were not conscious of the manipulations taking place; the manipulations were not clear or salient enough for the participants to remember. In any case, the manipulation checks do not fully confirm that the desired manipulations occurred based on the manipulation checks results. However, there were additional manipulation checks executed during the study construction phase. Prior to piloting, 12 leadership researchers were surveyed to ensure they could appropriately categorize scripts according to leadership style. The researchers categorized sections of the script according to leadership style. Inter-rater reliability ranged from .60 to 1. Any item with lower than a .9 inter-rater reliability was discussed and changed based on small group discussions to better represent the desired leadership style. This supports the notion that the participants did not consciously pick up on the manipulation checks or represent them appropriately on the manipulation check questions.

Second, a two item scale adapted from Hunt et al. (1999) was used to record the amount of stress induced by the scenario. Those in the low stress condition \((M = 2.49, SE = .08)\) generally perceived lower levels of stress based on the situation than those in the high stress condition \((M = 2.54, SE = .07)\). While there was not a statistically significant difference, the results trended in the intended direction.
Covariates

Using a stepwise analysis, all covariates were examined and it was determined that six covariates should be included in the final analysis based on their significance and the need to maximizes degrees of freedom. The following covariates were retained: ethnicity was coded as Caucasian versus non-Caucasian \((F(2, 318) = 12.70, p \leq .01)\); session leader (dummy code 1) \((F(2, 318) = 2.23, p \leq .11)\); session leader (dummy code 2) \((F(2, 318) = 3.79, p \leq .05)\); divergent thinking flexibility \((F(2, 318) = 9.27, p \leq .05)\); consequences two flexibility \((F(2, 318) = 5.17, p \leq .05)\); and the only variable from the big five personality variables retained was agreeableness \((F(2, 318) = 4.06, p \leq .05)\). As a point of clarification, though session leader (dummy code 1)’s \((p \leq .11)\) it was retained because it was evaluated as a pair with session leader (dummy code 2) \((p \leq .05)\).

Tests of Hypotheses

Hypothesis 1 predicted that there would be no significant differences between the overall ratings of creative performance (on quality and originality). However, there was a main effect for leadership condition for overall creative performance quality \((F(2, 318) = 5.84, p \leq .00)\), but not for originality \((F(2, 318) = 2.38, p \leq .09)\). The results are depicted in Figure 1. In terms of ratings on quality, individuals in the charismatic \((M = 2.73, SE = .04)\) and ideological \((M = 2.77, SE = .05)\) leadership conditions outperformed those in the pragmatic \((M = 2.56, SE = .04)\) leadership condition. Individuals in the pragmatic condition did not perform as well in terms of quality as individuals’ with a charismatic or ideological leader. Hypothesis 1 was not supported.
There was a significant interaction between leadership conditions by creative task ($F(4, 638) = 4.68, p < .01$). Therefore, subordinate performance on each task was evaluated by each leadership condition to determine where the interactive effect took place.

Hypothesis 2a, 2b, and 2c each predicted there would be significant differences on creative performance by each creative task. Hypothesis 2a focused on the early stage task results, hypothesis 2b focused on the middle stage task results, and hypothesis 2c focused on the late stage task results.

Recall that hypothesis 2a postulated that on an early stage creative task those in the pragmatic leadership condition would outperform both ideological and charismatic leaders with those in the ideological condition outperforming those in the charismatic condition. On ratings of quality, there were no significant differences between pragmatic ($M = 2.543, SE = .06$), ideological ($M = 2.69, SE = .067$), or charismatic ($M = 2.61, SE = .06$) leadership conditions. There were also no significant differences on ratings of originality for pragmatic ($M = 2.63, SE = .06$), ideological ($M = 2.69, SE = .06$), or charismatic ($M = 2.65, SE = .06$) leadership conditions. Therefore, there was no support for Hypothesis 2a.

Hypothesis 2b stated that on a middle stage creative task those in the charismatic leadership condition would outperform individuals in the ideological and pragmatic leadership conditions with those in the ideological condition outperforming individuals in the pragmatic condition. On ratings of quality, subordinates in the charismatic ($M = 2.76, SE = .05$) and ideological ($M = 2.70, SE = .06$) conditions significantly outperformed those in
the pragmatic ($M = 2.48, SE = .05$) condition. As seen in Figure 2, in terms of originality, those in the charismatic ($M = 2.95, SE = .05$) condition significantly outperformed subordinates in the ideological ($M = 2.62, SE = .05$) and pragmatic ($M = 2.66, SE = .05$) conditions. Therefore, there was partial support for Hypothesis 2b.

As seen in Figure 2, in terms of originality, those in the charismatic ($M = 2.95, SE = .05$) condition significantly outperformed subordinates in the ideological ($M = 2.62, SE = .05$) and pragmatic ($M = 2.66, SE = .05$) conditions. Therefore, there was partial support for Hypothesis 2b.

Insert Figure 2 about here

Hypothesis 2c asserted that on a late stage creative task individuals in the ideological leadership condition would outperform those in the charismatic and pragmatic leadership conditions with subordinates in the charismatic condition outperforming individuals in the pragmatic condition. On ratings of quality, subordinates in the ideological ($M = 2.90, SE = .06$) conditions significantly outperformed those in the pragmatic ($M = 2.67, SE = .06$) condition. Individual performance in the charismatic ($M = 2.81, SE = .06$) condition was not significantly different than people in the ideological or pragmatic conditions. On ratings of originality, there was no difference between the ideological ($M = 2.84, SE = .06$), charismatic ($M = 2.81, SE = .06$), or pragmatic ($M = 2.80, SE = .06$) conditions. Therefore, there was minimal support for Hypothesis 2c.

Hypothesis 3 predicted that individuals in the low stress condition would have higher levels of creative performance (on quality and originality) than individuals in the high stress condition. As seen in Figure 3, there was a main effect for stress condition for overall creative performance for quality ($F(2, 318) = 3.94, p < .01$), but not for originality ($F(2, 318) = .02, p < .05$). For quality, those in the low stress ($M = 2.75, SE = .04$) condition
significantly outperformed individuals in the high stress \((M = 2.62, SE = .03)\) condition. Therefore, Hypothesis 3 was partially supported.

Hypothesis 4 postulated that there would be an interactive effect between leadership conditions and stress conditions; such that, those in the charismatic condition would show the least change from the low to high stress condition followed by ideological and then pragmatic leaders. For the charismatic condition, those in the low stress \((M = 2.82, SE = .06)\) condition were significantly different than subordinates in the high stress \((M = 2.63, SE = .06)\) condition. For the ideological condition, those in the low stress \((M = 2.86, SE = .07)\) condition were significantly different than subordinates in the high stress \((M = 2.67, SE = .06)\) condition. Only in the pragmatic condition was there no significant difference between the low stress \((M = 2.57, SE = .06)\) condition and the high stress \((M = 2.66, SE = .06)\) condition. As depicted in Figure 4, both the charismatic and ideological conditions showed a significant amount of change while there was no significant difference in the pragmatic condition. Hypothesis 4 was not supported.

Exploratory Results.

Several additional variables were included in the study in an attempt to learn more about perceptions of leaders and power bases when examining the CIP Model. The first set
of exploratory variables dealt with perceptions of the leader, see Table 3. The following exploratory variables were tested in regard to perceptions of the leader based on leader condition: leader competence relationship \( (F(2, 318) = .06, p \leq .94) \); leader competence task \( (F(2, 318) = .20, p \leq .82) \); leader competence change orientation \( (F(2, 318) = .78, p \leq .46) \); willingness to follow \( (F(2, 318) = .28, p \leq .76) \); and liking \( (F(2, 318) = 1.42, p \leq .24) \). None of these variables showed significant differences by leadership condition, stress condition, or combination of the two.

The second set of exploratory variables dealt with power bases and the nature of the task. The following exploratory variables were tested in regard to the use of certain power bases for the different leadership conditions: legitimate power \( (F(2, 318) = .54, p \leq .59) \); reward power \( (F(2, 318) = .39, p \leq .68) \); expert power \( (F(2, 318) = .41, p \leq .66) \); and referent power \( (F(2, 318) = 1.07, p \leq .34) \). There were no significant differences based on leadership condition, stress condition or interaction between the two, see Table 4. Two other variables were collected regarding perceptions of the task itself: importance of the task \( (F(2, 318) = .76, p \leq .47) \); and enjoyment of the task \( (F(2, 318) = 2.38, p \leq .09) \). As detailed in Table 5, there were no significant differences based on leadership condition, stress condition, or an interaction between the two. However, enjoyment of the task was approaching significance. Those in the charismatic \( (M = 2.77, SE = .06) \) and the ideological condition \( (M = 2.72, SE = .07) \) tended to rate the tasks as more enjoyable than those in the pragmatic \( (M = 2.58, SE = .06) \) condition.
Discussion

The focus of this study was to examine multiple leadership styles, their impact during different stages of the creative process, while considering stress as an additional influence. The results of this study support several components of the major theory, yet also challenges certain elements of theory, replicate findings from the literature, indicate the future need for additional research on leading for creative performance, and identifies scaling issues that must be further developed in the future.

Study Findings

Overall Creative Performance. In this study, charismatic and ideological leaders’ subordinates performed significantly better than individuals with a pragmatic leader in terms of ratings for quality. There are a few possible explanations for this overall performance difference. First, there may actually be performance differences based on leadership condition. The controls built into the scripts for the study would suggest the cause of the performance differences would be a result of a leader’s specific behaviors.
However, an alternate explanation may be more likely. Mumford and colleagues articulate while defining pragmatic leaders that they emerge after having the opportunity to develop a reputation for consistent performance over time. Pragmatic leaders focus on rational appeals and gain the support and trust of others around them once they demonstrate their ability to solve problems. This study gauges creative performance after a short, one-time interaction between the leader and the participant. Charismatic and ideological leaders’ ability to engage others on a more personal level and their use of emotional appeals may not require that same amount of time to emerge in a given situation. Consequently, it is reasonable to suggest that pragmatic leaders did not have the chance to establish themselves, under the study conditions, with their subordinates as effectively as charismatic or ideological leaders.

*Creative Performance on Specific Tasks.* Although we found no strong differences on the early and late stage tasks, we did observe performance differences on the middle stage creative task. Charismatic leaders influenced the performance of their subordinates above and beyond ideological and pragmatic leaders on middle stage creative tasks. Specifically, originality, but not quality, was greater when participants were led by a charismatic leader. They impacted the ability of individuals to come up with more novel but not necessarily higher quality output. This study replicated the results of Mumford et al. (2006) which demonstrated leader performance differences on middle stage tasks which extend the results from leader performance to the creative performance of subordinates. Mumford et al. (2006) suggested that charismatic leaders performed best on middle stage creative tasks because of their focus on the facilitation of idea generation. The concept that charismatic leaders perform and inspire better performance on middle stage creative tasks
has specific implications on practical settings and future research. Also, it supports that the idea that having both ratings of quality and originality is useful; without this distinction in outcome criteria observed differences across conditions may not have been as evident.

**Stress Effect.** In congruence with previous results, this study found that stress directly impacts performance levels (Hunt et al., 1999; Byron et al., 2010). In this study the stress condition's impact was isolated to ratings of creative performance for quality. The evaluation of the quality of the creative performance is based on whether the output is logical, complete, and coherent (Redmond et al., 1993; Besemer & O'Quin, 1999). In the low stress condition individuals produced higher quality responses than those in the high stress condition.

The manipulation check indicated through trending data that individuals found the high stress condition slightly more stressful. In accordance with the literature presented in support of hypothesis 3, individuals were manipulated to think that they were battling time pressures which, according to theory, influenced their intrinsic motivation (Amabile, 1983; Oldham and Cummings, 1996, Amabile, Hadley, & Kramer, 2002). As a result, creative performance ratings of quality were negatively impacted. It is notable that ratings of originality were not impacted by the manipulation. It is possible that originality is a more internalized attribute that emerges regardless of stress level or intrinsic motivation. Additional research should test the impact of various levels of stress to examine if originality and intrinsic motivation might be more significantly influenced by a much higher levels of stress. Regardless, it was again useful to have both ratings of quality and originality for creative performance.
Leader Effects. Pragmatic leaders’ subordinates performed well-below those participants in the charismatic and ideological condition in the one-time encounter investigated in the study. However, while it was hypothesized that charismatic leaders would show the least amount of change based on the stress condition, it was actually pragmatic leaders that demonstrated little to no variance in the ratings of creative performance. Charismatic leaders’ appeal to the masses was the reasons that it was originally hypothesized that charismatic leaders would show the least amount of change based on the stress condition.

However, Bedell-Avers et al. (2008) explained that pragmatic leaders show consistent performance across situations regardless of context. Pragmatic leaders’ use of problem solving skills and use of rational persuasion are essential to their consistent performance. Pragmatic leaders focus on rational ideas and problem solving skills are also reasons that people do not accept a pragmatic leader as quickly as they might accept a charismatic or ideological leader who pushes a specific vision and use emotional appeals. Mumford and Van Doorn (2001) also suggested that since pragmatic leaders focus on social utility as opposed to an overarching social vision subordinates’ investment in the situation is limited and, as a result, may not inspire strong affective reactions (Bass, 1990). Therefore there may be a range limitation on a subordinate’s reaction to a pragmatic leader. While pragmatic leaders may not inspire the high levels of performance, they will keep their subordinates more emotionally stable during a response to a crisis. Further consideration of the evidence and the results of this study support the notion that it is pragmatic leaders that actually would inspire the least amount of change in a crisis situation.
Theoretical Implications.

The results of this study have several implications for leadership and creativity research. First, one of the fundamental elements of the CIP model of leadership is that multiple forms of leadership have the potential to result in outstanding performance (e.g. Mumford and Van Doorn, 2001; Mumford, 2006, Bedell-Avers et al., 2008). The indication is that no one style of leadership is better than any other style of leadership. The main effect for quality for creative output contradicts this portion of theory. Pragmatic leaders inspired much lower levels of idea quality in this study. The consistent poor performance of pragmatic leaders could simply mean that pragmatic leaders are not as good as ideological and charismatic leaders or something not accounted for by the study is going on. Mumford and colleagues explain that pragmatic leaders establish themselves in organizations by showing they are capable problem solvers over the course of time as they build their reputation for being able to get the job done. The leaders in this study were not able to establish a salient reputation with the participants of this study due to nature of the one-time interaction and time restrictions with individuals from a University subject pool. Further research would help clarify if the performance differences are found in both short-term and long-term relationships and in an academic versus practical settings.

A second implication of the study is that several findings support the basic premise for using both ratings of quality and originality when evaluating creative performance (Besemer & O’Quin, 1999). There are several points that support rating both quality and originality for creative performance outcomes. First, a main effect for quality was identified for overall performance. This same effect was not demonstrated for originality. Second, an interactive effect for originality was present for charismatic leaders on middle
stage creative tasks. Charismatic leaders’ focus on idea generation during middle stage tasks influenced subordinates specifically on originality, but not quality. Third, stress was found to impact directly the quality of individual creative performance, but not the originality. Both quality and originality were impacted by manipulations in the study. However, separate manipulations influenced them both differently. Therefore, having both ratings enabled specific information to be identified that may otherwise have been missed by using only one rating for creative performance.

Practical Implications

The results of this study also have several practical implications as well. First, based on the poor performance of pragmatic leaders, it is important to give them the time necessary to gain support from within the organization by developing a reputation for consistent performance. Pragmatic leaders gain their support over the course of time by proving they are capable of solving problems. The poor performance of their subordinates during this study indicates that they are not the right fit for short duration creative tasks. They need to be given opportunities to prove themselves to their subordinates. This may impact how a supervisor develops an up and coming pragmatic leader. Pragmatic leaders’ inability to positively impact subordinate performance when they are new to an organization could severely hamper the number of opportunities they are given earlier in their time within an organization.

The results of this study indicate that when there is a short duration middle stage creative task, a charismatic leader appears to be the best person for the job. A greater understanding of leadership styles and their influence on subordinate creative
performance may help to identify which type of leader should be selected during different stages of the creative process. Depending on the replication of these results in future research; the study results may be applied to the actual selection process for choosing certain leaders to take responsibility for specific tasks.

Limitations

There are a few limitations that should be considered in regard to this study. First, the limited ethnic and age diversity in the population of the subject pool may limit the generalizability of the results. Although lab studies often produce questions about generalizability, it is not unreasonable to suggest that undergraduates are capable of serving as surrogate subordinates in an experimental setting. Moreover, studies of subordinate attitudes in experimental settings, are fairly common and have been shown to be applicable to practitioners (Kim, Ferrin, Cooper, & Dirks, 2004; Kim et al., 2006). Additionally, there is some indication that effects observed in field settings and experimental settings are highly correlated (Anderson, Lindsay, & Bushman, 1999; Cohen-Chararsh & Spector, 2001). Thus, although generalizing to applied settings is cautioned, it does not appear unreasonable as a starting point for field investigations.

Second, Hunter et al. (2007) points out that a major limitation of many leadership studies is the inability to examine the impact of the different leadership styles over a longer period of time. Due to the limitations of the subject pool used, this study is not longitudinal in nature. This limitation may have impacted the performance of those individuals in the pragmatic condition since they did not have the time necessary to build a reputation for consistent performance that people grow to recognize and respect. Additionally research
is necessary to not only address the longitudinal nature of the study, but to attempt to replicate the results of this study and its predecessors in a field sample.

Last, the literature on scale development for the CIP Model of leadership is not extremely well-developed at this time. The study attempted to adapt a scale not originally intended for use in a lab setting of this type. The majority of the research deals with coders of historical information or self-rated tasks based on provided scenarios. The availability of proven scales that produce reliable results are not widely available at this time. Future research into the matter would go a long way to assisting this area of need.

Future Research

The results, limitations, and short-falls of this study highlight particular areas in need of further research. Mumford et al. (2006) explained that while leadership styles in the CIP model may did not differ on overall performance there may be specific difference at different stages of the creative process model. This study was able to partially replicate those results in a laboratory setting with subordinates’ creative performance. However, it is clear that two research directions are important to better understanding these results and to ensure that the results can be applied in practical settings.

First, it is necessary to try to replicate the results in a longitudinal study. Results for pragmatic leaders were much lower for ratings of quality. These findings run counter to findings observed in previous studies (Mumford, 2006; Mumford et al., 2006; Bedell-Avers et al., 2008). A longitudinal study would help clarify if pragmatic leaders did not have time to establish themselves with the subordinates or if there really are differences in subordinate performance on creative tasks.
Second, it is important to test whether these results can be replicated in an applied work sample. Much of the literature that delineates these leadership styles focuses on the study of historiometric data samples. Being able to conduct a study in an active organization would require a reliable and valid scale that could accurately and appropriately categorize leaders as charismatic, ideological, or pragmatic. The weaknesses of current scales for this type of research were evident in the manipulation check of perceptions of the leader in this study.

An additional research area that would be useful to better understand the relationship between the leader and their influence on subordinate creative performance should focus on ratings of quality and originality for creative performance. In this study, several effects demonstrated how important it was to have both ratings. However, why some manipulations impacted certain ratings and not others is not clear at this time. Personality variables, personal needs, the type of leader, or the type of task are all examples of possible factors in the facilitation of quality and/or originality. There are very specific practical implications that may develop based on the ability to improve quality and originality on their own or in combination.

Conclusion

This study set out to increase our understanding of the CIP model of leadership by examining how leadership styles influence the creative performance of subordinates and to consider how varying levels of stress influence the relationship between leadership style and creative performance. Through the manipulation of the leadership conditions and the time pressure faced by each participant this study provided support for many aspects of
the current literature, challenged portions of current theory, and cultivated new research avenues to pursue. More specifically, this study added to our understanding of the differences between the leadership styles in the CIP model, their ability to influence subordinate performance on specific creative tasks during the creative process, and how different contextual variables, such as stress, impact performance results.
### Table 1. Means, Standard Deviations, and Intercorrelations for Study Variables

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader Condition</td>
<td>2.03</td>
<td>0.83</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress Condition</td>
<td>1.52</td>
<td>0.5</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session Leader</td>
<td>1.87</td>
<td>0.78</td>
<td>.11*</td>
<td>.06</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity- Caucasian/ Other</td>
<td>0.24</td>
<td>0.42</td>
<td>.11</td>
<td>.01</td>
<td>.04</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>2.88</td>
<td>1.80</td>
<td>.03</td>
<td>.00</td>
<td>.01</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.25</td>
<td>.44</td>
<td>-.06</td>
<td>-.08</td>
<td>-.05</td>
<td>.13*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT Verbal</td>
<td>609.44</td>
<td>144.58</td>
<td>.03</td>
<td>-.05</td>
<td>.00</td>
<td>-.10</td>
<td>-.04</td>
<td>.04</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT Quantitative</td>
<td>618.14</td>
<td>123.31</td>
<td>-.05</td>
<td>-.02</td>
<td>-.08</td>
<td>.01</td>
<td>.02</td>
<td>.24**</td>
<td>.61**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DV Thinking Flexibility</td>
<td>6.13</td>
<td>2.03</td>
<td>-.11*</td>
<td>-.09</td>
<td>-.12*</td>
<td>-.09</td>
<td>-.01</td>
<td>.09</td>
<td>.08</td>
<td>.06</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consequences 2 Flexibility</td>
<td>4.62</td>
<td>1.61</td>
<td>-.12*</td>
<td>-.00</td>
<td>-.12*</td>
<td>-.15**</td>
<td>-.13*</td>
<td>-.07</td>
<td>.04</td>
<td>-.06</td>
<td>.24**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>4.1</td>
<td>0.55</td>
<td>.04</td>
<td>.13*</td>
<td>.08</td>
<td>-.09</td>
<td>-.11*</td>
<td>-.18**</td>
<td>-.01</td>
<td>-.19**</td>
<td>.00</td>
<td>.04</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 1- Quality</td>
<td>2.6</td>
<td>0.68</td>
<td>-.08</td>
<td>-.14*</td>
<td>.03</td>
<td>-.24**</td>
<td>-.11*</td>
<td>-.01</td>
<td>.14*</td>
<td>.04</td>
<td>.15**</td>
<td>.24**</td>
<td>.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 2- Quality</td>
<td>2.64</td>
<td>0.59</td>
<td>-.22**</td>
<td>-.11*</td>
<td>-.05</td>
<td>-.22**</td>
<td>-.04</td>
<td>.00</td>
<td>.04</td>
<td>.03</td>
<td>.16**</td>
<td>.11*</td>
<td>.03</td>
<td>.40**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 3- Quality</td>
<td>2.78</td>
<td>0.64</td>
<td>-.11*</td>
<td>-.06</td>
<td>.04</td>
<td>-.28**</td>
<td>-.08</td>
<td>-.06</td>
<td>.10</td>
<td>.08</td>
<td>.13*</td>
<td>.19**</td>
<td>.19**</td>
<td>.40**</td>
<td>.36**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 1- Originality</td>
<td>2.65</td>
<td>0.61</td>
<td>-.05</td>
<td>-.01</td>
<td>-.04</td>
<td>-.21**</td>
<td>.00</td>
<td>.01</td>
<td>.09</td>
<td>.07</td>
<td>.13*</td>
<td>.20**</td>
<td>.08</td>
<td>.65**</td>
<td>.28**</td>
<td>.29**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 2- Originality</td>
<td>2.74</td>
<td>0.57</td>
<td>-.26**</td>
<td>-.07</td>
<td>-.05</td>
<td>-.10</td>
<td>-.09</td>
<td>.09</td>
<td>.07</td>
<td>.10</td>
<td>.35**</td>
<td>.20**</td>
<td>.07</td>
<td>.27**</td>
<td>.49**</td>
<td>.21**</td>
<td>.29**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Task 3- Originality</td>
<td>2.81</td>
<td>0.63</td>
<td>-.01</td>
<td>.05</td>
<td>.08</td>
<td>-.19**</td>
<td>-.04</td>
<td>-.05</td>
<td>.09</td>
<td>.06</td>
<td>.14*</td>
<td>.14</td>
<td>.22**</td>
<td>.25**</td>
<td>.22**</td>
<td>.67**</td>
<td>.28**</td>
<td>.23**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Note.** **Correlation is significant at the 0.01 level (2-tailed).  *Correlation is significant at the 0.05 level (2-tailed)**
Table 2. Repeated Measures Analysis of Variance for Creativity Outcomes Quality and Originality

<table>
<thead>
<tr>
<th></th>
<th>Quality</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Originality</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>df</td>
<td>p</td>
<td>(\eta^2)</td>
<td></td>
<td>F</td>
<td>df</td>
<td>p</td>
<td>(\eta^2)</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>93.80</td>
<td>2</td>
<td>.00</td>
<td>.23</td>
<td></td>
<td>97.14</td>
<td>2</td>
<td>.00</td>
<td>.235</td>
<td></td>
</tr>
<tr>
<td><strong>Covariates:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session Leader (Dummy Code 1)</td>
<td>5.19</td>
<td>2</td>
<td>.02</td>
<td>.016</td>
<td></td>
<td>3.65</td>
<td>2</td>
<td>.06</td>
<td>.011</td>
<td></td>
</tr>
<tr>
<td>Session Leader (Dummy Code 2)</td>
<td>8.30</td>
<td>2</td>
<td>.00</td>
<td>.026</td>
<td></td>
<td>3.93</td>
<td>2</td>
<td>.05</td>
<td>.012</td>
<td></td>
</tr>
<tr>
<td>Ethnicity-Caucasian/Other</td>
<td>3.17</td>
<td>2</td>
<td>.08</td>
<td>.017</td>
<td></td>
<td>1.11</td>
<td>2</td>
<td>.29</td>
<td>.006</td>
<td></td>
</tr>
<tr>
<td>DV Thinking Flexibility</td>
<td>1.13</td>
<td>1</td>
<td>.29</td>
<td>.006</td>
<td></td>
<td>0.46</td>
<td>1</td>
<td>.50</td>
<td>.012</td>
<td></td>
</tr>
<tr>
<td>Consequences 2 Flexibility</td>
<td>3.25</td>
<td>1</td>
<td>.07</td>
<td>.017</td>
<td></td>
<td>0.21</td>
<td>1</td>
<td>.65</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.01</td>
<td>1</td>
<td>.95</td>
<td>.000</td>
<td></td>
<td>0.00</td>
<td>1</td>
<td>1.00</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td><strong>Main Effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition</td>
<td>5.68</td>
<td>3</td>
<td>.00</td>
<td>.035</td>
<td></td>
<td>2.68</td>
<td>3</td>
<td>.07</td>
<td>.020</td>
<td></td>
</tr>
<tr>
<td>Stress Condition</td>
<td>7.50</td>
<td>2</td>
<td>.01</td>
<td>.023</td>
<td></td>
<td>.01</td>
<td>2</td>
<td>.92</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Task</td>
<td>1.77</td>
<td>3</td>
<td>.17</td>
<td>.006</td>
<td></td>
<td>.88</td>
<td>3</td>
<td>.41</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td><strong>Two-way interactions:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition*Stress Condition</td>
<td>1.81</td>
<td>6</td>
<td>.17</td>
<td>.011</td>
<td></td>
<td>1.304</td>
<td>6</td>
<td>.27</td>
<td>.008</td>
<td></td>
</tr>
<tr>
<td>Leader Condition*Task</td>
<td>1.44</td>
<td>9</td>
<td>.22</td>
<td>.009</td>
<td></td>
<td>4.56</td>
<td>9</td>
<td>.00</td>
<td>.028</td>
<td></td>
</tr>
<tr>
<td>Stress Condition*Task</td>
<td>.77</td>
<td>6</td>
<td>.47</td>
<td>.002</td>
<td></td>
<td>.87</td>
<td>6</td>
<td>.42</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td><strong>Three-way interactions:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition<em>Stress Condition</em>Task</td>
<td>.46</td>
<td>18</td>
<td>.76</td>
<td>.003</td>
<td></td>
<td>.84</td>
<td>18</td>
<td>.50</td>
<td>.005</td>
<td></td>
</tr>
</tbody>
</table>

*Note. \(\eta^2\) = partial eta squared.*
Table 3. Summary of Multivariate Analysis of Variance for Exploratory Variables Perceptions of the Leader

<table>
<thead>
<tr>
<th></th>
<th>Leader Competence-</th>
<th>Leader Competence-</th>
<th>Leader Competence-</th>
<th>Willingness to Follow</th>
<th>Liking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relational</td>
<td>Task</td>
<td>Change Orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F       df  p   (\eta^2)</td>
<td>F       df  p   (\eta^2)</td>
<td>F       df  p   (\eta^2)</td>
<td>F       df  p   (\eta^2)</td>
<td></td>
</tr>
<tr>
<td><strong>Main Effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition</td>
<td>.06    2  .94 .000</td>
<td>.20    2  .82 .001</td>
<td>.78    2  .46 .005</td>
<td>.28    2  .76 .002</td>
<td>1.42  2 .24 .009</td>
</tr>
<tr>
<td>Stress Condition</td>
<td>.03    1  .87 .000</td>
<td>.00    1  .95 .000</td>
<td>.18    1  .67 .001</td>
<td>.51    1  .48 .002</td>
<td>2.02  1 .16 .006</td>
</tr>
<tr>
<td><strong>Two-way interaction:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition*Stress</td>
<td>1.04   2  .36 .006</td>
<td>.74    2  .48 .004</td>
<td>.10    2  .90 .001</td>
<td>.34    2  .72 .002</td>
<td>.48   2 .62 .003</td>
</tr>
<tr>
<td>Stress Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. \(\eta^2\) = partial eta squared.*
Table 4. Summary of Multivariate Analysis of Variance for Exploratory Variables Power Bases

<table>
<thead>
<tr>
<th></th>
<th>Legitimate Power</th>
<th>Reward Power</th>
<th>Expert Power</th>
<th>Referent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>df</td>
<td>p</td>
<td>( \eta^2 )</td>
</tr>
<tr>
<td><strong>Main Effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition</td>
<td>.54</td>
<td>2</td>
<td>.59</td>
<td>.003</td>
</tr>
<tr>
<td>Stress Condition</td>
<td>.05</td>
<td>1</td>
<td>.82</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Two-way interaction:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition* Stress</td>
<td>.56</td>
<td>2</td>
<td>.57</td>
<td>.003</td>
</tr>
</tbody>
</table>

*Note. \( \eta^2 \) = partial eta squared.*
Table 5. *Summary of Multivariate Analysis of Variance for Exploratory Variables Perceptions of Tasks*

<table>
<thead>
<tr>
<th></th>
<th>Importance of Task</th>
<th></th>
<th>Enjoyment of Task</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>df</td>
<td>p</td>
<td>(\eta^2)</td>
</tr>
<tr>
<td><strong>Main Effects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition</td>
<td>.76</td>
<td>2</td>
<td>.47</td>
<td>.005</td>
</tr>
<tr>
<td>Stress Condition</td>
<td>1.59</td>
<td>1</td>
<td>.208</td>
<td>.005</td>
</tr>
<tr>
<td><strong>Two-way interaction:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Condition* Stress Condition</td>
<td>.54</td>
<td>2</td>
<td>.59</td>
<td>.003</td>
</tr>
</tbody>
</table>

*Note.* \(\eta^2\) = partial eta squared.
Figure 1: Estimated Marginal Means of Quality of Creative Performance by Leadership Condition

Figure 2: Estimated Marginal Means of Originality of Creative Performance by Leadership Condition by Creative Task
**Figure 3:** Estimated Marginal Means of Quality of Creative Performance by Stress Condition

![Figure 3: Estimated Marginal Means of Quality of Creative Performance by Stress Condition](image)

**Figure 4:** Estimated Marginal Means of Quality of Creative Performance by Leadership Condition by Stress Condition

![Figure 4: Estimated Marginal Means of Quality of Creative Performance by Leadership Condition by Stress Condition](image)
References


the combination of task characteristics and leader–member exchange. Organizational Behavior and Human Performance, 33, 283–306.

characteristics on creativity: Where should we go from here? Journal of Management, 30 (6), 933-958.

ideological leadership. The Leadership Quarterly, 13, 343-377.

creativity: The relevance of traits and relationships. Personnel Psychology, 52, 591-620.

development of the personal need for structure and the personal fear of invalidity

and Ambidextrous Organizations. In P. Anderson & M. Tushman (Eds.), Managing
Strategic Innovation and Change (pp. 3-23). New York: Oxford University Press.


Appendix A

Covariates

Demographic Information:

- Please list your current GPA: ______________________
- Please list your SAT math score: __________________
- Please list your SAT verbal score: _______________
- Please indicate your gender: ______________________
- Please list your age: ___________________________
- Please select your major: _________________________
- Please select your ethnicity: ____________

Big 5 Personality Variables (Goldberg, 1992): see reference for full scale

Liking (Wayne & Ferris, 1990):
Measured on a 1-7 scale where 1=strongly disagree and 5= strongly agree
- I like my supervisor very much as a person.
- I think my supervisor would make a good friend.
- Working for my leader is a pleasure

Personal Need for Structure:

Read each of the following statements and decide how much you agree with each according to your attitudes, beliefs, and experiences. It is important for you to realize that there are no “right” or “wrong” answers to these questions. People are different, and we are interested in how you feel. Please respond according to the 5 point scale.

- It upsets me to go into a situation without knowing what I can expect from it.
- I’m not bothered by things that interrupt my daily routine.
- I enjoy having a clear and structured mode of life.
- I like to have a place for everything and everything in its place.
- I enjoy being spontaneous.
- I find that a well-ordered life with regular hours makes my life tedious.
- I don’t like situations that are uncertain.
- I hate to change my plans at the last minute.
- I hate to be with people who are unpredictable.
- I find that a consistent routine enables me to enjoy life more.
- I enjoy the exhilaration of being in unpredictable situations.
• I become uncomfortable when the rules in a situation are not clear.

Need for Leadership:

Would you please indicate on which of the following you personally need the contribution of your supervisor/boss/manager/leader? **Please indicate your level of agreement on a 1 – 5 scale**

I need by supervisor to...

• ...set goals
• ...decide what work should be done
• ...transfer knowledge
• ...motivate me
• ...coordinate, plan, and organize my work
• ...maintain external contacts
• ...provide me with information
• ...gear all activities of the team to one another
• ...create a good team spirit
• ...provide me with support
• ...arrange things with higher-level management
• ...handle conflicts
• ...give work-related feedback
• ...correct mistakes
• ...help solve problems
• ...recognize and reward contributions
• ...inspire me

Self-Rated Creative Ability:

How would you rate your creative performance using the following scale:

• Never
• Rarely
• Sometimes
• Often
• Always

1------------------------2------------------------3------------------------4------------------------5

• Demonstrates originality in my work.
• Tries out new ideas and approaches to problems.
• Identifies opportunities for new products/processes.
• Generates novel, but operable work-related ideas.
Divergent Think Task:

- Most people throw their used tin cans away, but they have thousands of interesting and unusual uses. In the spaces below, list as many of these interesting and unusual uses as you can think of. Do not limit yourself to any one size can. You may use as many cans as you like. Do not limit yourself to the uses you have seen or heard about; think about as many possible uses as you are able to (5 min).

Divergent Thinking Task (Consequences 1):

- LIST AS MANY CONSEQUENCES AS YOU CAN
  You will be allowed 2 minutes to answer the following question

  What would be the result if everyone lost the ability to read and write?

  Sample Responses:
  a. No newspapers or magazines
  b. No libraries
  c. No mail or letters
  d. T.V. sales increase

Divergent Thinking Task (Consequences 2):

- LIST AS MANY CONSEQUENCES AS YOU CAN
  You will be allowed 2 minutes to answer the following question

  What would be the result if human life continued on earth without death?

  Sample Responses:
  a. Overpopulation
  b. More old people
  c. Housing shortage
  d. No more funerals
Appendix B

Dependent Variables.

Questions about the Leader (Leader Development Survey)

Leader competence – task (new scale – Yukl, 2007):

Please indicate your level of agreement on a 1 – 5 scale

I believe this leader would do well at:

- Organizing work activities to improve efficiency
- Planning short-term operations
- Assigning work to groups or individuals
- Clarifying what results are expected for a task
- Set specific goals and standards for task performance
- Explain rules, policies and standard operating procedures
- Direct and coordinate work activities
- Monitor operations and performance
- Resolve immediate problems that would disrupt work

Leader competence – relational (new scale – Yukl, 2007):

Please indicate your level of agreement on a 1 – 5 scale

I believe this leader would do well at:

- Providing support and encouragement to someone with a difficult task
- Expressing confidence that a person or group can perform a difficult task
- Socializing with people to build relationships
- Recognizing contributions and accomplishments
- Providing coaching and mentoring when appropriate
- Consulting with people on decisions affecting them
- Allowing people to determine the best way to do a task
- Keeping people informed about actions affecting them
- Helping resolve conflicts in a constructive way
- Using symbols, ceremonies, rituals, and stories to build team identity
- Recruiting competent new members for the team or organization

Leader competence – change-oriented (new scale – Yukl, 2007):

Please indicate your level of agreement on a 1 – 5 scale
I believe this leader would do well at:

Monitoring the external environment to detect threats and opportunities

- Interpreting events to explain the urgent need for change
- Studying competitors and outsiders to get ideas for improvements
- Envisioning exciting new possibilities for the organization
- Encouraging people to view problems or opportunities in a different way
- Encouraging and facilitating innovation and entrepreneurship in the organization
- Encouraging and facilitating collective learning in a team or organization
- Experimenting with new approaches for achieving objectives
- Making symbolic changes that are consistent with a new vision or strategy
- Encouraging and facilitating efforts to implement major changes
- Announcing and celebrating progress in implementing changes
- Influencing outsiders to support change and negotiating agreements with them

Willingness to Follow (from Cushenbery, Thoroughgood, & Hunter, 2009):

- I would like to work with this leader on future projects
- I would be willing to serve under this leader
- I would enjoy working with this leader
- If given the choice, I would rather not work with this leader (R)
- I would be unhappy if I was required to work with this leader (R)
- I would request to work with this leader

Power Yukl, Kim, and Falbe (1996):

Please indicate your level of agreement on a 1 – 4 scale from Not at all to Very Much:

- Legitimate Power- Does the leader have the authority to request that you complete the tasks you took part in today?
- Reward Power- How much is the leader able to influence your academic standing?
- Expert Power- Does the leader have the skills necessary to solve problems related to the task subject matter?
- Referent Power- The leader is the type of person you respect and admire.

Please indicate your level of agreement on a 1 – 4 scale from Not at all to Very:

- Importance of Task- How important are the tasks you performed today?
- Enjoyment of Task- Did the tasks involve doing something that was pleasant and enjoyable?
Appendix C

Manipulation Checks

Leadership:

For all ratings use the following scale:
   5 = Nearly always
   4 = The majority of time
   3 = Some of the time
   2 = Rarely
   1 = Never

Time Frame:
To What Extent Does the Leader:

- Use a future-oriented time-frame?
- Use a present-oriented time-frame?
- Use a past-oriented time-frame?

Type of Experience Used:
To What Extent Does the Leader:

- Discuss positive prior experiences when interacting with (e.g., motivating) subordinates?
- Discuss negative prior experiences when interacting with (e.g., motivating) subordinates?
- Blend both positive and negative prior experiences when interacting with (e.g., motivating) subordinates?

Nature of Outcomes Sought:
To What Extent Does the Leader:

- Seek positive outcomes?
- Seek transcendent (e.g., going beyond normal bounds or expectations) outcomes?
- Change or alter his discussion of outcomes sought, depending on the situation?

Use of Emotional Appeals:
To What Extent Does the Leader:

- Use emotional appeals to motivate and engage followers?
- Use rational persuasion to motivate and engage followers?

Stress Scale:
For item 1 use the following scale:
   5 = Strongly Agree
   4 = Agree
   3 = Neutral
   2 = Disagree
   1 = Strongly Disagree

- The goals of the tasks were threatened by time pressure.

For item 2 use the following scale:
   5 = Extremely
   4 = Very
   3 = Moderately
   2 = Slightly
   1 = Not at all

- The three tasks were ______ stressful.
Appendix D

Condition Charismatic High Stress Condition

Study Begins:
Participants are welcomed to the lab and asked to sit at the table or on the couch outside the lab room.

Have the participants sign in on the Session/Participant Record Sheet. You will use the first four blocks of this form to give the participant their administrative code.

The Correct survey version should already be pulled up on the computer. Have the participant enter the room

Have an informed Consent form on their laptop. Have them sign it and then bring their attention to the computer. Give them their administrative participant code.

Experimenter: “Welcome to our study and thank you for agreeing to participate. You will be working on several creative exercises as part of a joint project between the Psychology Department and the Educational Leadership Department. You will be led through three exercises by an upper level student from the Department of Educational Leadership in the College of Education. In addition to your participation in multiple exercises, you will also be asked to provide anonymous feedback about the project leader in regard to his/her leadership skills. It is very important that you provide a honest and clear assessment about their performance both for the project and their personal leadership development.”

“The project leaders from The Educational Leadership Department have been selected based on an interview process and a review of their specific credentials which demonstrate a high level of leadership potential. They are working on further developing two primary leadership skills during this session. The project leader will be working on developing their ability to lead creative projects. More specifically, they have been given some leeway in how they approach leading the project, but their main task is to provide basic direction and guidance to help you successfully complete each exercise. They will take you through three exercises today. You will have 15 minutes for each exercise. The project leader is supposed to provide very little feedback once the exercise is explained to allow for your creative freedom. So, pay attention to their directions but don’t be upset if they can’t tell you...
exactly what to do. Before we begin I have a few administrative details we need to take care of first. I will have you begin the study by completing this questionnaire.”

**Experimenter waits until participants finish.** *(MAKE SURE THAT YOU ARE KEEPING AN EYE ON THE PARTICIPANTS SCREENS AND THAT THEY ARE ON THE CORRECT SURVEY PAGE.)*

“Next, you will complete three short tasks. Please read the instructions to the first task. You have 5 minutes.

**Experimenter waits until participants finish.**

“Next please read the general instructions for the next two tasks. Please go to the next page and read the instructions for the next task. You have two minutes for this task.”

**Experimenter waits until participants finish.**

“Next, please read the instructions for the next task. You have two minutes for this task.”

“Your project leader ______ will be in to start in a few minutes. Thank you again for your participation and good luck!”

**Leader walks into lab room with clipboard. Leader has clipboard at all times.**

**Leader (use a very enthusiastic approach/attitude):** “Hi Everyone! Thanks for coming in today. My name is _____ and I’m a senior Educational Leadership Student. This joint project between the Industrial/Organizational Psychology program and the Educational Leadership program that we’re ______ working on today provides an excellent opportunity for us *(make gesture to everyone in the room)* to help improve the future of our University. Overall our efforts today can make a real difference in helping Penn State shine as an Academic Center for Excellence. We have the opportunity to help make sure Penn State is a place that students want to be. also, we can help Penn State provides access to the most up to date resources and ensure that information is clearly distributed to those that need it.”

Here is a little background on the situation: The Undergraduate Admissions Office reached out to the Department of Educational Leadership and the Department of Psychology for assistance with a few different challenges they are dealing with. Both of these Departments have specific expertise that they
believe can help address the problems that I will describe. The Admissions Office feels strongly that current Penn State students have unique ideas and experiences that can produce invaluable information to assist the Admission Office in addressing these problems.

“I couldn’t agree more. I feel extremely confident that you will provide insightful ideas during the upcoming exercises.”

We have been selected to provide input on three different issues. There will be 15 minutes given for each one of the exercises that I will ask you to complete. You will write your responses into the survey screen on your laptop.

“Remember, as you approach each task, focus on the future of Penn State and how to make the University the best it can be. Penn State is a fantastic place to be, and your input can help it stay that way for a long time to come.”

Experimenter listen for the word “REMEMBER! That is your signal to get ready to come back into the room. Let the leader finish their sentence then come back into the room.

Experimenter: “______ can I please speak with you outside?”

Leader excuses herself and goes out of the room. Wait one minute and come back inside.

Leader: “So, unfortunately, someone made a mistake and double booked this room. And as a result we’re going to have to cut some time off of our exercises. So now, you’ll only be given 10 minutes for each exercise. It is going to be much more difficult to complete everything we need to do. We’re really going to have to work hard to get this done.”

Leaders remember that exercises will be rotated during each session to avoid confounding the results of the experiment. Check the clipboard to ensure that you are introducing the correct exercise.

Leader: “Let me give you a quick overview of the first exercise.”

**Recruiting Exercise:**

Leader:
Instructions on Survey: Please follow along with the instructions on the screen:

The Office of Undergraduate Admissions reported information to the President of the University detailing that in the past two years there has been a significant drop (>20%) in the number of top-tier high school students applying to Penn State (SAT Scores above 1400, High School GPA > 3.7). It is critical to the President that the University better understand this shocking trend.”

Develop a plan for how you would gather information to identify the cause(s) of this drop in applications. Be specific on the methods you would use to capture the information and how you might use that information to provide an answer for the President on why this drop in applications of top-tier high school students is occurring. Do not attempt to develop solutions to this problem nor discuss how to implement changes to fix this issue. Again, you are not trying to come up with solutions, but focus on gathering the information needed to understand what is going on.

Leader says: “Considering the instructions, I want to give you my focus:

Recruiting top-tiered students is critical to the future reputation of our distinguished University. In order to solidify Penn State’s Academic reputation, we need to make sure the leadership of the University really understands the problem they’re facing. Before we can fix this problem, we need to make sure we know why this drop in applications is taking place. As you know, Penn State is a great place to be and provides tons of opportunities for its students. I have complete confidence that you will be able to come up with a plan that really lays out what Penn State need to know to figure out this problem.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

Modernizing Classrooms Exercise:

Leader:
**Instructions on Survey:** Please follow along with the instructions on the screen:

Recently, the President of the University initiated a plan to improve the University’s classrooms due to complaints from students and teachers and a recent College Magazine article that labeled PSU in the bottom 20% of big universities in reference to cutting edge classrooms. The President identified this as a significant issue for the University and it is his intention to implement changes to make Penn State an example for other Universities to look up to in regard to effective classroom techniques.

Do not explain how you would implement the ideas. The focus is to generate as many possible solutions within the time limits of the exercise.

**Leader says:** “Considering the instructions, I want to give you my focus:

Penn State is an excellent establishment and can set itself up for the future by establishing a “cutting-edge” reputation. We’ve all experienced taking classes at Penn State. So think about how our experience could be made even better by including other available resources. The goal here is to imagine the classroom of the future, so come up with as many ideas as you possibly can. The sky’s the limit!

Remember you have ten minutes.

3 minutes left

Time’s up.

**Leader:** “Let’s go over the next exercise”

**Major Selection Exercise:**

**Leader:**

**Instructions on Survey:** Please follow along with the instructions on the screen:

Information from new freshmen who completed surveys during syllabus week and from this year’s graduating seniors, who completed surveys prior to graduation, identified that more than 50% of students surveyed were not aware of all the majors offered at Penn State. Additionally, the surveys from recent graduates indicate that more than 40% of students surveyed changed their Major at least once citing that their first selection was not what they
thought it would be. The University has already generated many ideas and evaluated them. They decided that the best way to solve this problem is (1) to improve the current website which will include a personal interest interactive tool to help people find Majors that align with their interests and (2) to use e-mails to reach out to current and future students. The current website provides just a brief description with some pages that have links to Department websites.”

Develop a plan that addresses how to implement the solutions Penn State identified to better distribute information on available Majors. The focus of the exercise is to implement the ideas previously described. The following points should be highlighted: focus of the major, future opportunities (leads to what type of jobs, internships, etc), types of classes, and additional requirements. Do not spend time trying to address other methods of distributing information to students or potential students.

**Leader says:** “Considering the instructions, I want to give you my focus:

By addressing this problem, Penn State can truly highlight all the wonderful educational opportunities it has to offer students. Getting this information out to students in an effective manner will enhance their experience and help them to select the correct Major and hopefully find their true calling while still in College. Our goal is to make sure people are finding the right area of study to set them up for the future.”

Remember you have ten minutes.

3 minutes left

Time’s up.

When the last task is complete say....

**Leader:** “That completes this portion of the study. I just wanted to say thank you for coming and helping with such an important project. The experimenter will be in shortly.”

**Leader leaves, experimenter walks in after 1 minute.**

**Experimenter:** “Hi everyone! I have one final questionnaire that I’d like you to complete. Go ahead and begin

*wait for everyone to finish*
Thanks for participating in the study. We really appreciate your contributions. Please read through your debriefing forms.”

“We really appreciate your time. You are free to go.”

Experimenter and Leader wait until participants leave.
Lion's Pride
Condition Charismatic Low Stress

Study Begins:

Participants are welcomed to the lab and asked to sit at the table or on the couch outside the lab room.

Have the participants sign in on the Session/Participant Record Sheet. You will use the first four blocks of this form to give the participant their administrative code.

The Correct survey version should already be pulled up on the computer.

Have the participant enter the room

Have an informed Consent form on their laptop. Have them sign it and then bring their attention to the computer. Give them their administrative participant code.

Experimenter: “Welcome to our study and thank you for agreeing to participate. You will be working on several creative exercises as part of a joint project between the Psychology Department and the Educational Leadership Department. You will be led through three exercises by an upper level student from the Department of Educational Leadership in the College of Education. In addition to your participation in multiple exercises, you will also be asked to provide anonymous feedback about the project leader in regard to his/her leadership skills. It is very important that you provide a honest and clear assessment about their performance both for the project and their personal leadership development.”

“The project leaders from The Educational Leadership Department have been selected based on an interview process and a review of their specific credentials which demonstrate a high level of leadership potential They are working on further developing two primary leadership skills during this session. The project leader will be working on developing their ability to lead creative projects. More specifically, they have been given some leeway in how they approach leading the project, but their main task is to provide basic direction and guidance to help you successfully complete each exercise. They will take you through three exercises today. You will have 10 minutes for each exercise. The project leader is supposed to provide very little feedback once the exercise is explained to allow for your creative freedom. So, pay attention to their directions but don’t be upset if they can’t tell you

Stress Man.
Low Stress
exactly what to do. Before we begin I have a few administrative details we need to take care of first. I will have you begin the study by completing this questionnaire.”

Experimenter waits until participants finish. (MAKE SURE THAT YOU ARE KEEPING AN EYE ON THE PARTICIPANTS SCREENS AND THAT THEY ARE ON THE CORRECT SURVEY PAGE.”

“Next, you will complete three short tasks. Please read the instructions to the first task. You have 5 minutes.

Experimenter waits until participants finish.

“Next please read the general instructions for the next two tasks. Please go to the next page and read the instructions for the next task. You have two minutes for this task.”

Experimenter waits until participants finish.

“Next, please read the instructions for the next task. You have two minutes for this task.”

“Your project leader _____ will be in to start in a few minutes. Thank you again for your participation and good luck!”

Leader walks into lab room with clipboard. Leader has clipboard at all times.

Leader (use a very enthusiastic approach/attitude): “Hi Everyone! Thanks for coming in today and before we begin, I’d like to tell you a little bit more about myself. My name is _____ and I’m a senior Educational Leadership Student. This joint project between the Industrial/Organizational Psychology program and the Educational Leadership program that we’re working on today provides an excellent opportunity for us (make gesture to everyone in the room) to help improve the future of our University. Overall, our efforts today can make a real difference in helping Penn State shine as an Academic Center for Excellence. We have the opportunity to help make sure Penn State is a place that students want to be. also, we can help Penn State provide access to the most up to date resources and ensure that information is clearly distributed to those that need it.”

Here is a little background on the situation: The Undergraduate Admissions Office reached out to the Department of Educational Leadership and the Department of Psychology for assistance with a few different challenges they
are dealing with. Both of these Departments have specific expertise that they believe can help address the problems I will describe. The Admissions Office feels strongly that current Penn State students have unique ideas and experiences that can produce invaluable information to assist the Admission Office in addressing these problems.

“I couldn’t agree more. I feel extremely confident that you will provide insightful ideas during the upcoming exercises.”

We have been selected to provide input on three different issues. There will be 10 minutes given for each one of the exercises that I will ask you to complete. You will write your responses into the survey screen on your laptop.

“Remember, as you approach each task focus on the future of Penn State and how to make the University the best it can be. Penn State is a fantastic place to be, and your input can help it stay that way for a long time to come.”

Leaders remember that exercises will be rotated during each session to avoid confounding the results of the experiment. Check the clipboard to ensure that you are introducing the correct exercise.

**Recruiting Exercise:**

**Leader:**

**Instructions on Survey:** Please follow along with the instructions on the screen:

The Office of Undergraduate Admissions reported information to the President of the University detailing that in the past two years there has been a significant drop (>20%) in the number of top-tier high school students applying to Penn State (SAT Scores above 1400, High School GPA > 3.7). It is critical to the President that the University better understand this shocking trend.

Develop a plan for how you would gather information to identify the cause(s) of this drop in applications. Be specific on the methods you would use to capture the information and how you might use that information to provide an answer for the President on why this drop in applications of top-tier high school students is occurring. Do not attempt to develop solutions to this problem nor discuss how to implement changes to fix this issue. Again,
you are not trying to come up with solutions, but focus on gathering the information needed to understand what is going on.

Leader says: “Considering the instructions, I want to give you my focus:

Recruiting top-tiered students is critical to the future reputation of our distinguished University. In order to solidify Penn State’s Academic reputation, we need to make sure the leadership of the University really understands the problem they’re facing. Before we can fix this problem, we need to make sure we know why this drop in applications is taking place. As you know Penn State is a great place to be and provides tons of opportunities for the futures of students. I have complete confidence that you will be able to come up with a plan that really lays out what Penn State needs to know to figure out this problem.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

Modernizing Classrooms Exercise:

Leader:

Instructions on Survey: Please follow along with the instructions on the screen:

Recently, the President of the University initiated a plan to improve the University’s classrooms due to complaints from students and teachers and a recent College Magazine article that labeled PSU in the bottom 20% of big universities in reference to cutting edge classrooms. The President identified this as a significant issue for the University and it is his intention to implement changes to make Penn State an example for other Universities to look up to in regard to effective classroom techniques.

Do not explain how you would implement the ideas. The focus is to generate as many possible solutions within the time limits of the exercise.

Leader says: “Considering the instructions, I want to give you my focus:

Penn State is an excellent establishment and can set itself up for the future by establishing a “cutting-edge” reputation. We’ve all experienced taking
classes at Penn State. So think about how our experience could be made even better by including other available resources. The goal here is to imagine the classroom of the future, so come up with as many ideas as you possibly can. The sky’s the limit!”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

**Major Selection Exercise:**

Leader:

**Instructions on Survey:** Please follow along with the instructions on the screen:

Information from new freshmen who completed surveys during syllabus week and from this year’s graduating seniors, who completed surveys prior to graduation, identified that more than 50% of students surveyed were not aware of all the majors offered at Penn State. Additionally, the surveys from recent graduates indicate that more than 40% of students surveyed changed their Major at least once citing that their first selection was not what they thought it would be. The University has already generated many ideas and evaluated them. They decided that the best way to solve this problem is (1) to improve the current website which will include a personal interest interactive tool to help people find Majors that align with their interests and (2) to use e-mails to reach out to current and future students. The current website provides just a brief description with some pages that have links to Department websites.

Develop a plan that addresses how to implement the solutions Penn State identified to better distribute information on available Majors. The focus of the exercise is to implement the ideas previously described. The following points should be highlighted: focus of the major, future opportunities (leads to what type of jobs, internships, etc), types of classes, and additional requirements. Do not spend time trying to address other methods of distributing information to students or potential students.

Leader says: “Considering the instructions, I want to give you my focus:
By addressing this problem, Penn State can truly highlight all the wonderful educational opportunities it has to offer students. Getting this information out to students in an effective manner will enhance their experience, and help them to select the correct Major and hopefully find their true calling while still in College. Our goal is to make sure people are finding the right area of study to set them up for the future.”

Remember you have ten minutes.

3 minutes left

Time’s up.

When the last task is complete say....

Leader: “That completes this portion of the study. I just wanted to say thank you for coming and helping with such an important project. The experimenter will be in shortly.”

Leader leaves, experimenter walks in after 1 minute.

Experimenter: “Hi everyone! I have one final questionnaire that I'd like you to complete. Go ahead and begin

*wait for everyone to finish*

Thanks for participating in the study. We really appreciate your contributions. Please read through your debriefing forms.”

“We really appreciate your time. You are free to go.”

Experimenter and Leader wait until participants leave.
Lion’s Pride
Condition Ideological High Stress

Study Begins:
Participants are welcomed to the lab and asked to sit at the table or on the couch outside the lab room.

Have the participants sign in on the Session/Participant Record Sheet. You will use the first four blocks of this form to give the participant their administrative code.

The Correct survey version should already be pulled up on the computer. Have the participant enter the room.

Have an informed Consent form on their laptop. Have them sign it and then bring their attention to the computer. Give them their administrative participant code.

Experimenter: “Welcome to our study and thank you for agreeing to participate. You will be working on several creative exercises as part of a joint project between the Psychology Department and the Educational Leadership Department. You will be led through three exercises by an upper level student from the Department of Educational Leadership in the College of Education. In addition to your participation in multiple exercises, you will also be asked to provide anonymous feedback about the project leader in regard to his/her leadership skills. It is very important that you provide a honest and clear assessment about their performance both for the project and their personal leadership development.”

“The project leaders from The Educational Leadership Department have been selected based on an interview process and a review of their specific credentials which demonstrate a high level of leadership potential. They are working on further developing two primary leadership skills during this session. The project leader will be working on developing their ability to lead creative projects. More specifically, they have been given some leeway in how they approach leading the project, but their main task is to provide basic direction and guidance to help you successfully complete each exercise. They will take you through three exercises today. You will have 15 minutes for each exercise. The project leader is supposed to provide very little feedback once the exercise is explained to allow for your creative freedom. So, pay attention to their directions but don’t be upset if they can’t tell you...”
exactly what to do. Before we begin I have a few administrative details we need to take care of first. I will have you begin the study by completing this questionnaire.”

Experimenter waits until participants finish. (MAKE SURE THAT YOU ARE KEEPING AN EYE ON THE PARTICIPANTS SCREENS AND THAT THEY ARE ON THE CORRECT SURVEY PAGE.”

“Next, you will complete three short tasks. Please read the instructions to the first task. You have 5 minutes.

Experimenter waits until participants finish.

“Next please read the general instructions for the next two tasks. Please go to the next page and read the instructions for the next task. You have two minutes for this task.”

Experimenter waits until participants finish.

“Next, please read the instructions for the next task. You have two minutes for this task.”

“You project leader _____ will be in to start in a few minutes. Thank you again for your participation and good luck!”

Leader walks into lab room with clipboard. Leader has clipboard at all times.

Leader (use a slightly enthusiastic approach/attitude): “Hi Everyone! Thanks for coming in today. My name is _____ and I’m a senior Educational Leadership Student. This joint project between the Industrial/Organizational Psychology program and the Educational Leadership program that we’re working on today provides an opportunity to help improve several challenges the University is facing. Today I plan to lead you through each exercise today to help restore Penn State’s reputation as a Center of Academic Excellence. By returning to the traditional values of the University, like focusing on the Penn State experience such as having great academics, providing the best resources to students, and getting clear and correct information out to students, Penn State will again set the example for others to follow.”

Here is a little background on the situation: The Undergraduate Admissions Office reached out to the Department of Educational Leadership and the Department of Psychology for assistance with a few different challenges they
are dealing with. Both of these Departments have specific expertise that they believe can help address the problems that I will describe. The Admissions Office feels strongly that current Penn State students have unique ideas and experiences that can produce invaluable information to assist the Admission Office in addressing these problems.

“By returning to a focus on strong academic traditions, Penn State can avoid failing to provide students with the resources to help them learn. In addition, its failure to distribute clear and helpful information to the student body can also be avoided”

You have been selected to provide input on three different exercises. You will be given 15 minutes on each one of the exercises that I will ask you to complete. You will write your responses into the survey screen on your laptop.

“Remember, I want you to focus on the strong academic tradition that Penn State established in the past. The failure of certain individuals to maintain focus on these pillars of Penn State tradition have led to some of the problems we will discuss. “

Experimenter listen for the word “REMEMBER! That is your signal to get ready to come back into the room. Let the leader finish their sentence then come back into the room.

Experimenter: “______ can I please speak with you outside?”

Leader excuses herself and goes out of the room. Wait one minute and come back inside.

Leader: “So, unfortunately, someone made a mistake and double booked this room. As a result we’re going to have to cut some time off of our exercises. You’ll only be given 10 minutes for each exercise now. So now It’s going to be much more difficult to complete everything we need to do. We’re really going to have to work hard to get this done.”

Leaders remember that exercises will be rotated during each session to avoid confounding the results of the experiment. Check the clipboard to ensure that you are introducing the correct exercise.

Leader: “Let me give you a quick overview of the first exercise.”

**Recruiting Exercise:**
Leader:

Instructions in Survey: Please follow along with the instructions on the screen:

The Office of Undergraduate Admissions reported information to the President of the University detailing that in the past two years there has been a significant drop (>20%) in the number of top-tier high school students applying to Penn State (SAT Scores above 1400, High School GPA > 3.7). It is critical to the President that the University better understand this shocking trend.

Develop a plan for how you would gather information to identify the cause(s) of this drop in applications. Be specific on the methods you would use to capture the information and how you might use that information to provide an answer for the President on why this drop in applications of top-tier high school students is occurring. Do not attempt to develop solutions to this problem nor discuss how to implement changes to fix this issue. Again, you are not trying to come up with solutions, but focus on gathering the information needed to understand what is going on.

Leader says: “Considering the instructions, I want to give you my focus:

Recruiting top-tiered academic students has always been important to the reputation of this distinguished University. Obviously, Individuals that develop the recruitment plan each year have not focused on the issues that are important to strong academic students; such as, focus on academics, and great resources. It is important to address things that are traditionally important to academically driven individuals. It is critical to help the leadership of the University really understand the problem they are facing. Before we can fix the problem we need to make sure we know why this drop in applications is taking place.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

Modernizing Classrooms Exercise:

Leader:
Instructions in Survey: Please follow along with the instructions on the screen:

Recently, the President of the University initiated a plan to improve the University’s classrooms due to complaints from students and teachers and a recent College Magazine article that said Penn State is in the bottom 20% of big universities in reference to cutting edge classrooms. The President identified this as a significant issue for the University and it is his intention to implement changes to make Penn State an example for other Universities to look up to in regard effective classroom techniques.

Generate as many ideas as possible for how Penn State can improve their classrooms. Do not explain how you would implement the ideas. The focus is to generate as many possible solutions within the time limits of the exercise.

Leader says: “Considering the instructions, I want to give you my focus:

In the past, Penn State was always rated high on “classroom experience.” I know I had some classes recently that were so large I didn’t know a single person in the room and I wouldn’t even recognize my professor if I saw him out of class, it was awful! Penn State used to stress the importance of ensuring each student had a great experience. It’s time to get back to that.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Lets go over the next exercise”

Major Selection Exercise:

Leader:

Instructions on Survey: Please follow along with the instructions on the screen:

Information from new freshmen who completed surveys during syllabus week and from this year’s graduating seniors, who completed surveys prior to graduation, identified that more than 50% of students surveyed were not aware of all the majors offered at Penn State. Additionally, the surveys from recent graduates indicate that more than 40% of students surveyed changed
their Major at least once citing that their first selection was not what they thought it would be. The University has already generated many ideas and evaluated them. They decided that the best way to solve this problem is (1) to improve the current website which will include a personal interest interactive tool to help people find Majors that align with their interests and (2) to use e-mails to reach out to current and future students. The current website provides just a brief description with some pages that have links to Department websites.”

Develop a plan that addresses how to implement the solutions Penn State identified to better distribute information on available Majors. The focus of the exercise is to implement the ideas previously described. The following points should be highlighted: focus of the major, future opportunities (leads to what type of jobs, internships, etc), types of classes, and additional requirements. Do not spend time trying to address other methods of distributing information to students or potential students.

**Leader says:** “Considering the instructions, I want to give you my focus:

The lack of availability of information has created a situation in which students don’t understand all their Major options. This used to be very important to the University. It should be considered failure on their part if students can’t take advantage of all their options. It is essential to really re-evaluate what information is important for students to understand all their Major options. The intent is to make sure that people have the information they need to make the best decision they can about a major.”

Remember you have ten minutes.

3 minutes left

Time’s up.

*When the last task is complete say....*

**Leader:** “That completes this portion of the study. I just wanted to say thank you for coming and helping with such an important project. The experimenter will be in shortly.”

**Leader leaves, experimenter walks in after 1 minute.**

**Experimenter:** “Hi everyone! I have one final questionnaire that I’d like you to complete. Go ahead and begin
*wait for everyone to finish*

Thanks for participating in the study. We really appreciate your contributions. Please read through your debriefing forms.”

“We really appreciate your time. You are free to go.”

Experimenter and Leader wait until participants leave.
Study Begins:
Participants are welcomed to the lab and asked to sit at the table or on the couch outside the lab room.

Have the participants sign in on the Session/Participant Record Sheet. You will use the first four blocks of this form to give the participant their administrative code.

The Correct survey version should already be pulled up on the computer.
Have the participant enter the room

Have an informed Consent form on their laptop. Have them sign it and then bring their attention to the computer. Give them their administrative participant code.

Experimenter: “Welcome to our study and thank you for agreeing to participate. You will be working on several creative exercises as part of a joint project between the Psychology Department and the Educational Leadership Department. You will be led through three exercises by an upper level student from the Department of Educational Leadership in the College of Education. In addition to your participation in multiple exercises, you will also be asked to provide anonymous feedback about the project leader in regard to his/her leadership skills. It is very important that you provide a honest and clear assessment about their performance both for the project and their personal leadership development.”

“The project leaders from The Educational Leadership Department have been selected based on an interview process and a review of their specific credentials which demonstrate a high level of leadership potential. They are working on further developing two primary leadership skills during this session. The project leader will be working on developing their ability to lead creative projects. More specifically, they have been given some leeway in how they approach leading the project, but their main task is to provide basic direction and guidance to help you successfully complete each exercise. They will take you through three exercises today. You will hâve 10 minutes for each exercise. The project leader is supposed to provide very little feedback once the exercise is explained to allow for your creative freedom. So, pay attention to their directions but don’t be upset if they can’t tell you exactly what to do. Before we begin I have a few administrative details we
need to take care of first. I will have you begin the study by completing this questionnaire.”

Experimenter waits until participants finish. (MAKE SURE THAT YOU ARE KEEPING AN EYE ON THE PARTICIPANTS SCREENS AND THAT THEY ARE ON THE CORRECT SURVEY PAGE.”

“Next, you will complete three short tasks. Please read the instructions to the first task. You have 5 minutes.

Experimenter waits until participants finish.

“Next please read the general instructions for the next two tasks. Please go to the next page and read the instructions for the next task. You have two minutes for this task.”

Experimenter waits until participants finish.

“Next, please read the instructions for the next task. You have two minutes for this task.”

“Your project leader ______ will be in to start in a few minutes. Thank you again for your participation and good luck!”

Leader walks into lab room with clipboard. Leader has clipboard at all times.

Leader (use a slightly enthusiastic approach/attitude): “Hi Everyone! Thanks for coming in today. My name is _____ and I’m a senior Educational Leadership Student. This joint project between the Industrial/Organizational Psychology program and the Educational Leadership program that we’re working on today provides an opportunity to help improve several challenges the University is facing. Today, I plan to lead you through each exercise to help restore Penn State’s reputation as a Center of Academic Excellence. By returning to the traditional values of the University, like focusing on the Penn State experience such as having great academics, providing the best resources to students, and getting clear and correct information out to students, Penn State will again set the example for others to follow.”

Here is a little background on the situation: The Undergraduate Admissions Office reached out to the Department of Educational Leadership and the Department of Psychology for assistance with a few different challenges they are dealing with. Both of these Departments have specific expertise that they
believe can help address the problems that I will describe. The Admissions Office feels strongly that current Penn State students have unique ideas and experiences that can produce invaluable information to assist the Admission Office in addressing these problems.

“By returning to a focus on strong academic traditions, Penn State can avoid failing to provide students with the resources to help them learn. Its failure to distribute clear and helpful information to the student body can also be avoided.”

You have been selected to provide input on three different exercises. You will be given 10 minutes on each one of the exercises that I will ask you to complete. You will write your responses into the survey screen on your laptop.

“Remember, I want you to focus on the strong academic tradition that Penn State established in the past. The failure of certain individuals to maintain focus on these pillars of Penn State tradition have led to some of the problems we will discuss. “

Leaders remember that exercises will be rotated during each session to avoid confounding the results of the experiment. Check the clipboard to ensure that you are introducing the correct exercise.

Leader: “Let me give you a quick overview of the first exercise.”

**Recruiting Exercise:**

**Leader:**

**Instructions in Survey:** Please follow along with the instructions on the screen:

The Office of Undergraduate Admissions reported information to the President of the University detailing that in the past two years there has been a significant drop (>20%) in the number of top-tier high school students applying to Penn State (SAT Scores above 1400, High School GPA > 3.7). It is critical to the President that the University better understand this shocking trend.

Develop a plan for how you would gather information to identify the cause(s) of this drop in applications. Be specific on the methods you would use to capture the information and how you might use that information to provide an answer for the President on why this drop in applications of top-tier high
school students is occurring. Do not attempt to develop solutions to this problem nor discuss how to implement changes to fix this issue. Again, you are not trying to come up with solutions, but focus on gathering the information needed to understand what is going on.

Leader says: “Considering the instructions, I want to give you my focus:

Recruiting top-tiered academic students has always been important to the reputation of this distinguished University. Obviously, Individuals that develop the recruitment plan each year have not focused on the issues that are important to strong academic students; such as, focus on academics, and great resources. It is important to address things that are traditionally important to academically driven individuals. It is critical to help the leadership of the University really understand the problem they are facing. Before we can fix the problem we need to make sure we know why this drop in applications is taking place.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

Modernizing Classrooms Exercise:

Leader:

Instructions in Survey: Please follow along with the instructions on the screen:

Recently, the President of the University initiated a plan to improve the University’s classrooms due to complaints from students and teachers and a recent College Magazine article that said Penn State is in the bottom 20% of big universities in reference to cutting edge classrooms. The President identified this as a significant issue for the University and it is his intention to implement changes to make Penn State an example for other Universities to look up to in regard effective classroom techniques.

Generate as many ideas as possible for how Penn State can improve their classrooms. Do not explain how you would implement the ideas. The focus is to generate as many possible solutions within the time limits of the exercise.
Leader says: “Considering the instructions, I want to give you my focus:

In the past Penn State was always rated high on “classroom experience.” I know I had some classes recently that were so large I didn’t know a single person in the room and I wouldn’t even recognize my professor if I saw him out of class, it was awful! Penn State used to stress the importance of ensuring each student had a great student experience. It is time to get back to that.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

Major Selection Exercise:

Leader:

Instructions on Survey: Please follow along with the instructions on the screen:

Information from new freshmen who completed surveys during syllabus week and from this year’s graduating seniors, who completed surveys prior to graduation, identified that more than 50% of students surveyed were not aware of all the majors offered at Penn State. Additionally, the surveys from recent graduates indicate that more than 40% of students surveyed changed their Major at least once citing that their first selection was not what they thought it would be. The University has already generated many ideas and evaluated them. They decided that the best way to solve this problem is (1) to improve the current website which will include a personal interest interactive tool to help people find Majors that align with their interests and (2) to use e-mails to reach out to current and future students. The current website provides just a brief description with some pages that have links to Department websites.”

Develop a plan that addresses how to implement the solutions Penn State identified to better distribute information on available Majors. The focus of the exercise is to implement the ideas previously described. The following points should be highlighted: focus of the major, future opportunities (leads to what type of jobs, internships, etc), types of classes, and additional
requirements. Do not spend time trying to address other methods of distributing information to students or potential students.

Leader says: “Considering the instructions, I want to give you my focus:

The lack of availability of information has created a situation in which students don’t understand all their Major options. This used to be very important to the University. It should be considered failure on their part if students can’t take advantage of all their options. It is essential to re-evaluate what information is important for students to understand all their Major options. The intent is to make sure that people have the information they need to make the best decision they can about a major.”

Remember you have ten minutes.

3 minutes left

Time’s up.

When the last task is complete say....

Leader: “That completes this portion of the study. I just wanted to say thank you for coming and helping with such an important project. The experimenter will be in shortly.”

Leader leaves, experimenter walks in after 1 minute.

Experimenter: “Hi everyone! I have one final questionnaire that I’d like you to complete. Go ahead and begin

*wait for everyone to finish*

Thanks for participating in the study. We really appreciate your contributions. Please read through your debriefing forms.”

“We really appreciate your time. You are free to go.”

Experimenter and Leader wait until participants leave.
Study Begins:
Participants are welcomed to the lab and asked to sit at the table or on the couch outside the lab room.

Have the participants sign in on the Session/Participant Record Sheet. You will use the first four blocks of this form to give the participant their administrative code.

The Correct survey version should already be pulled up on the computer. Have the participant enter the room

Have an informed Consent form on their laptop. Have them sign it and then bring their attention to the computer. Give them their administrative participant code.

**Experimenter:** “Welcome to our study and thank you for agreeing to participate. You will be working on several creative exercises as part of a joint project between the Psychology Department and the Educational Leadership Department. You will be led through three exercises by an upper level student from the Department of Educational Leadership in the College of Education. In addition to your participation in multiple exercises, you will also be asked to provide anonymous feedback about the project leader in regard to his/her leadership skills. It is very important that you provide a honest and clear assessment about their performance both for the project and their personal leadership development.”

“The project leaders from The Educational Leadership Department have been selected based on an interview process and a review of their specific credentials which demonstrate a high level of leadership potential. They are working on further developing two primary leadership skills during this session. The project leader will be working on developing their ability to lead creative projects. More specifically, they have been given some leeway in how they approach leading the project, but their main task is to provide basic direction and guidance to help you successfully complete each exercise. They will take you through three exercises today. You will have 15 minutes for each exercise. The project leader is supposed to provide very little feedback once the exercise is explained to allow for your creative freedom. So, pay attention to their directions but don’t be upset if they can’t tell you exactly what to do. Before we begin I have a few administrative details we
need to take care of first. I will have you begin the study by completing this questionnaire."

**Experimenter waits until participants finish. (MAKE SURE THAT YOU ARE KEEPING AN EYE ON THE PARTICIPANTS SCREENS AND THAT THEY ARE ON THE CORRECT SURVEY PAGE.)**

“Next, you will complete three short tasks. Please read the instructions to the first task. You have 5 minutes.

**Experimenter waits until participants finish.**

“Next please read the general instructions for the next two tasks. Please go to the next page and read the instructions for the next task. You have two minutes for this task.”

**Experimenter waits until participants finish.**

“Next, please read the instructions for the next task. You have two minutes for this task.”

“Your project leader ______ will be in to start in a few minutes. Thank you again for your participation and good luck!”

**Leader walks into lab room with clipboard. Leader has **clipboard** at all times.**

**Leader (use even-keel non-emotional/not especially enthusiastic approach):**

“Hello Everyone. Thanks for coming in today. My name is _____ and I’m a senior Educational Leadership Student. This joint project between the Industrial/Organizational Psychology program and the Educational Leadership program requires us to address some specific issues that the Admissions Office is dealing with at this time. Our efforts today are part of a larger effort to help solve some of the problems associated with Penn State’s potentially unstable reputation as an Academic Center for Excellence. There are some very specific issues that the University is facing and our job today is to help develop solutions to these problems.”

Here is a little background on the situation: The Undergraduate Admissions Office reached out to the Department of Educational Leadership and the Department of Psychology for assistance with a few different challenges they are dealing with. Both of these Departments have specific expertise that they believe can help address the problems that I will describe. The Admissions
Office feels strongly that current Penn State students have unique ideas and experiences that can produce invaluable information to assist the Admission Office in addressing these problems.

“All of you, as current Penn State students are a logical group to get input from based on your current situation and experience. As we proceed, remain focused on the functional needs of students as you consider each exercise.”

“You have been selected to provide input on three different issues. There are 15 minutes for each one of the exercises that I will ask you to complete. You will write your responses into the survey screen on your laptop.”

“Remember, as you approach each task focus on the problem at hand and how the issue can be resolved in a logical and efficient manner.”

Experimenter listen for the word “REMEMBER! That is your signal to get ready to come back into the room. Let the leader finish their sentence then come back into the room.

Experimenter: “______ can I please speak with you outside?”

Leader excuses herself and goes out of the room. Wait one minute and come back inside.

Leader: “So, unfortunately, someone made a mistake and double booked this room. As a result, we’re are going to have to cut some time off of our exercises. So now, you will only be given 10 minutes for each exercise. It is going to be much more difficult to complete everything we need to do. So we’re really going to have to work hard to get this done.”

Leaders remember that exercises will be rotated during each session to avoid confounding the results of the experiment. Check the clipboard to ensure that you are introducing the correct exercise.

Leader: “Let me give you a quick overview of the first exercise.”

**Recruiting Exercise:**

Leader:

**Instructions in Survey:** Please follow along with the instructions on the screen:

The Office of Undergraduate Admissions reported information to the President of the University detailing that the past two years there has been a
significant drop (>20%) in the number of top-tier high school students applying to Penn State (SAT Scores above 1400, High School GPA > 3.7). It is critical to the President that the University better understand this shocking trend.

Develop a plan for how you would gather information to identify the cause(s) of this drop in applications. Be specific on the methods you would use to capture the information and how you might use that information to provide an answer for the President on why this drop in applications of top-tier high school students is occurring. Do not attempt to develop solutions to this problem nor discuss how to implement changes to fix this issue. Again, you are not trying to come up with solutions, but you are to focus on gathering the information needed to understand what is going on.

Leader says: “Considering the instructions, I want to give you my focus:

In order to maintain its current prestige as a top-tier Academic University it is important for Penn State to continue to attract top Academic students out of high school. At this time the University is not clear why there is a drop in the admission packets of this group of individuals. Before the problem can be fixed it must be clear why this drop in applications is taking place. So, develop a clear plan on how you will gather the information needed to clarify this problem for Penn State.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

Modernizing Classrooms Exercise:

Leader:

Instructions in Survey: Please follow along with the instructions on the screen:

Recently, the President of the University initiated a plan to improve the University’s classrooms due to complaints from students and teachers and a recent College Magazine article that labeled PSU in the bottom 20% of big universities in reference to cutting edge classrooms. The President identified this as a significant issue for the University and it is his intention to
implement changes to make Penn State an example for other Universities to look up to in regard to effective classroom techniques.

Generate as many ideas as possible for how PSU could improve their classrooms. Do not explain how you would implement the ideas. The focus is to generate as many possible solutions within the time limits of the exercise.

“Considering the instructions, I want to give you my focus:

According to students, teachers, and the media, the current “classroom experience” at Penn State needs improvements. As a result, it is your job on this exercise to come up with logical solutions to this problem. This will improve the classrooms at Penn State for students and teachers. Think about what students and teachers really need in the classroom to provide them with the most effective experience possible.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Lets go over the next exercise”

**Major Selection Exercise:**

Leader:

Instructions on Survey: Please follow along with the instructions on the screen:

Information from new freshmen who completed surveys during syllabus week and from this year's graduating seniors, who completed surveys prior to graduation, identified that more than 50% of students surveyed were not aware of all the majors offered at Penn State. Additionally, the surveys from recent graduates indicate that more than 40% of students surveyed changed their Major at least once citing that their first selection was not what they thought it would be. The University has already generated many ideas and evaluated them. They decided that the best way to solve this problem is (1) to improve the current website which will include a personal interest interactive tool to help people find Majors that align with their interests and (2) to use e-mails to reach out to current and future students. The current
website provides just a brief description with some pages that have links to Department websites.”

Develop a plan that addresses how to implement the solutions Penn State identified to better distribute information on available Majors. The focus of the exercise is to implement the ideas previously described. The following points should be highlighted: focus of the major, future opportunities (leads to what type of jobs, internships, etc), types of classes, and additional requirements. Do not spend time trying to address other methods of distributing information to students or potential students.

Leader says: “Considering the instructions, I want to give you my focus:

According to the data from the surveys, information on Majors is not readily available, is not clear, or is misleading. In any event, students are not getting the information the President of the University would like them to have. Adhering to the President’s plan, the point of this exercise is to craft a solution for distributing the required information to students.”

Remember you have ten minutes.

3 minutes left

Time’s up.

When the last task is complete say....

Leader: “That completes this portion of the study. I just wanted to say thank you for coming in and helping with such an important project. The experimenter will be in shortly.”

Leader leaves, experimenter walks in after 1 minute.

Experimenter: “Hi everyone! I have one final questionnaire that I’d like you to complete. Go ahead and begin

*wait for everyone to finish*

Thanks for participating in the study. We really appreciate your contributions. Please read through your debriefing forms.”

“We really appreciate your time. You are free to go.”

Experimenter and Leader wait until participants leave.
Study Begins:
Participants are welcomed to the lab and asked to sit at the table or on the
couch outside the lab room.

Have the participants sign in on the Session/Participant Record Sheet. You
will use the first four blocks of this form to give the participant their
administrative code.

The Correct survey version should already be pulled up on the computer.
Have the participant enter the room

Have an informed Consent form on their laptop. Have them sign it and then
bring their attention to the computer. Give them their administrative
participant code.

Experimenter: “Welcome to our study and thank you for agreeing to
participate. You will be working on several creative exercises as part of a
joint project between the Psychology Department and the Educational
Leadership Department. You will be led through three exercises by an upper
level student from the Department of Educational Leadership in the College
of Education. In addition to your participation in multiple exercises, you will
also be asked to provide anonymous feedback about the project leader in
regard to his/her leadership skills. It is very important that you provide a
honest and clear assessment about their performance both for the project
and their personal leadership development.”

“The project leaders from The Educational Leadership Department have
been selected based on an interview process and a review of their specific
credentials which demonstrate a high level of leadership potential. They are
working on further developing two primary leadership skills during this
session. The project leader will be working on developing their ability to
lead creative projects. More specifically, they have been given some leeway
in how they approach leading the project, but their main task is to provide
basic direction and guidance to help you successfully complete each exercise.
They will take you through three exercises today. You will have 10 minutes
for each exercise. The project leader is supposed to provide very little
feedback once the exercise is explained to allow for your creative freedom.
So, pay attention to their directions but don’t be upset if they can’t tell you
exactly what to do. Before we begin I have a few administrative details we
need to take care of first. I will have you begin the study by completing this questionnaire.”

Experimenter waits until participants finish. (MAKE SURE THAT YOU ARE KEEPING AN EYE ON THE PARTICIPANTS SCREENS AND THAT THEY ARE ON THE CORRECT SURVEY PAGE.”

“Next, you will complete three short tasks. Please read the instructions to the first task. You have 5 minutes.

Experimenter waits until participants finish.

“Next please read the general instructions for the next two tasks. Please go to the next page and read the instructions for the next task. You have two minutes for this task.”

Experimenter waits until participants finish.

“Next, please read the instructions for the next task. You have two minutes for this task.”

“Your project leader ______ will be in to start in a few minutes. Thank you again for your participation and good luck!”

Leader walks into lab room with clipboard. Leader has clipboard at all times.

Leader (use even-keel non-emotional/not especially enthusiastic approach):

“Hello Everyone. Thanks for coming in today. My name is _____ and I’m a senior Educational Leadership Student. This joint project between the Industrial/Organizational Psychology program and the Educational Leadership program requires us to address some specific issues that the Admissions Office is dealing with at this time. Our efforts today are part of a larger effort to help solve some of the problems associated with Penn State’s potentially unstable reputation as an Academic Center for Excellence. There are some very specific issues that the University is facing and our job today is to help develop solutions to these problems.”

Here is a little background on the situation: The Undergraduate Admissions Office reached out to the Department of Educational Leadership and the Department of Psychology for assistance with a few different challenges they are dealing with. Both of these Departments have specific expertise that they believe can help address the problems that I will describe. The Admissions
Office feels strongly that current Penn State students have unique ideas and experiences that can produce invaluable information to assist the Admission Office in addressing these problems.

“All of you, as current Penn State students are a logical group to get input from based on your current situation and experience. As we proceed, remain focused on the functional needs of students as you consider each exercise.”

“You have been selected to provide input on three different issues. There are 10 minutes for each one of the exercises that I will ask you to complete. You will write your responses into the survey screen on your laptop.”

“Remember, as you approach each task, focus on the problem at hand and how the issue can be resolved in a logical and efficient manner.”

Leaders remember that exercises will be rotated during each session to avoid confounding the results of the experiment. Check the clipboard to ensure that you are introducing the correct exercise.

Leader: “Let me give you a quick overview of the first exercise.”

**Recruiting Exercise:**

Leader:

Instructions in Survey: Please follow along with the instructions on the screen:

The Office of Undergraduate Admissions reported information to the President of the University detailing that the past two years there has been a significant drop (>20%) in the number of top-tier high school students applying to Penn State (SAT Scores above 1400, High School GPA > 3.7). It is critical to the President that the University better understand this shocking trend.

Develop a plan for how you would gather information to identify the cause(s) of this drop in applications. Be specific on the methods you would use to capture the information and how you might use that information to provide an answer for the President on why this drop in applications of top-tier high school students is occurring. Do not attempt to develop solutions to this problem nor discuss how to implement changes to fix this issue. Again, you are not trying to come up with solutions, but you are to focus on gathering the information needed to understand what is going on.
Leader says: “Considering the instructions, I want to give you my focus:

In order to maintain its current prestige as a top-tier Academic University it is important for Penn State to continue to attract top Academic students out of high school. At this time the University is not clear why there is a drop in the admission packets of this group of individuals. Before the problem can be fixed it must be clear why this drop in applications is taking place. So, develop a clear plan on how you will gather the information needed to clarify this problem for Penn State.”

Remember you have ten minutes.

3 minutes left

Time’s up.

Leader: “Let’s go over the next exercise”

Modernizing Classrooms Exercise:

Leader:

Instructions in Survey: Please follow along with the instructions on the screen:

Recently, the President of the University initiated a plan to improve the University’s classrooms due to complaints from students and teachers and a recent College Magazine article that labeled PSU in the bottom 20% of big universities in reference to cutting edge classrooms. The President identified this as a significant issue for the University and it is his intention to implement changes to make Penn State an example for other Universities to look up to in regard to effective classroom techniques.

Generate as many ideas as possible for how PSU could improve their classrooms. Do not explain how you would implement the ideas. The focus is to generate as many possible solutions within the time limits of the exercise.

“Considering the instructions, I want to give you my focus:

According to students, teachers, and the media, the current “classroom experience” at Penn State needs improvements. As a result, it is your job on this exercise to come up with logical solutions to this problem. This will improve the classrooms at Penn State for students and teachers. Think about..."
what students and teachers really need in the classroom to provide them with the most effective experience possible.”

Remember you have ten minutes.

3 minutes left

Time’s up.

**Leader:** “Let’s go over the next exercise”

**Major Selection Exercise:**

**Leader:**

**Instructions on Survey:** Please follow along with the instructions on the screen:

Information from new freshmen who completed surveys during syllabus week and from this year’s graduating seniors, who completed surveys prior to graduation, identified that more than 50% of students surveyed were not aware of all the majors offered at Penn State. Additionally, the surveys from recent graduates indicate that more than 40% of students surveyed changed their Major at least once citing that their first selection was not what they thought it would be. The University has already generated many ideas and evaluated them. They decided that the best way to solve this problem is (1) to improve the current website which will include a personal interest interactive tool to help people find Majors that align with their interests and (2) to use e-mails to reach out to current and future students. The current website provides just a brief description with some pages that have links to Department websites.”

Develop a plan that addresses how to implement the solutions Penn State identified to better distribute information on available Majors. The focus of the exercise is to implement the ideas previously described. The following points should be highlighted: focus of the major, future opportunities (leads to what type of jobs, internships, etc), types of classes, and additional requirements. Do not spend time trying to address other methods of distributing information to students or potential students.

**Leader says:** “Considering the instructions, I want to give you my focus:

According to the data from the surveys, information on Majors is not readily available, is not clear, or is misleading. In any event, students are not getting
the information the President of the University would like them to have. Adhering to the President’s plan, the point of this exercise is to craft a solution for distributing the required information to students.”

Remember you have ten minutes.

3 minutes left

Time’s up.

When the last task is complete say....

Leader: “That completes this portion of the study. I just wanted to say thank you for coming in and helping with such an important project. The experimenter will be in shortly.”

Leader leaves, experimenter walks in after 1 minute.

Experimenter: “Hi everyone! I have one final questionnaire that I’d like you to complete. Go ahead and begin

*wait for everyone to finish*

Thanks for participating in the study. We really appreciate your contributions. Please read through your debriefing forms.”

“We really appreciate your time. You are free to go.”

Experimenter and Leader wait until participants leave.