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**INITIATING AN ENTREPRENEURIAL
MINDSET IN THE DEPARTMENT OF
DEFENSE (DoD): TESTING A
COMPREHENSIVE MODEL**

THESIS

Gretchen R. Rhoads, Captain, USAF

AFIT/GSP/ENV/05M-06

**DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY**

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

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AFIT/GSP/ENV/05M-06

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DEFENSE (DoD): TESTING A COMPREHENSIVE MODEL

THESIS

Presented to the Faculty

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In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Strategic Purchasing

Gretchen R. Rhoads, BS

Captain, USAF

March 2005

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DEFENSE (DoD): TESTING A COMPREHENSIVE MODEL

Gretchen R. Rhoads, BS
Captain, USAF

Approved:

 / signed /
Ross T. McNutt, Lt Col, USAF (Chairman)

 10 Mar 05
date

 / signed /
Bryan J. Hudgens, Maj, USAF (Member)

 10 Mar 05
date

 / signed /
Daniel T. Holt, Maj, USAF (Member)

 10 Mar 05
date

Abstract

This research effort aims to test an integrated model of the entrepreneurial mindset and to produce a framework that senior leaders can implement to ignite their organizations' innovative potential and ability to transform. The research will use a questionnaire to gather data regarding three entrepreneurial mindset antecedents-- individual characteristics, process, and context to determine the level of influence each has on three entrepreneurial outcomes: job performance, job satisfaction, and affective commitment.

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Gretchen R. Rhoads

Table of Contents

	Page
Abstract.....	iv
Acknowledgements.....	v
List of Figures.....	viii
List of Tables.....	ix
I. Introduction.....	1
Background.....	1
Entrepreneurship in the Public Sector.....	3
The Entrepreneurial Mindset.....	4
Problem.....	4
Research Questions & Hypotheses.....	5
Proposed Methodology.....	5
Scope & Limitations.....	6
Proposed Study Contributions.....	6
Conclusion.....	7
II. Literature Review.....	8
History of Entrepreneurship.....	10
Entrepreneurial Mindset.....	11
Proposed Model.....	13
Entrepreneurial Mindset Antecedents.....	17
Individual Characteristics.....	18
Context.....	26
Process.....	28
Entrepreneurial Mindset Outcomes.....	32
Job Satisfaction.....	32
Affective Commitment.....	33
Job Performance.....	34
Problem / Purpose Statement.....	34
Theoretical Model.....	35
Conclusion.....	37
III. Methodology.....	38
Introduction.....	38

	Page
Methodology / Experimental Design.....	38
Data Sources / Collection.....	39
Sample.....	39
Wave Analysis.....	39
Data Collection.....	41
Survey Design.....	42
Reliability.....	43
Entrepreneurial Mindset Antecedents.....	43
Individual Characteristics.....	43
Context.....	44
Process.....	45
Assessment of the Entrepreneurial Mindset.....	46
Entrepreneurial Mindset Outcomes.....	47
Job Satisfaction.....	47
Affective Commitment.....	47
Job Performance.....	48
Data Analysis (Statistical Methods).....	48
Conclusion.....	48
 IV. Analysis.....	 50
Missing Data.....	50
Descriptive Statistics.....	52
Mediated Regression Analysis	56
Hypotheses Evaluation Results.....	58
Conclusion.....	72
 V. Conclusions and Recommendations.....	 73
Individual Characteristics.....	76
Context.....	76
Process.....	76
Benefits and Contributions.....	77
Limitations.....	78
Recommendations for Future Research.....	78
Conclusion.....	79
 Appendix: A Study of Entrepreneurship in DoD Organizations (survey).....	 80
 Bibliography.....	 94
 Vita.....	 99

List of Figures

Figure	Page
1. Proposed Entrepreneurial Mindset Model.....	15
2. Big Five Correlations for the Workplace.....	20

List of Tables

Table	Page
1. Big Five and Entrepreneurial Traits.....	22
2. Sample.Demographics.....	40
3. Big Five Traits and Reliabilities.....	44
4. Proposed Model Individual Characteristic Reliabilities.....	44
5. Proposed Model Context Reliabilities.....	45
6. Corporate Entrepreneurship Assessment Instrument Reliabilities.....	46
7. Proposed Model Process Reliabilities.....	46
8. Demographics of Missing Data.....	51
9. Descriptive Statistics and Reliabilities.....	53
10. Mediated Regression Analysis.....	57
11. Correlation Matrix of Study Antecedents and Outcomes (Entire Sample).....	59
12. Correlation Matrix of Study Antecedents and Outcomes (AFIT).....	60
13. Correlation Matrix of Study Antecedents and Outcomes (AFRL).....	61
14. Correlation Matrix of Study Antecedents and Outcomes (AFMA).....	62
15. Regression Analysis (for Hypothesis 2).....	65
16. Mediated Regression Analysis (for Hypothesis 3).....	67
17. Summary of Hypotheses and Results.....	74

INITIATING AN ENTREPRENEURIAL MINDSET IN THE DEPARTMENT OF DEFENSE: TESTING A COMPREHENSIVE MODEL

I. Introduction

Background

Department of Defense has undertaken a challenge of transformation led by Secretary of Defense Donald Rumsfeld (TOFT, 2004). Now, more than ever, senior military leaders are recognizing the change in the type of battles the United States is facing and will continue to face in the future. New threats are erupting from rogue nations and extremist groups that deliver unexpected and lethal attacks anywhere in the world.

Rumsfeld (2002) connected transformation to entrepreneurial thinking stating, “we must promote a more entrepreneurial approach: one that encourages people to be proactive, not reactive, and to behave less like bureaucrats and more like venture capitalists; one that does not wait for threats to emerge and be ‘validated’ but rather anticipates them before they appear and develops new capabilities to dissuade and deter them”. Furthermore, Rumsfeld commends the American soldier and states that the best way to show support for servicemen and women of all branches is to ensure they have the “resources, capabilities, and innovative culture not only to win today's wars, but to deter and, if necessary, defeat aggressors we will surely face in the dangerous century ahead” (Rumsfeld 2002). In essence, transformation calls for each member of a military organization to be entrepreneurial (Rolfson, 2002).

Instilling this entrepreneurial thinking throughout the military will demand a new culture that accepts innovative approaches and entrepreneurial thinking, even when they

do not necessarily lead to success. This new way of thinking will require each member to address, innovatively and flexibly, organizational issues and challenges, and must include an acceptance of a certain level of failure across the military (OSD, 2002).

A major step in this transformation effort was undertaken with the development of the Defense Department of Office of Force Transformation in October 2001 (Stone, 2003). The director of this office issued five top goals, including one that specifically addresses instilling the entrepreneurial mindset in organizations. The goal calls for the DoD to, “[c]hange the force and its culture from the bottom up through the use of experimentation, transformational articles (operational prototyping) and the creation and sharing of new knowledge and experiences” (TOFT, 2004). Transformation is at the forefront of military leaders and planning.

Senior military leaders are not the only people in Washington calling for transformation—Congress has requested Department of Defense acquisition programs to indicate whether or not they are considered transformational in an effort to protect the truly innovative and transformational programs from potential budget cuts (Keeter, 2002). Congress’ push is important for two reasons: First it motivates non-transformational programs to become more innovative so they fall under the protective umbrella when the budget becomes tight. Second, the call indicates a potential for a culture change where Congress is interested not in the cheapest or easiest programs, but instead on those programs trying to transform to meet the challenges of the future, seemingly independent of past or current success.

Entrepreneurship in the Public Sector

Thornberry (2001) touches on how entrepreneurial thinking is relevant to the Department of Defense explaining that when an organization is faced with an unpredictable future and unpredictable threats, the organization has to prepare for uncertainty by ensuring it is opportunity focused. The focus on future opportunities instead of existing or past threats is directly applicable to the military and the push from senior leaders toward an opportunity-focused force.

Not all experts agree, however, on the applicability of entrepreneurial thinking to the public sector. Bellone and Goerl (1993) and Terry (1993) have debated whether or not entrepreneurs are as welcome and efficient in the public sector as they are in the private sector. The debate focuses primarily on what Bellone and Goerl term the “civic-regarding” entrepreneur and the struggle between innovation and accountability to the public. Bellone and Goerl use the term “civic regarding” entrepreneur to describe the difficult balance an entrepreneur in the public sector must achieve between innovation and democratic responsibilities (1993). Although specific methods for bringing innovation into the military may be still under discussion, there are enough similarities (e.g. need for a vision and innovation, funding restrictions) and potential benefits to instilling entrepreneurial thought processes in both the corporate world and the public sector that this research will contribute to both sectors.

The Entrepreneurial Mindset

One important challenge is to ensure this innovation occurs within an organization. One solution is to create an entrepreneurial mindset (McGrath & MacMillan, 2000; Pryor & Shays, 1993) within the organization. As Pryor & Shays

explain, the entrepreneurial mindset is a way of thinking in an organization that encourages employees to introduce and develop new ideas in a continual cyclical process. It is a culture that fosters innovation, risk-taking, and a pro-active nature (Covin & Slevin, 1989) for the benefit of the organization. An entrepreneurial mindset will also help organizations captures the benefits of uncertainty (McGrath & MacMillan, 2000) and focus on future opportunities instead of past or current threats (Thornberry, 2001).

Problem

Senior leaders have been charged with ensuring innovation is a priority throughout the Department of Defense. Previous research suggests that instilling an entrepreneurial mindset into organizations can help them to achieve this goal. The problem then arises as to how these senior leaders, given the individuals, climate or culture (context), and current processes of the organization, can steer any organization toward the entrepreneurial mindset. This thesis will test a current integrated model of corporate entrepreneurship to verify the relative contributions of individual, context, and process characteristics, and their interactions, on the entrepreneurial mindset. If validated, this model will suggest a road map, to include potential process or climate changes, to guide senior leaders in instilling an entrepreneurial mindset in their organizations. Armed with the road map, senior leaders can then walk into an organization with any degree of variability relative to process, context, or individual characteristics, and encourage the entrepreneurial mindset, thereby facilitating true transformation across the Department of Defense.

Research Questions and Hypotheses

The primary focus of this study, and its primary research question, is determining whether or not the proposed integrated model of individual characteristics, context, and process accurately predicts the degree to which the entrepreneurial mindset has diffused through an organization. Three investigative questions follow:

- 1) What is the relative contribution of process, context, and individual characteristics on the entrepreneurial mindset?
- 2) What is the contribution of the interaction between these three categories (i.e., process, context, and individual characteristics) on the entrepreneurial mindset?
- 3) What are the effects of the entrepreneurial mindset, if applicable, on the Department of Defense and its push for transformation?

The hypotheses prior to the research are as follows:

- 1) There is a positive relationship between the three antecedents and the entrepreneurial mindset.
- 2) There is an interactive relationship between the three antecedents and the entrepreneurial mindset.
- 3) The three antecedents do not directly affect any of the outcomes without first impacting the organization's entrepreneurial mindset.

Proposed Methodology

The research methodology will consist of a questionnaire, administered to Department of Defense civilian and military members, that measures a series of process, context, and individual characteristics that are strongly tied to the entrepreneurial mindset. These measurements will be analyzed for their individual contributions to the entrepreneurial mindset and their collective or interactive contributions to the entrepreneurial mindset. Additionally, the questionnaire will measure the proposed

outcomes of the entrepreneurial mindset which include Job Satisfaction, Affective Commitment, and Job Performance to explore the effect of an entrepreneurial mindset on the outcome measures and to allow a test of the complete model.

Scope and Limitations

The scope of the research will be limited to various Air Force organizations located within the continental United States with varying perceived degrees of the entrepreneurial mindset. Within all of the organization, subjects will be selected at random and will include upper management as well as front-line workers. The research will be limited to Air Force organizations in the continental United States. Thus, while the Air Force is undeniably a large, complex organization, unique characteristics of the Air Force make it possible the results will not generalize to the rest of the Department of the Defense, the Federal Government, or to large non-governmental organizations.

Proposed Study Contributions

Transformation, including entrepreneurial thinking and innovation, is advocated as the key to the future success of the Department of Defense; however, little research has been conducted to give managers or senior leaders a basic guideline that will help them transform a static organization into an innovative one. Since each organization functions within a given framework made up of individuals, process, and culture, identifying which variables a senior leader can alter, such as new management processes, to positively affect the entrepreneurial mindset of an organization could be valuable. Furthermore, although this research is specifically directed at the Department of Defense, implications from its findings may also apply to industry and its similar quest to be innovative.

Conclusion

The Department of Defense is facing challenging times with a limited budget and new, never before seen threats. Senior military leaders have presented innovation and the entrepreneurial mindset as a way to best manage and overcome these new threats in the era of uncertainty. The proposed integrated model of the entrepreneurial mindset is one tool for capturing the antecedents and outcomes in an effort to help leaders in any organization foster innovation.

II. Literature Review

Entrepreneurial thinking has been a part of American culture ever since King James I chartered a group of London entrepreneurs to establish an English settlement in the Chesapeake region back in 1606 (APAV, 2000). Successful business ventures and the entrepreneurs or masterminds behind them have been part of American business culture for just as long. Examples of innovative thinking can be documented in history as far back as 1346 in the English's overwhelming defeat of the much larger French military in the Battle of Crécy. England's King Edward III relied on innovative tactics and techniques of the English longbow instead of the more traditional methods of the French. Edward's reliance on innovation led to only 300 English casualties, compared to over 16,000 French casualties. (Luecke, 1994). Other suggested examples of great historical moments and the entrepreneurial minds behind them include Hernán Cortés' success over the Aztecs and Admiral Isoroku Yamamoto's defeat at the Battle of Midway (Luecke, 1994).

The entrepreneur has also been pervasive in the American business dream, whether in or out of the public eye. Michael Eisner, former chief executive officer and chairman of Disney, turned a once floundering studio into a booming \$23 billion enterprise that delivers at least two new products a week (Wetlaufer, 2000). Brian LeGette and Ron Wilson, cofounders of Big Bang Products, are expecting revenues near \$200 million in 2005 from their company dedicated to identifying and correcting flaws in everyday products, such as earmuffs, beach chairs, and sunglasses (Fenn, 2002). Another entrepreneur, Scott Augustine, founded a \$64-million company specializing in medical

devices. Augustine recognized early on the power of an entrepreneurial firm and instituted a business plan that focuses on an “innovation mill,” where experimentation and innovation are part of the company’s routine (Buchanan, 2002). As evidence of his successful business plan, his company, Augustine Medical, boasts over 108 U.S. patents and reports an average rate of return of 56%--well over the American business average of 16% for a 30-year period (Buchanan, 2002).

With entrepreneurial tales prominent in both yesterday and today’s success stories, scholars and practitioners alike have tried to define and explain this idea of entrepreneurship and apply it to larger organizations. If a Michael Eisner can revitalize a floundering studio, is it possible to energize an already successful corporation to reap even larger profits? Can the lessons from the one-man start-ups be applied to the large corporations?

Literature regarding entrepreneurship currently spans the spectrum from prescriptive articles discussing key ingredients of the entrepreneur or the entrepreneurial mindset (e.g. Thornberry, 2001; McGrath & MacMillan, 2000; Kuratko et al, 1993; Sathe, 1988; Cromie, 1987; Ross, 1987) to largely descriptive case studies discussing successful business ventures and individual entrepreneurs (e.g. Buchanan, 2002; Covey, 2001; Thornberry, 2001; McGrath & MacMillan, 2000; Wetlaufer, 2000; Sathe, 1988).

Much of the current research can be organized within the framework of the proposed model presented in Chapter 1. For each aspect of the model, literature relevant to this study is presented to provide a foundation for the model and subsequent analysis. The proposed model consists of entrepreneurial mindset antecedents (individual

characteristics, context, and process) and outcomes (job satisfaction, job performance, and affective commitment).

History of Entrepreneurship

The focus on entrepreneurial ventures and the entrepreneurial mindset behind the ventures is nothing new. Pinchot (1978) suggested two problems facing large corporations—centralization and “yes” men. He suggested that decisions were being made by managers that had little personal interest in the decisions and who were ill-equipped to make the decisions and were guided by politics in the organization if they wanted to advance. Pinchot (1978) argued that entrepreneurs needed to be brought into the organizations and used widely, coining the term “intrapreneurs” as a new class of intra-corporate entrepreneurs. “Intrapreneurship” was used to indicate the support organizations were giving, or not giving, to their employees who were attempting to be innovative or entrepreneurial within the organization (Kuratko & Montagno, 1989). Companies recognized an immediate need for drastic change or innovation to push them through the then-existing economic lull and to meet the challenges of the changing and typically declining market (Sathe, 1988). Although the term intrapreneurship has fallen out of vogue, the implication that organizations and managers have a direct effect on the entrepreneurial mindset of its employees is well taken and is applicable to current discussions.

Entrepreneurial Mindset

Several key terms, included below, will form the backdrop for the research. As many researchers have introduced nuanced definitions, it is important to establish definitions for key terms used herein. The key terms are:

Corporate Entrepreneurship. Sometimes referred to as “Intrapreneurship” or “Corporate Venturing,” (Hornsby, Kuratko & Zahra, 2002) corporate entrepreneurship is, in layman’s terms, entrepreneurship turned inward (Thornberry, 2001). It is the idea that organizations focus on revamping or re-energizing their organization by developing and implementing new ideas (Hornsby, Kuratko & Zahra, 2002). One researcher has suggested corporate entrepreneurship has four components—1) corporate venturing, 2) intrapreneuring, 3) organizational transformation, and 4) industry rule-breaking (Thornberry, 2001).

Entrepreneur. Research generally associates the term entrepreneur with individuals, such as Bill Gates or Henry Ford, who have made tremendous achievements with new startups (Thornberry, 2001). Although both Thornberry (2001) and McGrath and MacMillan (2000) have identified different characteristics of entrepreneurs, three common themes arise—entrepreneurs seek and identify new opportunities, they pursue only the best opportunities, and through adaptive execution and teamwork deliver a successful business venture (Thornberry, 2001; McGrath & MacMillan, 2000).

Entrepreneurship. Research has defined entrepreneurship as a style of behavior, opposed to a body of knowledge, (Ross, 1987) or a disciplined activity that can be managed (Drucker, 1985). Due to the high degree of uncertainty typically involved as entrepreneurs pursue new and unproven ventures, entrepreneurship requires a high

degree of trust in the potential entrepreneurs (Sathe, 1988) and stems from a disruption in the standard operating procedures in an organization as resources are combined and applied in new and unique ways (Hult, Snow & Kandemir, 2003).

Entrepreneurial Mindset. The entrepreneurial mindset is a way of thinking about an organization that encourages employees to introduce and develop new ideas in a continual process of testing the validity of an idea, modifying its concept, and then trying again to continue the cycle (Pryor & Shays, 2002). It is also a tool to allow organizations to capture the benefits of uncertainty innate in business ventures (McGrath & MacMillan, 2000).

Entrepreneurial Spirit. The entrepreneurial spirit, similar to the entrepreneurial mindset, is an aspect of organizational culture which encourages and supports its members to explore and launch new ventures (Higdon, 2000).

Innovation. One aspect of entrepreneurship or the entrepreneurial mindset is innovation (Covin & Slevin, 1989). It is defined by researchers as the invention, or adoption, of something new to the organization (Hult, Snow & Kandemir, 2003).

Intrapreneur. An intrapreneur is defined as a corporate entrepreneur, a mix between an entrepreneur and a corporate manager (Kuratko, Hornsby, Naffziger & Montagno, 1993; Ross, 1987), or an intra-corporate entrepreneur (Pryor & Shays, 2002).

Transformation. Lemak, Henderson, and Wenger define transformation as a mix between operational improvement, corporate self-renewal programs, and strategic transformation (2004). They recognize that transformation, often referred to as organizational transformation, has lost favor in academia due to its lack of a definitive definition, but argue it remains applicable to organizational theory and strategy. A more

specific definition was offered by General (retired) Larry Welch, who defined transformation within the Department of Defense as the introduction of new ways to operate that are more relevant to the operating conditions (TOFT, 2004).

Transformation, then, is the emphasis of senior military leaders as a response to the changing world dynamic and world threats.

Proposed Model

Wood (2004) introduced a proposed model of the entrepreneurial mindset. The initial model had a total of five antecedents (i.e., Appropriate use of Rewards, Management Support, Resource Availability, Supportive Organizational Structure, and Risking Taking and Failure Tolerance). In addition, the original model included six outcomes (i.e. Job Satisfaction, Perceived Organizational Contribution, Affective Commitment, Normative Commitment, Memory Orientation, and Overall Organizational Performance). The mediated model had a total of five antecedents, as listed above.

Wood's original five antecedents were based on research by Hornsby, Kuratko & Zahra (2002) in creating a Corporate Entrepreneurship Assessment Instrument (CEAI). Hornsby et al.'s five distinct internal factors, with Wood's corresponding names, are Management Support, Work Discretion (i.e. Resource Availability), Organizational Boundaries (i.e. Supportive Organizational Structure), Rewards/Reinforcement (i.e. Appropriate use of Rewards), and Time Availability (i.e. Resource Availability). Wood's classifications are used for the proposed model.

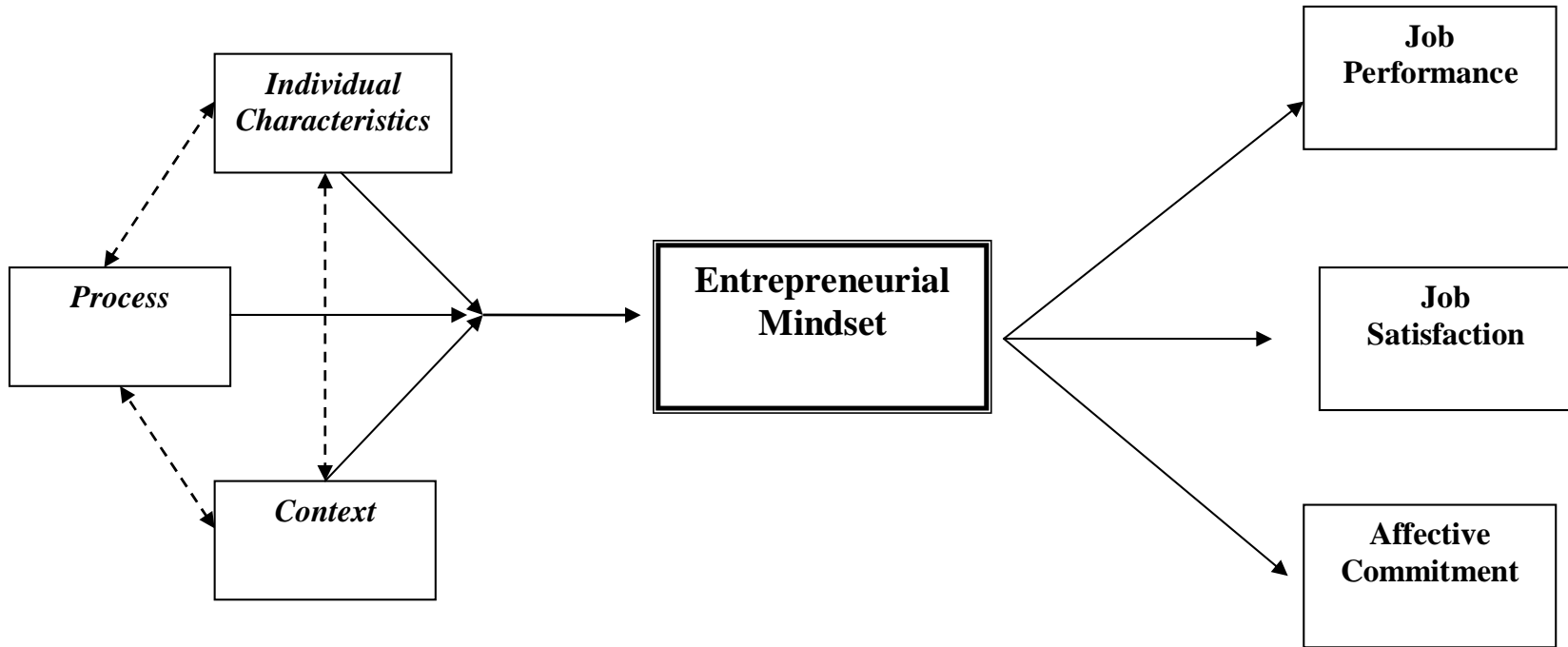
In addition, the mediated model had four outcomes (i.e. Job Satisfaction, Affective Commitment, Memory Orientation, and Overall Organizational Performance) of the original six outcomes (Wood, 2004). Perceived Organizational Contribution and

Normative Commitment were not included in the final mediated model as analysis showed the entrepreneurial mindset was not significantly related to these two outcomes, indicating there was not a mediating effect (Wood, 2004).

Building on Wood's research, this study categorized the various antecedents of an entrepreneurial mindset into three broad categories—Individual Characteristics, Context, and Process, as shown in Figure 1. Each antecedent will be explained in further detail below. A new antecedent group, Individual characteristics, was introduced to capture personality traits and behaviors of the organization's employees. A Context antecedent grouping was also introduced to capture the affect an organization's culture can have on the entrepreneurial mindset. Finally, the five factors identified in the CEAI were grouped into an overall Process antecedent heading. This categorization, which aims to provide a more parsimonious framework for senior leaders to use in an organization, is discussed in more detail later in the chapter. However, a few brief comments are included here to discuss changes in the proposed model from the Wood (2004) model.

The Context antecedent heading included Memory Orientation and Learning Orientation. Memory Orientation was tested in previous research as an outcome of the entrepreneurial mindset (Wood, 2004). However, since Memory Orientation affects the culture of an organization, it was moved from an outcome in Wood's model to a contextual antecedent (Hult, Snow & Kandemir, 2003). Additionally, Learning

Figure 1. Proposed Entrepreneurial Mindset Model



Orientation was introduced into the model as another aspect of the organization's culture, following the suggestion that organizations wanting to be entrepreneurial must develop an entrepreneurial culture (Hult, Snow & Kandemir, 2003). The entrepreneurial culture affects the manner in which the organization approaches its customers, markets, and learning (Hult, Snow & Kandemir, 2003).

Hult, Snow and Kandemir tested overall organizational learning, defined as a combination of team orientation, systems orientation, learning orientation, and memory orientation, (2003) as a component of entrepreneurial organizations. They found that organizational learning was present in their six models which produced significant results (Hult, Snow & Kandemir, 2003). For the purpose of this research, memory and learning orientation, a subcomponent of Hult, Snow and Kandemir's organizational learning (2003) were included in the final model. Team orientation and systems orientation were not included in the final model since research suggests a firm's ability to learn, rather than its team or systems orientation, is integral in developing the firm's entrepreneurial culture (Hult, Snow & Kandemir, 2003).

Systems orientation and team orientation were not included in the proposed model as many of the items used to measure these traits were very similar to those used to measure Management Support. For example, one systems orientation item was "We have a good sense of the inter-connectedness of all parts of the organization" (Hult, Snow & Kandemir, 2003; pg. 423). Similarly, under Management Support one item states "There is considerable desire among people in the organization for generating new ideas without regard to crossing departmental or functional boundaries" (Hornsby, Kuratko & Zahra, 2002; pg. 264). Additionally, Team Orientation included items such as "Cross-

functional teamwork is the common way of working in our organization” (Hult, Snow & Kandemir, 2003: pg. 423) which mirrors a similar item, “People are encouraged to talk to workers in other departments of this organization about ideas for new products,” in the Management Support instrument (Hornsby et al, 2002; pg. 264).

The outcomes for the proposed model were based on Wood’s (2004) mediated model which presented four outcomes: Job Satisfaction, Affective Commitment, Memory Orientation, and Overall Organizational Performance. Since Perceived Organizational Contribution and Normative Commitment were previously found to be non-significant (Wood, 2004), they were not included in the proposed model. Additionally, as previously explained, Memory Orientation was relocated in the model from the outcomes to the antecedents as Memory Orientation affects the culture of an organization, which is captured in the proposed model as the antecedent Context.

Entrepreneurial Mindset Antecedents

This thesis will test an integrated model of the entrepreneurial mindset (see Figure 1) to suggest a framework that senior leaders can implement to positively influence any organization’s innovative potential and ability to transform, or more pointedly, make the organization more entrepreneurial. Three antecedents—Individual Characteristics, Context, and Process—are identified as general categories of variables that influence the entrepreneurial mindset, in an effort to parsimoniously summarize the body of entrepreneurial literature that has long recognized the influence these general factors have on the entrepreneurial mindset within any organization (Kuratko & Montagno, 1989). The following paragraphs discuss current literature related to each antecedent.

Individual Characteristics

Individual characteristics are defined as those traits which are unique to the individuals in the organization; they are the “who” in the proposed model. Although considerable research (e.g. Hornsby et al., 1993; Cromie, 1987) has been conducted analyzing the motivation behind an individual’s decision to become entrepreneurial, such discussion is beyond the scope of this research. Instead, this research will focus on which personality traits are strong in entrepreneurs or potential entrepreneurs.

John and Srivastava (1999) suggest that individuals’ personalities can be described by their traits, typical internal and physical states, activities they engage in, roles they play, and society’s evaluation of their actions. John and Srivastava defined traits as enduring and internally-caused attributes, while states were temporary and externally caused. Building on considerable personality research, Tupes and Christal (1961) identified “five relatively strong and recurrent factors” which have been successful in describing one’s personality. Their five factors have evolved into what Goldberg (1981) defined as the “Big Five”, which do not reduce personality into five traits, but rather represent an individual’s personality at the broadest dimensions with replicable success. The Big Five factors include extraversion, agreeableness, conscientiousness, neuroticism, and openness. John and Srivastava (1999) define each dimension:

Extraversion: An “energetic approach” to the world which includes traits such as assertiveness, sociability, and positive emotionality (p. 121)

Agreeableness: Includes traits such as trust, modesty, and tender-mindedness (p. 121)

Conscientiousness: A level of “socially prescribed impulse control” which includes traits such as goal-directed behavior, thinking before one acts, following rules, and the ability to plan, organize, and prioritize tasks. (p. 121)

Neuroticism: “Negative emotionality” which includes traits such as anxiety, nervousness, sadness, and tension. (p. 121)

Openness to Experience: Describes the “breadth, depth, originality, and complexity of an individual’s “mental and experiential life.” (p. 121)

Researchers have continued to struggle with determining the best measure of personality dimensions even after the “discovery” of the Big Five. Other models that have been proven useful include Costa and McCrae’s (1995) work with the Neuroticism, Extraversion, and Openness (NEO) Personality Inventory (PI) and NEO PI-R (revised), which breaks each dimension of the Big Five down into six subcategories; the unipolar trait descriptive adjectives (TDA) (Goldberg, 1992); and the 44-item Big Five Inventory (BFI), which relies on short phrases instead of single adjectives (John, Donahue & Kentle, 1991). Researchers, however, consistently discover that whichever system they use, the successful measures almost always closely resemble the model of the Big Five (Costa & McCrae, 1985). Due to the similarities, researchers typically revert back to the Big Five model since at the broad level, the Big Five can capture the commonalities across most of the other systems (John & Srivastava, 1999).

Since personality trait research typically reverts to the Big Five, it will be the basis of the Individual Characteristics portion of the integrated model. Research has provided evidence for the external validity of the Big Five in adult and child subjects (John & Srivastava, 1999). Research has suggested that in the future Big Five profiles may be used to identify children that are “at risk” socially, developmentally, or

psychologically (John & Srivastava, 1999). Therefore it is reasonable that Big Five profiles may also be useful in predicting behaviors and skills in adults in the workplace. John and Srivastava (1999) found the following correlations among the Big Five profile and behaviors in the workplace and life outcomes:

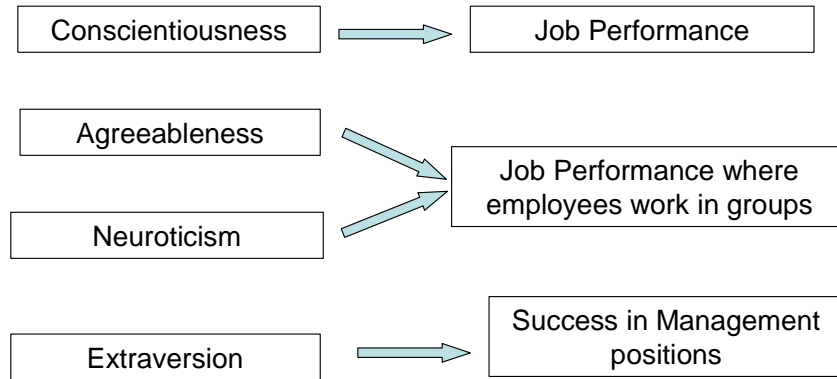


Figure 2. Big Five Correlations for the Workplace

Individual characteristics are arguably the hardest of the three antecedents for a leader to influence since they are unique and personal to each employee. Although patterns of behavior can be altered, personality traits are typically stable over longer lengths of time (John & Srivastava, 1999). The difficulty then arises in a time of increased corporate mobility as to how long a leader or employee in a particular organization is either able to influence or susceptible to being influenced. With constant personnel moves, it may be extremely difficult for leaders to assess the personalities of their employees and even more challenging to have any positive impact on them.

Thornberry (2001) suggests, however, that after assessing the individuals in an organization it is possible to have untrainable, non-innovative employees. Instead of trying to change these employees, he states it may be necessary to remove them from the

organization so they may be replaced with right-minded employees who have the desired entrepreneurial spirit. This approach might not always be realistic, but it is important to understand that not all employees are or can be turned into entrepreneurs and it is naïve to proceed under false pretenses.

Research has produced abundant lists of traits common among entrepreneurs. As no research was found to directly link the Big Five personality traits to those traits common in entrepreneurs, reasonable associations were made based on common definitions of each of the five personality traits and understanding of the entrepreneurial traits. Table 1 illustrates how personality traits were tied to entrepreneurial traits as a basis for forming hypotheses for this research. Characteristics were coded using a “+” symbol to indicate a positive correlation between the entrepreneurial trait and the personality trait; a “-“ symbol was used to indicate a negative correlation between the entrepreneurial trait and the personality trait. Multiple symbols, either the “+” or “-“ were used to indicate trends across the literature where more than one author reported a positive or negative correlation between a specific trait and the entrepreneur.

Each of the Big Five personality factors ties to specific entrepreneurial traits as outlined below. Overall, we expect entrepreneurs to be highly conscientious, extraverted, and open, while mildly agreeable.

Table 1. Big Five and Entrepreneurial Traits

		N	E	O	A	C
Traits of Entrepreneurs	Reference	<i>anxiety, nervousness, sadness, tension</i>	<i>assertiveness, talkative, energetic</i>	<i>intellectual, imaginative, independent-minded</i>	<i>trust, modest, good-natured</i>	<i>goal-oriented, orderly, dependable, responsible</i>
autonomy / desire to be on their own	<i>Hornsby et al, 1993; Cromie, 1987; Ross, 1987</i>			+++		
desire for job/career satisfaction	<i>Hornsby et al, 1993; Cromie, 1987</i>					++
desire for \$	<i>Hornsby et al, 1993; Cromie, 1987</i>					++
high personal commitment / job knowledge (generalists with multiple skills),	<i>McGrath & MacMillan, 2000; Kuratko et al, 1993; Sathe, 1988</i>			+++		+++
risk-taking; proactive	<i>Higdon 2004; Covey, 2001; Sathe, 1988</i>		+++			
trust	<i>Sathe, 1988</i>				+	
creative in business side, thinking in unconventional	<i>Thornberry, 2001; Sathe, 1988</i>			++		
courageous	<i>Sathe, 1988</i>		+			
likeable (need mgt support), political savvy	<i>Sathe, 1988</i>		-		+	
optimistic; happy	<i>Covey, 2001; Kuratko et al, 1993; Ross, 1987;</i>	-	+++		+++	
assertive	<i>Sathe, 1988</i>		+		-	
confident	<i>Sathe, 1988</i>		+	-		
passion for change	<i>Higdon, 2004</i>			+		
action-oriented and goal-oriented; disciplined	<i>McGrath & MacMillan, 2000; Kuratko et al, 1993</i>					++
need for achievement	<i>Hornsby et al, 1993</i>					+
willing to take responsibility for failures	<i>Kuratko et al, 1993</i>					+
capitulate on uncertainty	<i>McGrath & MacMillan, 2000</i>	-		+		
seek new opportunities	<i>Thornberry 2003; McGrath & MacMillan, 2000</i>			+		
team player--engage everyone around them & build on people's strengths	<i>McGrath & MacMillan, 2000; Covey 2001</i>				++	
adaptive execution (change directions when needed)	<i>McGrath & MacMillan, 2000</i>			+		
pursue only best opportunities	<i>McGrath & MacMillan, 2000</i>					+

*N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness

Neuroticism

Neuroticism refers to people's disposition to face stressful situations calmly without becoming upset or rattled (Costa & McCrae, 1992). Persons that are highly neurotic have poor coping mechanisms as they encounter new situations or experience stress. The ever-changing environment associated with an entrepreneurial firm that is founded on risk taking and ambiguity might pose a problem to these types of people. Additionally, as seen in Table 1, research suggests entrepreneurs are optimistic (Kuratko et al, 1993; Ross, 1987) and able to capitalize on uncertainty (McGrath & MacMillan, 2000), both traits that link negatively to neuroticism. Therefore, we expect entrepreneurs to be very low in neuroticism.

Extraversion

As previously explained, research surrounding extraversion converges on a few characteristics. These descriptions include being talkative, social, active, lively, risk-takers, and excitement seekers (John & Srivastava, 1999; Watson & Clark, 1997). These common traits were used as the basis for marrying entrepreneurial traits of extroverts. As seen in the above Table 1, entrepreneurs tend to exhibit several extrovert traits, such as being courageous (Sathe, 1988), risk-takers (Sathe, 1988), optimistic (Kuratko et al, 1993; Ross, 1987), assertive (Sathe, 1988) and passionate for change (Higdon, 2000). One trait of entrepreneurs, that of being likeable or politically savvy (Sathe, 1988), suggested a negative association with the extraversion category. Overall, however, we expect entrepreneurs to exhibit extroversion traits.

Openness

Openness, sometimes referred to as openness to experiences, is perhaps the most difficult dimension of the Big Five to define (McCrae & Costa, 1997). It is sometimes coupled with education, implying that the open people may be more inclined to seek higher levels of education (McCrae & Costa, 1997). Additionally, open people tend to have a broader range of experiences, perhaps due to their increased intellect (McCrae & Costa, 1997). McCrae & Costa also pair tolerance of ambiguity, emotional ambivalence as traits of an open person.

Entrepreneurs, then, would likely be relatively high in openness traits. Research has described entrepreneurs as being autonomous (Hornsby et al, 1993; Cromie, 1987; Ross, 1987), generalists that embrace learning (McGrath & MacMillan, 2000; Kuratko et al, 1993; Sathe, 1988), creative (Thornberry, 2001; Sathe, 1988), passionate for change (Higdon, 2000), and able to capitalize on uncertainty, seek new opportunities, and able to adopt execution when needed (McGrath & MacMillan, 2000).

Agreeableness

The notion of agreeableness hinges on the basic understandings that humans naturally live in groups, and that personality is based on how people interact within those groups (Wiggins, 1991). Research shows that people that score high in agreeableness are kind, considerate, cooperative, and helpful—they get along with and are efficient in their groups (Wiggins, 1991). Another important aspect for the discussion is that agreeable persons tend to show a high pro-social tendency with a high-communal orientation (Wiggins, 1991). That is to say they are people who act for the benefit of the group. Relating to the proposed model and Figure 2, we could expect entrepreneurs to be mildly

agreeable, as research has tied the following traits to entrepreneurs: trust (Sathe, 1988), likeable and politically savvy (Sathe, 1988), optimism (Kuratko et al, 1993; Ross, 1987), and the concept of being a team-player (McGrath & MacMillan, 2000). We predict only a mild link between entrepreneurs and agreeableness since there is also a negative association with the assertive (Sathe, 1988) side of entrepreneurs, which does not typically fit in the agreeable model.

Conscientiousness

Conscientiousness is a difficult trait to describe. Some, such as Freud, suggest there is a desired balance between too little and too much conscientiousness that must be met (Hogan & Ones, 1997). Like agreeableness, conscientiousness is also founded on the concept that human naturally exist within groups. The conscientiousness person will exist within that group by resolving their conflict with authority by avoiding arguments or ambiguities, accepting instead of challenging rules or authority. Research also characterizes this trait as describing a person who lacks impulsiveness and instead tends to be critical and cautious, organized and methodical. As seen in Table 1, we would expect entrepreneurs to capitalize on the hard-worker aspect of the trait, as Barrick, Mount & Strauss (1993) also indicate conscientiousness can predict job success. Therefore, we expect entrepreneurs to be highly conscientious, as they have a desire for job satisfaction and money (Hornsby et al, 1993; Cromie 1987), are action-orientated and disciplined (McGrath & MacMillan, 2000; Kuratko et al, 1993), have a high need for achievement and are willing to take responsibility for their failures (Horsby et al, 1993), are prudent to pursue only the best opportunities (McGrath & MacMillan, 2000) and also

exhibit high personal commitment (McGrath & MacMillan, 2000; Kuratko et al, 1993; Sathe 1988).

Entrepreneurial research regarding the individual also discusses the impact of gender on the entrepreneurial mindset. Hornsby et al (1993) and Cromie (1987) recognize there are certain individual traits that are consistent among entrepreneurs, regardless of gender. These traits, from most influential to least influential, include autonomy, achievement, job dissatisfaction, money, and career dissatisfaction (Cromie, 1987). Male and female entrepreneurs and their individual characteristics are very similar, the main deviation being the female's reliance on entrepreneurship as a means to balance family life and her professional life, while the average male tends to view entrepreneurship simply as a means to make more money (Cromie, 1987).

Context

Context, as defined for the purpose of this research, is the “where” in the proposed entrepreneurial mindset model. It is the natural culture or mindset of the collective individuals in an organization that is often resistant to change (Sathe, 1988). Just as Michael Eisner found culture to be essential when turning Disney around (Wetlaufer, 2000), research also indicates that internal or context factors play a major role in facilitating the entrepreneurial mindset (Higdon, 2000), and that middle managers can directly affect these internal or cultural characteristics (Higdon, 2000; Covin & Slevin, 1991).

Just as previous research has positively linked certain individual traits to the entrepreneurial mindset, it has also linked specific cultural aspects to a successful entrepreneurial framework (Hornsby, Kuratko, & Montagno 1999; Hornsby et al., 1993).

Past research has found organizational spontaneity (George & Brief, 1992), a culture which accepts some degree of failure or risk-taking (Thornberry, 2001; Higdon, 2000; Kuratko & Montagno, 1989; Sathe, 1988), and the emergence of a specific strategy that encourages innovation (Kuratko et al., 1993) as central traits in an organization ripe for the entrepreneurial mindset.

Literature also emphasizes the importance of setting aside traditions for new processes and procedures (Kuratko et al., 1993). Kuratko et al. present a process for assessing current strategies for entrepreneurial activity. The process includes: (1) assessing the current organization; (2) determining whether the employees understand management's vision for innovation; (3) identifying and communicating specific objectives; and (4) understanding the level of entrepreneurial thinking by the employees (Kuratko et al, 1993).

Hult, Snow and Kandemir (2003) present a scale to measure the organization's internal culture and its relationship to the entrepreneurial mindset. Their research identifies four elements that affect an organization's performance. Those elements are entrepreneurship, innovativeness, market orientation, and organizational learning (Hult, Snow & Kandemir, 2003). All four elements interact within an organization to define the organization's culture and affect its performance. Hult et al (2000) also stressed the importance of organizational learning as it relates to the entrepreneurial mindset and its positive effect on the organization.

Thornberry (2003) suggests similar findings when he identifies three common characteristics in entrepreneurs—they (1) identify opportunities, (2) develop the opportunities, and (3) create business structures to implement the opportunities. He also

suggests that although the ability to be creative or innovative is a human condition, it can be developed through training and education. Education or training provides potential entrepreneurs with the tools, techniques and discipline they need to recognize opportunities and cultivate those opportunities so they become concrete business plans.

Quinn (1996) has identified other characteristics which are common among entrepreneurial organizations. They include a clear vision with the necessary support to sustain the vision, a clear tie between vision and reality, flat organizational structure with small project teams, parallel development, interactive learning across functional lines, and skunkworks—groups that operate independent of traditional lines of authority.

For the purpose of this research, context will be comprised of memory orientation and learning orientation as defined by Hult, Snow & Kandemir (2003).

Process

Process, as defined for this research, is the “what” in an organization. It is those items over which managers or senior leaders has some level of control and can utilize as a tool for diffusing the entrepreneurial mindset throughout the organization. Numerous studies have identified process traits that positively affect the entrepreneurial mindset. For example, research supports providing groups or individuals with time away from their day-to-day jobs to pursue entrepreneurial projects or develop their ideas (Higdon, 2000; Kuratko & Montagno, 1989, Sathe 1988). Furthermore, research has show the ability to break a process into incremental stages, to increase upside potential of becoming entrepreneurial, and to ensure top management public support of entrepreneurial endeavors are all important factors in developing the entrepreneurial mindset (Higdon, 2000). The use of an appropriate reward structure is also highlighted

as essential for developing an entrepreneurial mindset (Hornsby, Kuratko & Zahra, 2002; Kuratko et al., 1993; Sathe, 1988). Hornsby, Kuratko & Zahra (2002) have included rewards as a contextual element, and state an appropriate reward system must consider goals, feedback, results-based incentives, and finally an emphasis on individual responsibility. Kuratko et al. (1993) also recognizes the importance of a good reward system but suggests that allowing an entrepreneurial employee to lead a new project may be enough of a reward. However, they also suggest that providing would-be entrepreneurs with more time to work on future projects could also be a reward.

Literature also provides potential scales for evaluating an organization and its potential for becoming entrepreneurial. Hornsby, Kuratko, & Zahra (2002) present the Corporate Entrepreneurship Assessment Instrument as a possible tool for measuring organizational factors consistent with the entrepreneurial mindset. Their study suggests five internal organizational factors which are indicative of an entrepreneurial mindset. Their factors include management support (i.e., the willingness of managers to support and facilitate the entrepreneurial mindset), work discretion (i.e., the degree of autonomy experienced by the workers), organizational boundaries (i.e., the ability for cross-flow of ideas or personnel when needed), rewards or reinforcements, and time availability (e.g., adequate skunk work to develop ideas).

Sathe (1988) outlines several management-level actions that are key in promoting the entrepreneurial mindset. He suggests managers should first encourage, not mandate, entrepreneurial activity to make it a shared value rather than purely a management objective. By creating an environment which supports the entrepreneurial mindset,

employees will focus on innovation out of intrinsic motivation versus extrinsic motivation based on fear of reprisal.

Furthermore, Sathe (1988) suggests managers should ensure human resource policies, such as personnel rotation, are reviewed to ensure employees have sufficient depth or job experiences to develop new ideas and become entrepreneurial. Typically, Sathe (1988) suggests a manager should remain in the same job for at least five years to develop this level of expertise. He emphasizes opportunities are most often seized only when employees possess the in-depth knowledge about their territory and share a personal conviction to pursue those opportunities. Others, however, suggest employees should be generalists (McGrath & MacMillan, 2000; Kuratko et al, 1993). All agree, however, that employee should embrace knowledge and have a management that supports this need. In-depth knowledge is not limited to on-the-job training, but also involves interactions with customers, competitors, and other relevant players.

Additionally, Sathe (1988) supports the need for managers to sustain a long-term commitment to entrepreneurial activities or projects in an effort to sustain momentum. This includes not only monetary commitment, but also sustained project visibility and communicated focus. Since corporations typically find only one successful venture out of every 50-100 attempted, organizations need to focus on the process, not on individual ventures. Furthermore, organizations must simultaneously manage the “total pool” of initiatives to ensure a balance between stable and entrepreneurial projects.

Finally, Sathe (1988) advocates relying on the people in the organization through both proper rewards and empowerment of (“betting on”) the employees. When presented with entrepreneurial opportunities, successful companies rely on their employees, with

consideration given depending on their position, scope, or track record, instead of only analyzing the data. Trust becomes paramount to the entrepreneurial company and is built on openness and clear communication. High-level leaders or managers must defer to the judgments of the individuals at the level in which they are trying to foster entrepreneurship; otherwise, they may be misguiding the effort.

In addition, research has supported the use of training programs to foster the entrepreneurial mindset (Thornberry, 2003; Kuratko & Montagno, 1989). Kuratko and Montagno (1989) developed a training program which focuses on individual characteristics (determining each person's creativity), context (examining the culture specifically related to risk taking, tolerance of failures, and the fluidity of movement across job or organizational boundaries), and process (providing a sound definition of "intrapreneuring" and designing solid business plans).

Kuratko and Montagno (1989) emphasize intrapreneurship training is not a one-time activity, but should be continually revisited until it is a part of the culture. Furthermore, regardless of how much training employees or managers receive, unless they are provided with the "slack time" to engage in the intrapreneurial activities, the training will have limited impact.

Kuratko and Montagno (1989) also emphasize the need to identify potential entrepreneurs early in their careers to ensure they receive the training and support they will need to succeed. Higdon (2000) however warns against leaping to conclusions as to who will make the best entrepreneur; he suggests the best ideas will come from the organizational pool. Thornberry (2003) also found that identifying the potential entrepreneurs maybe difficult, re-emphasizing the need for coaching, education, and

training to ensure individual abilities are fully developed and relied upon to the fullest extent possible.

Outcomes of the Entrepreneurial Mindset

Job Satisfaction

Job satisfaction is defined by Locke as the “pleasurable emotional state resulting from the appraisal of one’s job as achieving or facilitating the achievement of one’s job value” (1969: pg. 316). Basically, it is the perceived correlation between what employees expect from their job and what they actually get from their job. Research has suggested various methods for measuring job satisfaction.

Traditionally, researchers have relied upon the Job Description Index (JDI). However, Buckley, Carraher & Cote (1992) found the JDI had significant trait, method, and random error variances that maybe problematic in some situations. They also concluded that none of the JDI alternatives introduced significantly more variance than JDI (Buckley, Carraher & Cote, 1992).

One method typically used is to have employees rate various aspects of their job (e.g. pay, workload, management) and sum the individual ratings to produce an overall job satisfaction rating (Locke, 1969). The obvious challenge in such methods is ensuring the researcher accounts for every aspect of a job (Scarpello & Campbell, 1983). Additionally, it becomes difficult to weigh the various aspects (i.e. pay may be much more important to an employee than management and may therefore have a stronger influence on the employee’s overall job satisfaction) (Locke, 1969).

In response, some researchers turned to single-item measures of job satisfaction (Scarpello & Campbell, 1983). Advocates of the single-item measure note that in

addition to avoiding misleading conclusions drawn from multiple-item facet scales, single-item measures offer non-psychometric advantages, since they are much shorter, more efficient, and can be easily altered (Nagy, 2002). Single-item measures have also received their share of criticism due to internal reliability problems and the inability to include them in structural equation models (Wanous, Reichers & Hudy, 1997). As a result, four items from Quinn and Shepard's (1974) job satisfaction index will be used. These same items were used by Eisenberg, Cummings, Armeli, and Lynch (1997) in their studies.

Affective Commitment

Meyer and Allen (1991) introduced a three-component model of commitment which consisted of affective, continuance, and normative commitment. Research defines affective commitment as a strong desire to remain in a current job or occupation (Meyer, Allen & Smith, 1993). They suggest employees with a high degree of affective commitment also have a high likelihood of staying current with developments in their field (Meyer, Allen & Smith, 1993). Their research on commitment among student nurses also showed that affective commitment often correlates highly with job satisfaction (Meyer, Allen & Smith, 1993). Normative commitment was not included in the proposed model as it was found non-significant in prior research regarding the entrepreneurial mindset (Wood, 2004). Additionally, Continuance commitment, or a commitment to an organization driven by a perceived cost of leaving the organization, was not included in the proposed model (Meyer, Allen & Smith, 1993). This exclusion was based on the hypothesis that the entrepreneurial mindset would not positively affect

continuance commitment as entrepreneurs would be inclined to see a cost of staying with an organization given should they become innovative vice leaving the organization

Affective commitment is the degree the employees feel attached to their organization. It includes feelings such as loyalty and pride, which should increase as the entrepreneurial mindset increases.

Job Performance

The goal of the entrepreneurial mindset is to “create a genuine win for [an] organization in terms of growth in both profits and profitability” (McGrath & MacMillan, 2000). Job performance is the measure of the tangible results of the entrepreneurial mindset. It is the growth of a company, increase in revenue, etc that is directly affected by an increase in the entrepreneurial mindset of the organization.

Problem / Purpose Statement

Senior leaders across the Department of Defense have been challenged to be more entrepreneurial. The problem arises as to how these leaders, given the individuals, climate or culture (context), and current processes in an organization, can meet this challenge. Three research questions were developed to address the primary research problem:

- 1) What is the relative contribution of process, context, and individual characteristics on the entrepreneurial mindset?
- 2) What is the contribution of the interaction between these three categories?
- 3) How can the integrated model, if deemed appropriate, impact the Department of Defense and its push for transformation?

Theoretical Model

Figure 1 shows the proposed model that will be tested. A survey, to be discussed in Chapter III, was developed and administered to measure each of the three antecedents and outcomes to help determine their relative and interactive contributions to an organization's entrepreneurial mindset. Each individual antecedent relationship was tested.

From the proposed model and the corresponding research questions, several investigative questions were developed. The investigative questions were:

- I1. What is the relative contribution of process, context, and individual characteristics on the entrepreneurial mindset?
- I2. What is the contribution of the interaction between these three categories (i.e., process, context, and individual characteristics) on the entrepreneurial mindset?
- I3. What are the effects of the entrepreneurial mindset, if applicable, on the Department of Defense and its push for transformation?

In turn, formal hypotheses and sub-hypotheses were developed for each of the investigative questions. They include:

- H1. There is a positive relationship between the three antecedents and the entrepreneurial mindset.
 - H1a. There is a positive relationship between Individual Characteristics and the entrepreneurial mindset.
 - H1b. There is a positive relationship between Context and the entrepreneurial mindset.
 - H1c. There is a positive relationship between Process and the entrepreneurial mindset.
- H2. There is an interactive relationship between the three antecedents and the entrepreneurial mindset.

H2a. There is an interactive relationship between Individual Characteristics and Context, and the entrepreneurial mindset.

H2b. There is an interactive relationship between Individual Characteristics and Process, and the entrepreneurial mindset.

H2c. There is an interactive relationship between Context and Process, and the entrepreneurial mindset.

H2d. There is an interactive relationship between Individual Characteristics, Context, and Process, and the entrepreneurial mindset.

H3. The three antecedents do not directly affect any of the outcomes without first impacting the organization's entrepreneurial mindset.

H3a. Individual Characteristics does not directly affect Job Performance without first impacting the organization's entrepreneurial mindset.

H3b. Individual Characteristics does not directly affect Job Satisfaction without first impacting the organization's entrepreneurial mindset.

H3c. Individual Characteristics does not directly affect Affective Commitment without first impacting the organization's entrepreneurial mindset.

H3d. Context does not directly affect Job Performance without first impacting the organization's entrepreneurial mindset.

H3e. Context does not directly affect Job Satisfaction without first impacting the organization's entrepreneurial mindset.

H3f. Context does not directly affect Affective Commitment without first impacting the organization's entrepreneurial mindset.

H3g. Process does not directly affect Job Performance without first impacting the organization's entrepreneurial mindset.

H3h. Process does not directly affect Job Satisfaction without first impacting the organization's entrepreneurial mindset.

H3i. Process does not directly affect Affective Commitment without first impacting the organization's entrepreneurial mindset.

H4. The entrepreneurial mindset is present in DoD organizations.

Conclusion

Entrepreneurship and the entrepreneurial mindset have long been a part of everyday life. Recently researchers have placed considerable focus on defining traits and practices among start-up entrepreneurs and apply those principles to large organizations to see if they too can reap benefits from continual innovation and improvement. This chapter reviewed the relevant literature and developed a conceptual model of the antecedents and outcomes of an entrepreneurial mindset. Chapter Three will present the methodology used to test this model.

III. Methodology

Introduction

This chapter explains the methodology used to test the proposed model. It will justify why the survey was selected and how it was developed to test the proposed model. The chapter will also describe the sample used, to include how it was selected and why it is appropriate. Furthermore, it will explain how the survey was conducted and explain the proposed methodology for analyzing the survey data.

Methodology / Experimental Design

The study tested a model of the antecedents and outcomes of an entrepreneurial mindset in organizations (see Figure 1). A 121-item survey (see Appendix) was developed and administered to individuals from three DoD organizations--the Air Force Research Labs (AFRL), Wright-Patterson Air Force Base, Ohio, the Air Force Manpower Agency (AFMA), formerly the Air Force Manpower and Innovation Agency, Randolph Air Force Base, Texas, and the Air Force Institute of Technology (AFIT), Wright-Patterson Air Force Base, Ohio. AFRL and AFMA were chosen as organizations that were perceived to be entrepreneurial. Specifically, AFRL's selection was based on their strategy of developing "evolutionary and revolutionary technologies" (<http://www.afrl.af.mil>). The Air Force Institute of Technology was chosen due the student body composition which provided a vast and current cross-section of the Air Force. AFIT students, however, may have some potential bias toward innovation as they are all pursuing graduate-level degrees. The survey was based on previously tested and administered scales. Specific questions were adapted from previous research done in each of the areas to be measured—to include the three antecedents to the entrepreneurial

mindset and the three outcomes. Each area and its associated scale are described in further detail later in this section.

Data Sources / Collection

Sample

Once the organizations were selected, the leadership in the organizations was contacted to gain their commitment to participate in the research. All three organizations were willing to participate. E-mails were sent to the entire organization. The AFRL sample consisted of all members of the Air Force Sensors Directorate (AFRL/SN), the AFIT sample consisted of a variety of graduate students in the Department of Systems and Engineering Management (AFIT/ENV), while the AFMA sample consisted of the entire organization. The total sample size was 1,453 with an overall participation rate of 10.8%. Table 2 presents the demographics of the entire sample.

Wave Analysis

A wave analysis was conducted for each of the three organizations to determine whether or not there was a significant difference between the first respondents and the last respondents (Lambert & Harrington, 1990; Armstrong & Overton, 1977). An analysis of variance (ANOVA) was conducted using four measures, Agreeableness, Work Discretion, and Entrepreneurial Mindset, and Job Satisfaction. Agreeableness, Work Discretion, and Job Satisfaction were selected for wave analysis since all in each of the three measures one or more of the organizations exhibited significantly different means in the primary ANOVA test.

Table 2. Sample Demographics

Category	Entire Sample		AFIT		AFRL		AFMA		
	#	%	#	%	#	%	#	%	
Source									
	AFIT	35	23%						
	AFRL	79	52%						
	AFMA	37	25%						
TOTAL		151	100%						
Age (in years)									
	< 25	12	8%	3	9%	8	10%	1	3%
	25-35	46	30%	25	71%	16	20%	5	14%
	35-45	43	28%	7	20%	17	22%	19	51%
	>45	50	33%	0	0%	38	48%	12	32%
TOTAL		151	100%	35	100%	79	100%	37	100%
Gender									
	Male	117	77%	28	80%	60	76%	29	78%
	Female	34	23%	7	20%	19	24%	8	22%
TOTAL		151	100%	35	100%	79	100%	37	100%
Rank*									
	Enlisted	13	9%	3	9%	0	0%	10	28%
	Officer	67	45%	32	91%	25	32%	10	28%
	GS	49	33%	0	0%	33	42%	16	44%
	Other (Contractor)	21	14%	0	0%	21	27%	0	0%
TOTAL		150	100%	35	100%	79	100%	36	100%
Date Entered AFIT*									
	Jun-04	0	0%	0	0%	**	**	**	**
	Sep-04	19	56%	19	56%	**	**	**	**
	Jun-03	15	44%	15	44%	**	**	**	**
TOTAL		34	100%	34	100%				
Length of Time with Organization*									
	< 3 months	3	2%	1	3%	1	13%	1	3%
	4-12 months	23	16%	1	3%	16	20%	6	17%
	1-2 years	48	33%	18	56%	19	24%	11	31%
	> 2 years	73	50%	12	38%	43	54%	18	50%
TOTAL		147	100%	32	100%	79	111%	36	100%
Last Organization									
	ACC	16	11%	7	20%	5	6%	4	11%
	AETC	20	13%	5	14%	8	10%	7	19%
	AFMC	47	31%	5	14%	39	49%	3	8%
	AFSPC	9	6%	6	17%	1	1%	2	5%
	AFSOC	1	1%	1	3%	0	0%	0	0%
	AMC	3	2%	1	3%	1	1%	1	3%
	PACAF	3	2%	0	0%	1	1%	2	5%
	USAFE	8	5%	6	17%	0	0%	2	5%
	AFRC	1	1%	1	3%	0	0%	0	0%
	HQ USAF	2	1%	0	0%	0	0%	2	5%
	Other	41	27%	3	9%	24	30%	14	38%
TOTAL		151	100%	35	100%	79	100%	37	100%
Role in Organization*									
	Supervisory	28	26%	19	58%	9	12%	10	28%
	Non-Supervisory	95	65%	11	33%	59	96%	25	69%
	Senior Leadership	14	10%	3	9%	10	13%	1	3%
TOTAL		137	100%	33	100%	78	120%	36	100%

* Of the respondents, 1 did not report rank, 4 did not report Time with Organization, and 4 did not report their role in the organization.

Entrepreneurial Mindset was chosen since it is the primary measure for this study. Each group of responses were divided into three waves which corresponded to when the initial call for responses was sent, and each subsequent follow-up (for a total of two follow-up e-mails per organization). No significant difference between the waves in each organization was noted.

A wave analysis was also conducted across the entire sample using the same aforementioned measures. Only one item in Agreeableness, item 22, exhibited a significant difference between wave one and wave three of the overall sample. Wave one had a mean of 5.86, while wave three had a mean of 5.28. This discrepancy could be due to the reduction in number of respondents between wave one and wave three. Since none of the individual organizations showed a significant difference between waves, we can reasonably assume any future respondents would report results similar to those received in this study.

Data Collection

The survey was administered via the internet to facilitate ease of access. E-mails containing the survey were sent to the organizations with the commander's endorsement of the survey. Respondents were asked to reply via e-mail to the researcher by attaching the completed survey. Approximately one week after the initial e-mails were sent, a follow-up e-mail was sent to each organization to encourage participation.

In addition to items testing the proposed model, individuals in the organization were asked to provide basic background information. Basic information included the respondent's age (i.e. <25 years, 25-35, 35-45, or > 45 years), gender (i.e male or female), rank (i.e. Enlisted, Officer, GS, or Other), the amount of time they were with

their organization (i.e. < 3 months, 4-12 months, 1-2 years, or > 3 years) and their role within the organization (i.e. Supervisory, Non-Supervisory, Senior Leadership).

Respondents from AFIT were asked to reflect back on their last assignment prior to AFIT. Again, the potential for bias was introduced as respondents may have a different perspective of their organization when they are asked to reflect back versus commenting on a current situation. The AFIT survey also included a background question which asked respondents to describe their last organization (i.e. Air Combat Command (ACC), Air Education and Training Command (AETC), Air Force Space Command (AFSPC), Air Force Special Operations Command (AFSOC), Air Mobility Command (AMC), Pacific Air Forces (PACAF), U.S. Air Forces in Europe (USAFE), Air Force Reserve Command (AFRC), HQ U.S. Air Force, or Other (e.g., Direct Reporting Unit, Forward Operation Location, Air National Guard, U.S. Air Force Academy, or Reserve Officer Training Corps)).

Once responses were received, the data and time of each response, as well as the source of the response (i.e. AFIT, AFRL, or AFMA) were recorded. Each survey was then printed and the source e-mail was destroyed to eliminate any link between a specific survey and specific respondent, ensuring responses were completely anonymous.

Survey Design

As stated, the survey was based on previously developed and tested research. The survey was divided into six sections—Background Information, Perceptions of the Individual, Perceptions of the Organization Structure (Process), Perceptions of the Organization Culture (Context), Perceptions of the Entrepreneurial Mindset, and

Perceptions of Entrepreneurial Mindset Outcomes. Each section is described in further detail below.

Reliability

Cronbach's coefficient alphas were calculated for each of the scales in order to evaluate the reliabilities associated with each scale. All of the measures for each organization exceeded the 0.70 "rule-of-thumb" suggested by Nunnally (1978) except Openness and Organizational Boundaries. In both of these measures, all organizations were below 0.70, suggesting extra precautions must be taken when interpreting results using this scale.

Entrepreneurial Mindset Antecedents

Individual Characteristics

The individual characteristics were measured based on the 44-item Big Five scale developed by John and Srivastava (1999). According to John and Srivastava (1999), the Big Five Inventory (BFI) provides significant advantages over the Neuroticism, Extraversion, and Openness (NEO) Personality Inventory (PI) questionnaires or the trait descriptive adjectives (TDA) due to its brevity, simplicity, and efficiency. The BFI is based on a seven-point Likert-type scale where 1 represents *strongly disagree* and 7 represents *strongly agree*. A sample question is "I see myself as someone who is talkative." Although they reported that the TDA (0.89) had better reliabilities than the BFI (0.83), the BFI is substantially shorter (44 items versus 100 items). The BFI was therefore used in this research as it was much shorter and still offered very acceptable reliabilities. Table 3 gives the reliabilities associated with each of the five factors as

reported by John and Srivastava (1999: p117). All of the reliabilities exceed 0.70, the generally accepted minimum (Nunnally 1978).

Table 3. Big Five Traits and Reliabilities

	<i>Extraversion</i>	<i>Agreeableness</i>	<i>Conscientiousness</i>	<i>Neuroticism</i>	<i>Openness</i>	<i>Mean</i>
TDA	0.92	0.90	0.90	0.85	0.88	0.89
BF	0.88	0.79	0.82	0.84	0.81	0.83
NEO	0.78	0.78	0.83	0.85	0.70	0.79

Our research reported reliabilities as outlined in Table 4. As shown, all reliabilities except for Openness exceeded 0.70. The low reliabilities for Openness indicate caution should be used when evaluating responses associated with Openness.

Table 4. Proposed Model Individual Characteristic Reliabilities

	<i>Extraversion</i>	<i>Agreeableness</i>	<i>Conscientiousness</i>	<i>Neuroticism</i>	<i>Openness</i>
AFRL	.87	.76	.72	.84	.43
AFIT	.87	.74	.74	.81	.21
AFMA	.87	.80	.71	.74	.22

Context

Context, which for the purpose of this research is comprised of memory orientation and learning orientation, were measured using scales developed by Hurley and Hult (1998). The scales use a seven-point Likert-type scale, with 1 representing *strongly disagree* to 7 representing *strongly agree*. Sample questions include “We agree that our ability to learn is the key to improvement” and “We have specific mechanisms for sharing lessons learned in our organization” (Hult, Snow & Kandemir, 2003). A total

of eight items were included to measure Context. The reliabilities for learning orientation and memory orientation according to Hult, Snow and Kandemire (2003) were 0.92 and 0.87 respectively.

Our research showed also reported reliabilities that all exceeded .70, as outlined in Table 5.

Table 5. Proposed Model Context Reliabilities

	<i>Memory Orientation</i>	<i>Learning Orientation</i>
<i>AFRL</i>	.86	.80
<i>AFIT</i>	.82	.73
<i>AFMA</i>	.87	.79

Process

Process was measured based on the Corporate Entrepreneurship Assessment Instrument (CEAI) (Hornsby, Kuratko & Zahra, 2002). The CEAI relied on a Likert-type scales, with 1 representing *strongly disagree* to 5 representing *strongly agree*, to measure five distinct internal factors which play a significant role in the level of entrepreneurship within and organization. The five factors are: management support for corporate entrepreneurship, work discretion, reward/reinforcement, time availability, and organizational boundaries. A total of 84 items were included in the survey to measure the five factors.

The Chronbach alphas for each antecedent as reported by Hornsby, Kuratko & Zahra (2002) are shown in Table 6. In their research, they used two difference samples which is reported in the two difference analysis. As shown, there was little difference in

Analysis 1 and Analysis 2. All of the reliabilities are well above 0.70 except for Organizational Boundaries. However, since it was included in Wood's (2004) study and is close to the 0.70 threshold for acceptable reliability, it was included in the study.

Table 6. Corporate Entrepreneurship Assessment Instrument (CEAI) Reliabilities

	<i>Management Support</i>	<i>Work discretion</i>	<i>Rewards / Reinforcement</i>	<i>Time availabilitiy</i>	<i>Organizational Boundaries</i>	<i>Mean</i>
<i>Analysis 1</i>	0.92	0.86	0.75	0.77	0.69	0.80
<i>Analysis 2</i>	0.89	0.87	0.75	0.77	0.64	0.78
<i>Mean</i>	<u>0.91</u>	<u>0.87</u>	<u>0.75</u>	<u>0.77</u>	<u>0.67</u>	0.79

Our research indicated a similar problem with Organizational Boundaries as the reliabilities were low, ranging from 0.46 - 0.55. All other reliabilities, however, exceeded 0.70, as reported in Table 7.

Table 7. Proposed Model Process Reliabilities

	<i>Management Support</i>	<i>Work Discretion</i>	<i>Rewards / Reinforcement</i>	<i>Time Availability</i>	<i>Organizational Boundaries</i>
<i>AFRL</i>	.92	.90	.86	.80	.55
<i>AFIT</i>	.90	.91	.74	.71	.46
<i>AFMA</i>	.94	.90	.73	.77	.54

Assessment of the Entrepreneurial Mindset

Previous research relied on Covin & Slevin's (1989) nine-item scale to measure the organization's strategic posture, or entrepreneurial mindset (Woods, 2004). The scale was comprised of innovation, pro-activeness, and risk-taking. Covin & Slevin's scale was used again for this research. The nine items were constructed using two anchor responses and a seven-point scale response scale. A sample questions is "In general, top

managers of my firm favor... (1) A strong emphasis on the marketing of tried and true products or services or (7) A strong emphasis on R&D, technological leadership, and innovations.” Subjects were asked to indicate on the seven-point scale which statement they agree with most. The coefficient alpha for the nine-item scale was 0.87. Our research showed similar coefficient alphas--0.87 (AFIT), 0.91 (AFRL), and 0.85 (AFMA).

Entrepreneurial Mindset Outcomes

Job Satisfaction

Job Satisfaction was measured using four items from Quinn and Shepard's (1974) job satisfaction index as previously used by Eisenberg, Cummings, Armeli, and Lynch (1997). Eisenberg et al had previously used successfully abbreviated versions of longer scales. For the job satisfaction scale, four items were used that were based on a seven-point Likert-type scale where 1 represented *strongly agree* and 7 represented *strongly disagree*. The corresponding Cronbach's alpha for the scale was 0.72. Our research showed similar coefficient alphas--0.94 (AFIT), 0.96 (AFRL), and 0.97 (AFMA).

Affective Commitment

Affective commitment was measured using six items from a scale developed by Meyer, Allen & Smith (1993). The six items were measured using a seven-point Likert-style scale, where 1 represented *strongly agree* and 7 represented *strongly disagree*. A sample question is “I would be very happy to spend the rest of my career with this organization.” The corresponding reliability was 0.87. Our research showed similar coefficient alphas--0.80 (AFIT), 0.94 (AFRL), and 0.93 (AFMA).

Job Performance

Job Performance was measured based on a seven-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. It consisted of two questions regarding the organization's overall performance last year (Jaworski & Kohli, 1993). The corresponding coefficient alpha was 0.88. Our research showed similar coefficient alphas--0.91 (AFIT), 0.87 (AFRL), and 0.86 (AFMA).

Data Analysis (Statistical Methods)

Data analysis included descriptive statistics for each demographic (i.e. organization) and the overall demographic (i.e. entire sample). Descriptive statistics included minimum and maximum responses, mean, and standard deviation. Additionally, Cronbach's coefficient alpha was included to determine the internal reliability.

A wave analysis was conducted to determine whether there was a significant difference between respondents across three waves. Correlation analysis was conducted to identify significant correlations between variables, either positive or negative. A mediated regression analysis, based on Baron and Kenny's (1986) approach to test the mediating effect of Entrepreneurial Mindset between the antecedents and outcomes of this study.

Conclusion

The three antecedents to the entrepreneurial mindset and corresponding outcomes will be measured using previously validated survey-type questions from various research. Statistical calculations were conducted to measure each antecedent's influence on the entrepreneurial mindset and the interactive properties of the three antecedents on the

entrepreneurial mindset. Additionally, the outcomes were measured to determine the degree of correlation between the antecedents and the entrepreneurial mindset outcomes.

IV. Analysis

The Study of Entrepreneurship in DoD Organizations (Appendix) was designed to test the hypotheses outlined in Chapter II. Overall, the survey tested the proposed model, which suggested a specific set of organizational factors (i.e. Individual Characteristics, Context, and Process) influences entrepreneurial behavior in DoD organizations and this entrepreneurial behavior leads to positive organizational outcomes.

This chapter describes the preliminary data evaluations such as how missing data was handled, wave analysis, and analysis of variance (ANOVA). Additionally it describes how data was tested and evaluated using pairwise correlations and mediated regression to test each of the hypotheses and sixteen sub-hypotheses as outlined previously.

Missing Data

A total of 38 surveys were not completed in their entirety; 6 were returned unreadable. An e-mail was sent to the sender of any survey that was illegible informing them of the problem. None were resubmitted. Thirty of the incomplete surveys had three or fewer missing data points. Table 8 outlines the missing data as broken down by organization. The missing data appeared random and a result of time constraints or carelessness. Completely illegible surveys were not included in the analysis, but were included in the response rate. Surveys that were more than 75% complete were included in the analysis. This led to one survey from AFRL to be excluded since it was only 36% complete. The mean of each measure, by organization, was calculated. This average

Table 8. Demographics of Missing Data

% complete	Entire Sample		AFIT		AFRL		AFMA		TOTAL %
	#	%	#	%	#	%	#	%	
100%	112	72%	27	24%	50	45%	35	31%	100%
99%	16	10%	4	25%	12	75%	0	0%	100%
98%	14	9%	4	29%	9	64%	1	7%	100%
93%	2	1%	0	0%	3	150%	1	50%	200%
91%	1	1%	0	0%	1	100%	0	0%	100%
88%	2	1%	1	50%	1	50%	0	0%	100%
80%	1	1%	1	100%	0	0%	0	0%	100%
77%	1	1%	0	0%	1	100%	0	0%	100%
36%	1	1%	0	0%	1	100%	0	0%	100%
0%	6	4%	0	0%	4	67%	2	33%	100%
TOTAL	156	1	37		82		39		

figure was used to fill-in missing data on the 149 total surveys used for analysis (Hair et al, 1998).

Descriptive Statistics

Table 9 provides summaries of the descriptive statistics broken down by organization (i.e. AFIT, AFRL, and AFMA). The table includes the name of each variable, the number of items in each scale, the minimum and maximum, mean, and standard deviation. The Cronbach's coefficient alpha, which indicates each scale's reliability, is also included.

The symbol * was included in the table to indicate means that were significantly different as reported by the Tukey-Kramer honestly significant difference (HSD) test. The Tukey-Kramer HSD tests differences across all the means and is a conservative test given the sample sizes of the three organizations are different. As shown in Table 9, a total of eight measures illustrated significantly different means, according to the Tukey-Kramer HSD test, across at least two of the organizations.

For Individual Characteristics, AFRL (5.69) and AFIT (5.15) had significantly different means in Agreeableness. This difference could be expected since Agreeableness also refers to how well people work for the benefit of the group (Wiggins, 1991). Since respondents from AFRL and AFMA were currently in their organization, their tendency to answer positively to Agreeableness could be higher than respondents from AFIT how were asked to reflect back to their interactions with their last organization.

In Conscientiousness, AFIT (5.01) had a significantly lower mean from both AFRL (5.62) and AFMA (5.62). This difference could also be expected as

Table 9. Descriptive Statistics

	Min	Max	AFIT			AFRL			AFMA		
			Mean	SD	Alpha	Mean	SD	Alpha	Mean	SD	Alpha
EM Antecedents:											
Individual Characteristics											
<i>Extraversion (8)</i>	1	7	4.83	1.01	0.87	4.61	1.02	0.87	4.67	1.13	0.87
<i>Agreeableness (9)</i>	1	7	5.15*	0.69	0.74	5.69*	0.63	0.76	5.51	0.78	0.80
<i>Neuroticism (8)</i>	1	7	3.20	0.83	0.81	2.82	0.92	0.84	2.71	0.79	0.74
<i>Conscientiousness (9)</i>	1	7	5.01*	0.72	0.74	5.62	0.63	0.72	5.62	0.70	0.71
<i>Openness (10)</i>	1	7	4.78*	0.48	0.21	5.03*	0.53	0.43	4.86	0.53	0.22
Context											
<i>Memory Orientation (4)</i>	1	7	3.93	1.28	0.82	3.82	1.27	0.86	3.96	1.42	0.87
<i>Learning Orientation (4)</i>	1	7	4.91*	1.01	0.73	5.70*	0.98	0.80	5.41	1.13	0.79
Process											
<i>Management Support (19)</i>	1	5	2.83	0.61	0.90	3.13	0.69	0.92	2.89	0.08	0.94
<i>Work Discretion (10)</i>	1	5	3.38	0.78	0.91	3.74*	0.70	0.90	3.14	0.77	0.90
<i>Rewards / Reinforcement (6)</i>	1	5	3.63	0.69	0.74	3.62	0.79	0.86	3.61	0.59	0.73
<i>Time Availability (6)</i>	1	5	2.65	0.67	0.71	2.76	0.74	0.80	2.83	0.78	0.77
<i>Organizational Boundries (7)</i>	1	5	3.19	0.60	0.46	3.07	0.58	0.55	3.18	0.60	0.54
Entrepreneurial Mindset:	1	7	3.92	1.11	0.87	4.18	1.16	0.91	4.38	1.07	0.85
EM Outcomes:											
<i>Job Satisfaction (4)</i>	1	7	3.31	1.54	0.94	2.56*	1.50	0.96	3.58*	1.99	0.97
<i>Affective Commitment (6)</i>	1	7	4.36	1.21	0.80	5.07*	1.55	0.94	3.94*	1.83	0.93
<i>Job Performance (2)</i>	1	7	5.31	1.31	0.91	5.19	1.39	0.87	4.5*	1.47	0.86

* Indicates means that are significantly different.

Conscientiousness is also founded on the concept of how people interact within naturally formed groups. Once again, AFIT respondents may feel more alienated since they are reflecting back on their last organization and are not currently involved with that organization or group.

For Openness, AFIT (4.78) again had a significantly lower mean than AFRL (5.03). This was surprising since Openness tends to refer to a openness to experience, which often leads to individuals seeking higher levels of education (McCrae & Costa, 1997). One possible explanation is that AFIT respondents were seeking a Masters of Science degree, while several of the AFRL respondents already completed doctorate-level work. In future tests, it might be useful to document respondents' level of education to confirm a possible source of this difference.

In the Context category, the only significant difference was in the Learning Orientation measure. Once again, AFIT (4.91) had a significantly lower mean than AFRL (5.70). This difference could be expected since AFRL must focus on technology and relies upon technical expertise on a daily basis, unlike many organization upon which the AFIT respondents were basing their responses. Many of the AFIT respondents were from an acquisition background which may not put as much emphasis on sharing knowledge.

In the Process category, Work Discretion, AFRL (3.56) was significantly higher than both AFIT (3.26) and AFMA (3.04). Once again, this could be explained by the nature of the AFRL organization. Since they are technology-based and focused, it would be expected that their employees could experience greater level of freedom in their job

than a typical Air Force job, represented by the AFIT respondents, or other forward-leaning but not technology-based organization (AFMA).

It is important to note that no significant differences were demonstrated in the Entrepreneurial Mindset measure across the three organizations. Although we expected AFRL and AFMA to be significantly higher than AFIT, this was not validated in the data.

Several differences were seen in the Entrepreneurial Mindset Outcomes. In all three measures (i.e. Job Satisfaction, Affective Commitment, and Job Performance), AFMA was significantly different. In Job Satisfaction, AFRL (2.56) was significantly lower than AFMA (3.58), while in Affective Commitment AFRL (5.07) was significantly higher than AFMA (3.94). That is, AFRL respondents demonstrated they were less satisfied with their jobs, but felt a stronger tie to their organization than AFMA respondents. Since all of the Entrepreneurial Mindset antecedents, except for Work Discretion showed no significant differences between the two organizations, it is difficult to explain this difference. One possibility is that although AFRL and AFMA were not significantly different in Conscientiousness and Agreeableness, AFRL was higher in both categories. A larger sample from AFRL with a greater response rate (7% compared to AFMA's 22% response rate) might have shown significant difference in group interaction which could affect Conscientiousness, Agreeableness, and Affective Commitment. That is, respondents who demonstrate tendencies to work well in groups may also feel a stronger tie to the group within which they work.

AFMA (4.5) was also significantly lower in Job Performance than AFRL (5.19) and AFIT (5.31). That is, although AFMA respondents reported they were satisfied with

their job, they did not feel their organization performed well. One possible explanation is that Job Satisfaction referred to a respondent's individual satisfaction (e.g. "All in all, I am very satisfied with my current job") while Job Performance refers to a respondent's overall organization (e.g. "Regarding our overall performance during the last year, we...").

Mediated Regression Analysis

A mediated regression analysis was conducted to analyze interactive relationships in the proposed model, as shown in Table 10. This analysis followed the three-step mediated regression approach recommended by Baron and Kenny (1986) to determine if a mediating effect was present.

First, the mediator (entrepreneurial mindset) was regressed on the independent variable (each study antecedent). Baron and Kenny (1986) suggest the independent variable must be significantly related to the mediator variable. This condition was met as the results were significant ($p < .01$) and they produced an adjusted R-squared of .46.

Second, the dependent variables (each individual outcome) were regressed on the independent variable (antecedents). Baron and Kenny (1986) suggest the independent variable must be significantly related to the dependent variable. This condition was also met as the results were significant ($p < .01$) for all three outcomes (i.e. Job Satisfaction, Job Performance, and Affective Commitment) and produced R-squared values of .56 (Job Satisfaction), .40 (Job Performance), and .44 (Affective Commitment).

Third, the dependent variables (each individual outcome) were regressed simultaneously on the independent variable (antecedents) and mediator (Entrepreneurial

Table 10. Mediated regression analysis.

<i>Equation</i>	<i>Dependent Variable</i>	<i>Independent Variable(s)</i>	<i>Regression Coefficients</i>		<i>Adjusted R-squared</i>	<i>F value</i>	<i>Equation</i>
(1)	EM	AN	.87**	EM	.46	9.54**	
(2)	JS	AN	1.17**		.56	14.18**	
(3)	JS	AN, EM	1.17**	1.60**	.56	13.38**	
(1)	EM	AN	.87**		.46	9.54**	
(2)	AC	AN	1.26**		.44	9.03**	
(3)	AC	AN, EM	1.26**	1.47**	.45	8.47**	
(1)	EM	AN	.87**		.46	9.54**	
(2)	JP	AN	1.15**		.40	7.47**	
(3)	JP	AN, EM	1.15**	1.33**	.40	6.92**	

Labels: EM = Entrepreneurial Mindset, AN = Antecedents, JS = Job Satisfaction, AC = Affective Commitment, JP = Overall Job Performance
 The symbol ** indicates $p < .01$

Mindset). Baron and Kenny (1986) suggest the effect of the relationship between the independent variable and the dependent variable must be weaker in the third step than in the second step. Full mediation results when the independent variable has no effect on the dependent variable when the mediator is included in the regression. Partial mediation results when the independent variable has a significant but weaker effect on the dependent variable when the mediator is included in the regression. We found a partial mediation effect as the mediator (Entrepreneurial Mindset) remained significant in this third step and the R-squared values either remained the same or increased in this third and final step.

Hypotheses Evaluation Results

Pairwise correlations of the study's variables were conducted and evaluated to test the study's hypotheses. Correlations were done for each organization and then an overall study correlation was also completed. The overall correlation was used to test the study's hypotheses. Tables 11-14 illustrate the correlations for each of the 16 variables in the study.

H1. There is a positive relationship between the three antecedents and the entrepreneurial mindset.

NOT SUPPORTED. We expected a positive significant correlation between the three antecedents (Individual Characteristics, Context, and Process) and the Entrepreneurial Mindset. This was not supported as there were no significant correlations between Individual Characteristics and the Entrepreneurial Mindset. This held true for the overall model correlations and for each individual organization's correlations.

Table 11. Correlation matrix of study antecedents and outcomes (Entire Sample)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Extraversion	-															
2. Agreeableness	0.18*	-														
3. Neuroticism	-0.41**	-0.39**	-													
4. Conscientiousness	0.18*	0.48**	-0.42**	-												
5. Openness	0.23**	0.18*	-0.23**	0.12	-											
6. Memory Orientation	0.14	0.19*	-0.17*	0.05	0.13	-										
7. Learning Orientation	-0.10	0.25**	-0.06	0.13	0.20*	0.44**	-									
8. Management Support	0.08	0.18*	-0.12	0.04	0.17*	0.64**	0.53**	-								
9. Work Discretion	0.12	0.15	-0.13	0.12	0.17*	0.32**	0.39**	0.69**	-							
10. Rewards / Reinforcement	0.02	0.20*	-0.06	0.03	0.11	0.39**	0.44**	0.62**	0.52**	-						
11. Time Availability	0.04	0.11	-0.08	-0.03	0.13	0.28**	0.20*	0.29**	0.21*	0.03	-					
12. Organizational Boundries	0.09	0.20*	-0.17*	0.12	0.04	0.36**	0.28**	0.43**	0.39**	0.48**	0.08	-				
13. Entrepreneurial Mindset	0.06	0.08	-0.10	-0.01	0.06	0.45**	0.44**	0.62**	0.35**	0.47**	0.13	0.21**	-			
14. Job Satisfaction	-0.21*	-0.23**	0.26**	-0.16*	-0.18*	-0.42**	-0.41**	-0.65**	0.60**	-0.56**	-0.16	-0.49**	-0.34**	-		
15. Affective Commitment	0.15	0.23**	-0.21**	0.16*	0.16*	0.43**	0.37**	0.60**	0.47**	0.49**	0.17*	0.46**	0.42**	-0.78**	-	
16. Job Performance	0.18*	0.14	-0.17*	0.08	0.10	0.34**	0.31**	0.49**	0.46**	0.42**	-0.10	0.42**	0.35**	-0.54**	0.47**	-

* Indicates $p < .05$ ** Indicates $p < .01$

Table 12. Correlation matrix of study antecedents and outcomes (AFIT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Extraversion	-															
2. Agreeableness	0.39*	-														
3. Neuroticism	-0.66**	-0.28	-													
4. Conscientiousness	0.39*	0.08	-0.39*	-												
5. Openness	0.23	0.09	-0.09	-0.06	-											
6. Memory Orientation	0.08	0.29	-0.09	-0.06	-0.04	-										
7. Learning Orientation	-0.03	0.28	0.08	0.00	0.04	0.37*	-									
8. Management Support	0.02	0.22	-0.03	0.00	-0.10	0.43*	0.41*	-								
9. Work Discretion	-0.60	0.20	-0.04	0.06	-0.08	0.08	0.48**	0.71**	-							
10. Rewards / Reinforcement	0.11	0.31	-0.08	0.23	0.01	0.30	0.63**	0.64**	0.61**	-						
11. Time Availability	-0.20	-0.10	0.25	-0.24	-0.09	0.26	0.25	0.31	0.35*	0.03	-					
12. Organizational Boundries	-0.11	0.32	0.16	-0.05	-0.13	0.24	0.47**	0.48**	0.37*	0.63**	0.09	-				
13. Entrepreneurial Mindset	-0.05	0.08	0.03	0.04	-0.29	0.25	0.52**	0.51**	0.39*	0.34*	0.24	0.22	-			
14. Job Satisfaction	-0.29	-0.24	0.24	-0.26	-0.06	-0.23	-0.41*	-0.59**	-0.53**	-0.65**	-0.01	-0.45**	-0.35*	-		
15. Affective Commitment	0.12	0.15	-0.09	0.25	-0.12	0.35*	0.41*	0.45**	0.34*	0.59**	0.19	0.41*	0.46**	-0.61**	-	
16. Job Performance	0.31	0.14	-0.28	0.07	-0.12	0.16	0.28	0.51**	0.55**	0.61**	0.12	0.32	0.28	-0.62**	0.36*	-

* Indicates $p < .05$

** Indicates $p < .01$

Table 13. Correlation matrix of study antecedents and outcomes (AFRL)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Extraversion	-															
2. Agreeableness	0.17	-														
3. Neurtoticism	-0.37**	-0.31**	-													
4. Conscientiousness	0.19	0.46**	0.39**	-												
5. Openness	0.31**	0.09	-0.23*	0.12	-											
6. Memory Orientation	0.10	0.28*	-0.18	0.18	0.17	-										
7. Learning Orientation	0.08	0.12	-0.01	0.01	0.18	0.57**	-									
8. Management Support	0.14	0.18	-0.14	0.02	0.16	0.72**	0.53**	-								
9. Work Discretion	0.22*	0.15	0.25*	0.17	0.20	0.38**	0.33**	0.68**	-							
10. Rewards / Reinforcement	0.03	0.15	-0.03	-0.15	0.09	0.54**	0.44**	0.73**	0.58**	-						
11. Time Availability	0.17	0.13	-0.21	0.09	0.22	0.30**	0.10	0.29*	0.22	0.09	-					
12. Organizational Boundries	-0.05	0.18	-0.27*	0.12	0.08	0.38**	0.29*	0.56**	0.54**	0.54**	-0.01	-				
13. Entrepreneurial Mindset	0.12	0.06	-0.09	-0.04	0.14	0.57**	0.53**	0.74**	0.52**	0.64**	0.08	0.34**	-			
14. Job Satisfaction	-0.09	-0.08	0.24*	0.05	-0.09	-0.56**	-0.32**	-0.75**	-0.60**	-0.71**	-0.20	-0.64**	-0.55**	-		
15. Affective Commitment	-0.02	0.07	-0.18	0.00	0.05	0.49**	0.22	0.64**	0.51**	0.58**	0.22	0.58**	0.52**	-0.79**	-	
16. Job Performance	0.07	0.08	-0.22	0.08	0.14	0.31**	0.26*	0.55**	0.43**	0.43**	-0.22	0.41**	0.55**	-0.52**	0.42**	-

* Indicates p < .05

** Indicates p < .01

Table 14. Correlation matrix of study antecedents and outcomes (AFMA)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Extraversion	-															
2. Agreeableness	0.16	-														
3. Neurtoticism	-0.37*	-0.56**	-													
4. Conscientiousness	0.16	0.67**	-0.36*	-												
5. Openness	0.13	0.24	-0.27	0.08	-											
6. Memory Orientation	0.25	0.03	-0.25	-0.06	0.24	-										
7. Learning Orientation	-0.05	0.19	-0.09	0.09	0.18	0.41*	-									
8. Management Support	0.08	0.01	-0.08	-0.10	0.28	0.74**	0.54**	-								
9. Work Discretion	0.16	-0.06	0.02	-0.01	0.15	0.54**	0.32	0.67**	-							
10. Rewards / Reinforcement	-0.10	0.31	-0.16	0.31*	0.34	0.13	0.40*	0.39*	0.41*	-						
11. Time Availability	0.00	-0.17	0.15	-0.20	0.07	0.28	0.31	0.29	0.13	-0.16	-					
12. Organizational Boundries	0.53**	0.25	-0.30	0.43**	0.21	0.42*	0.26	0.23	0.33	0.21	0.26	-				
13. Entrepreneurial Mindset	0.07	0.01	-0.17	-0.22	0.17	0.41*	0.21	0.51**	0.11	0.13	0.09	-0.53	-			
14. Job Satisfaction	-0.40*	-0.30	0.38*	-0.32	-0.29	-0.45**	-0.47**	-0.49**	-0.55**	-0.29	-0.23	-0.45**	-0.03	-		
15. Affective Commitment	0.54**	0.42*	-0.42*	0.33	0.42*	0.51**	0.50**	0.55**	0.38*	0.35*	0.11	0.49**	0.34*	-0.80**	-	
16. Job Performance	0.30	0.33	-0.12	0.28	0.16	0.60**	0.53**	0.40*	0.37*	0.25	0.07	0.64**	0.14	-0.49**	0.57**	-

* Indicates $p < .05$

** Indicates $p < .01$

H1a. There is a positive relationship between Individual Characteristics and the entrepreneurial mindset.

NOT SUPPORTED. We expected a positive correlation between Conscientious, Extraversion, and Openness and the Entrepreneurial Mindset. We also predicated a negative correlation between Neuroticism and the Entrepreneurial Mindset. This was not supported in the study as none of the correlation were significant ($p > .05$).

H1b. There is a positive relationship between Context and the entrepreneurial mindset.

SUPPORTED. We expected a positive correlation between Context (i.e. Memory Orientation and Learning Orientation) and the Entrepreneurial Mindset. This was supported in the study as Memory Orientation had a positive correlation of 0.45 and Learning Orientation had a positive correlation of 0.44, both of which were significant ($p < .01$). These findings were consistent in AFRL and AFIT; AFMA reported a positive correlation between Memory Orientation and Entrepreneurial Mindset, which was significant ($p < 0.05$), but did not report a significant correlation between Learning Orientation and the Entrepreneurial Mindset.

H1c. There is a positive relationship between Process and the Entrepreneurial Mindset.

SUPPORTED. As predicted, we found a positive correlation between Process and the Entrepreneurial Mindset. Positive significant correlations ($p < .01$) were only found in four of the five measures which together comprised Process. Those measures with positive significant correlations were Management Support (.62), Work Discretion (.35), Rewards/Reinforcement (.47), and Organizational Boundaries (.22). Time Availability had a positive correlation (.13), but it was not significant ($p > .05$). Only

Management Support was consistently and significantly positively correlation across all three organizations. AFMA only reported one significant ($p < .01$) correlation in Process, between Management Support (.51) and the Entrepreneurial Mindset. AFIT reported had three significant positive correlations—Management Support (.52, $p < .01$), Work Discretion (.38, $p < .05$) and Rewards/Reinforcement (.34, $p < .05$). AFIT was consistent with the overall evaluation.

H2. There is an interactive relationship between the three antecedents and the Entrepreneurial Mindset.

SUPPORTED. Table 15 reports each analysis conducted broken down by sub-hypothesis. As seen in the sub-hypotheses, interaction was found among all three antecedents.

H2a. There is an interactive relationship between Individual Characteristics and Context, and the Entrepreneurial Mindset.

SUPPORTED. Table 15 reports the regression analysis when Entrepreneurial Mindset was regressed on Individual Characteristics and Context simultaneously. Although Individual Characteristics alone was not a significant predictor of Entrepreneurial Mindset, when combined with Context, it was a significant ($p < .01$) predictor and produced an adjusted R-squared of .29. When regressed only on Context, the results were significant ($p < .01$) and it produced an adjusted R-squared of .28. Since the results are significant and there is an increase in the adjusted R-squared value when Entrepreneurial Mindset is regressed simultaneously on Individual Characteristics and Context, we can assume an interactive relationship between the two antecedents.

H2b. There is an interactive relationship between Individual Characteristics and Process, and the entrepreneurial mindset.

Table 15. Regression analysis (for Hypothesis 2).

<i>Hypothesis</i>	<i>Dependent Variable</i>	<i>Independent Variable(s)</i>	<i>Regression Coefficient</i>	<i>Adjusted R-squared</i>	<i>F value</i>	<i>Equation</i>
(H2a)	EM	IC, CT	.98**	.29	8.28**	
	EM	IC	1.14ns	.02	.58ns	
	EM	CT	.97**	.28	28.05**	
(H2b)	EM	IC, PP	.88**	.43	10.59**	
	EM	IC	1.14ns	.02	.58ns	
	EM	PP	.87**	.42	21.13**	
(H2c)	EM	CT, PP	.87**	.44	15.92**	
	EM	CT	.97**	.28	28.05**	
	EM	PP	.87**	.42	21.13**	
(H2d)	EM	IC, CT, PP	.87**	.46	9.54**	
	EM	IC	1.14ns	.02	.58ns	
	EM	CT	.97**	.28	28.05**	
	EM	PP	.87**	.42	21.13**	

Labels: EM = Entrepreneurial Mindset, IC = Individual Characteristics, CT = Context, PP = Process, JS = Job Satisfaction, AC = Affective Commitment, JP = Overall Job Performance

The symbol ** indicates $p < .01$, ns indicates not significant.

SUPPORTED. Table 15 shows an interactive and significant ($p < .01$) relationship between Individual Characteristics and Process when Entrepreneurial Mindset is regressed on the two antecedents simultaneously. This is shown as the individual R-squared values (.02 and .42 respectively) are less than their combined R-squared value of .43.

H2c. There is an interactive relationship between Context and Process, and the entrepreneurial mindset.

SUPPORTED. Table 15 shows an interactive and significant ($p < .01$) relationship between Context and Process when Entrepreneurial Mindset is regressed on the two antecedents simultaneously since their individual R-squared values (.28 and .42 respectively) are less than their combined R-squared value of .44.

H2d. There is an interactive relationship between Individual Characteristics, Context, and Process, and the entrepreneurial mindset.

SUPPORTED. As seen in Table 15, there is an interactive relationship between the three antecedents when Entrepreneurial Mindset is regressed upon them simultaneously. Although alone Individual Characteristics was not significant, when combined with Context and Process, a significant relationship ($p < .01$) and an adjusted R-square of .46 were reported.

H3. The three antecedents do not directly affect any of the outcomes without first impacting the organization's entrepreneurial mindset.

SUPPORTED. Table 16 shows that there is a significant ($p < .01$) relationship when each of the outcomes (i.e. Job Performance, Job Satisfaction, and Affective Commitment) are mediated simultaneously on an antecedent (i.e. Individual Characteristics, Context, and Process) and the Entrepreneurial Mindset. As the adjusted

Table 16. Regression analysis (for Hypothesis 3).

<i>Outcomes</i>	<i>Dependent Variable</i>	<i>Independent Variable(s)</i>	<i>Regression Coefficient</i>	<i>Adjusted R-squared</i>	<i>Equation F value</i>
(H3a)	JP	IC, EM	1.33**	.16	4.47**
	JP	IC	1.40ns	.05	1.55ns
	JP	EM	1.33**	.12	20.51**
(H3b)	JS	IC, EM	1.54**	.20	5.96**
	JS	IC	1.62**	.11	3.50**
	JS	EM	1.60**	.11	18.92**
(H3c)	AC	IC, EM	1.44**	.24	7.53**
	AC	IC	1.57*	.09	2.69*
	AC	EM	1.47**	.18	31.64**
(H3d)	JP	CT, EM	1.30**	.18	10.44**
	JP	CT	1.32**	.15	12.62**
	JP	EM	1.33**	.12	20.51**
(H3e)	JS	CT, EM	1.48**	.25	16.13**
	JS	CT	1.48**	.24	23.56**
	JS	EM	1.60**	.11	18.92**
(H3f)	AC	CT, EM	1.40**	.26	17.37**
	AC	CT	1.43**	.22	20.91**
	AC	EM	1.47**	.18	31.64**
(H3g)	JP	PP, EM	1.14**	.38	14.44**
	JP	PP	1.14**	.37	17.04**
	JP	EM	1.33**	.12	20.51**

(H3h)	JS	PP, EM	1.19**	.53	26.17**
	JS	PP	1.19**	.52	31.10**
	JS	EM	1.60**	.11	18.92**
(H3i)	AC	PP, EM	1.25**	.43	17.57**
	AC	PP	1.25**	.42	20.70**
	AC	EM	1.47**	.18	31.64**

Labels: EM = Entrepreneurial Mindset, IC = Individual Characteristics, CT = Context, PP = Process, JS = Job Satisfaction, AC = Affective Commitment, JP = Overall Job Performance

The symbol * indicates $p < .05$, ** indicates $p < .01$, and ns indicates not significant

R-squared values are higher when the antecedent and Entrepreneurial Mindset are used simultaneously, we can assume a mediating affect with Entrepreneurial Mindset.

H3a. Individual Characteristics does not directly affect Job Performance without first impacting the organization's Entrepreneurial Mindset.

SUPPORTED. When Job Performance is mediated on Individual Characteristics, there is a not significant relationship ($p > .05$) with an adjusted R-squared of .05. However when it is mediated with Individual Characteristics and Entrepreneurial Mindset, there is a significant relationship ($p < .01$) with an adjusted R-squared of .16. This is higher than when Job Performance is mediated only on Entrepreneurial Mindset, which produces an adjusted R-squared of .12.

H3b. Individual Characteristics does not directly affect Job Satisfaction without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger, significant ($p < .01$) relationship when Job Satisfaction was regressed on Individual Characteristics and Entrepreneurial Mindset than when either was regressed independently. When regressed simultaneously, the adjusted R-squared value was .20, compared to .11 (Individual Characteristics) and .11 (Entrepreneurial Mindset).

H3c. Individual Characteristics does not directly affect Affective Commitment without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger significant ($p < .01$) relationship when Affective Commitment was regressed on Individual Characteristics and Entrepreneurial Mindset than when either was regressed independently. When

regressed simultaneously, the adjusted R-squared value was .24, compared to .09 (Individual Characteristics) and .18 (Entrepreneurial Mindset).

H3d. Context does not directly affect Job Performance without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger significant ($p < .01$) relationship when Job Performance was regressed on Context and Entrepreneurial Mindset than when either was regressed independently. When regressed simultaneously, the adjusted R-squared value was .18, compared to .15 (Context) and .12 (Entrepreneurial Mindset).

H3e. Context does not directly affect Job Satisfaction without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger significant ($p < .01$) relationship when Job Satisfaction was regressed on Context and Entrepreneurial Mindset than when either was regressed independently. When regressed simultaneously, the adjusted R-squared value was .25, compared to .24 (Context) and .11 (Entrepreneurial Mindset).

H3f. Context does not directly affect Affective Commitment without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger significant ($p < .01$) relationship when Affective Commitment was regressed on Context and Entrepreneurial Mindset than when either was regressed independently. When regressed simultaneously, the adjusted R-squared value was .26, compared to .22 (Context) and .18 (Entrepreneurial Mindset).

H3g. Process does not directly affect Job Performance without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger significant ($p < .01$) relationship when Job Performance was regressed on Process and Entrepreneurial Mindset than when either was regressed independently. When regressed simultaneously, the adjusted R-squared value was .38, compared to .37 (Process) and .12 (Entrepreneurial Mindset).

H3h. Process does not directly affect Job Satisfaction without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger significant ($p < .01$) relationship when Job Satisfaction was regressed on Process and Entrepreneurial Mindset than when either was regressed independently. When regressed simultaneously, the adjusted R-squared value was .53, compared to .52 (Process) and .11 (Entrepreneurial Mindset).

H3i. Process does not directly affect Affective Commitment without first impacting the organization's entrepreneurial mindset.

SUPPORTED. As expected, there was a stronger significant ($p < .01$) relationship when Affective Commitment was regressed on Process and Entrepreneurial Mindset than when either was regressed independently. When regressed simultaneously, the adjusted R-squared value was .43, compared to .42 (Process) and .18 (Entrepreneurial Mindset).

H4. The entrepreneurial mindset is present in DoD organizations.

SUPPORTED. Table 6 reported the Entrepreneurial Mindset means of 3.92 (AFIT), 4.18 (AFRL), and 4.38 (AFMA) for the study, based on a nine-item, seven-point scale. The respective standard deviations were 1.11 (AFIT), 1.16 (AFRL), and 1.07

(AFMA). Reliabilities in all three organizations was good, with coefficient alphas of .87 (AFIT), .91 (AFRL), and .85 (AFMA). There was no significant difference in the three organizations during the analysis of variance (ANOVA) test. These results indicate the entrepreneurial mindset is mildly present in the DoD, leaving much room for increasing its presence.

Conclusion

This chapter discussed the data analysis performed and its resulting affects on the proposed hypothesis. Analyses were conducted across organizations to determine any significant differences, as well as across responses waves to ensure the sample could be deemed representative of the sample population. The only hypothesis not support was that there is a positive relationship between each of the three antecedents and the Entrepreneurial Mindset. This study found that there was not a significant, nor positive correlation between Individual Characteristics and the Entrepreneurial Mindset.

V. Conclusions and Recommendations

This chapter addresses the conclusions which resulted from this research and also provides recommendations for future research.

The purpose of this study was to test the hypotheses outlined in Chapter II and test the proposed model, which suggested a specific set of organizational factors (i.e. Individual Characteristics, Context, and Process) influences entrepreneurial behavior in DoD organizations and this entrepreneurial behavior leads to positive organizational outcomes. Data was collected via a 121-item survey which was e-mailed out to three organizations—the Air Force Institute of Technology (AFIT), Air Force Research Labs (AFRL), and the Air Force Manpower Agency (AFMA). AFIT was chosen for the ability it presented to sample respondents which represented various careerfields and major commands from across the Air Force. Both AFRL and AFMA were chosen for their forward-leaning strategies and reputations.

Table 17 presents a summary of the hypothesis presented in Chapter II and evaluated in Chapter IV. As seen in Table 17, only two hypothesis were not supported—both regarding Individual Characteristics' positive correlation on the Entrepreneurial Mindset. Since this trend was consistent across all three organizations in addition to the overall correlation matrix, we can assume there is no significant ($p < .05$) correlation. However, as seen in the mediated regression analysis, when Individual Characteristics is matched with Context or Process, or both, there is a significant positive correlation. This was expected, as individuals do not work in a vacuum and are subject to the Context and Process within which they

Table 17. Summary of hypothesis and results.

<i>Hypothesis</i>	<i>Result</i>
H1: There is a positive relationship between the three antecedents and the Entrepreneurial Mindset.	NOT SUPPORTED
H1a. There is a positive relationship between Individual Characteristics and the Entrepreneurial Mindset.	NOT SUPPORTED
H1b. There is a positive relationship between Context and the Entrepreneurial Mindset.	SUPPORTED
H1c. There is a positive relationship between Process and the Entrepreneurial Mindset.	SUPPORTED
H2: There is an interactive relationship between the three antecedents and the Entrepreneurial Mindset.	SUPPORTED
H2a. There is an interactive relationship between Individual Characteristics and Context, and the Entrepreneurial Mindset.	SUPPORTED
H2b. There is an interactive relationship between Individual Characteristics and Process, and the Entrepreneurial Mindset.	SUPPORTED
H2c. There is an interactive relationship between Context and Process, and the Entrepreneurial Mindset.	SUPPORTED
H2d. There is an interactive relationship between Individual Characteristics, Context, and Process, and the Entrepreneurial Mindset.	SUPPORTED
H3. The three antecedents do not directly affect any of the outcomes without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3a. Individual Characteristics does not directly affect Job Performance without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED

H3b. Individual Characteristics does not directly affect Job Satisfaction without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3c. Individual Characteristics does not directly affect Affective Commitment without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3d. Context does not directly affect Job Performance without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3e. Context does not directly affect Job Satisfaction without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3f. Context does not directly affect Affective Commitment without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3g. Process does not directly affect Job Performance without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3h. Process does not directly affect Job Satisfaction without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H3i. Process does not directly affect Affective Commitment without first impacting the organization's Entrepreneurial Mindset.	SUPPORTED
H4. The Entrepreneurial Mindset is present in DoD organizations.	SUPPORTED

operate. Therefore there appears to be some benefit in leaving Individual Characteristics in the proposed model

Individual Characteristics

Overall, the research suggested that Agreeableness was the only Individual Characteristics that positively correlated to any of the other antecedents with any significance ($p < .05$). It could be expected that Agreeableness positively correlates with Memory Orientation, Learning Orientation, Management Support, Rewards/Reinforcement, and Organizational Boundaries since all in some way deal with social interactions within a group. It could be beneficial in future research to limit the Individual Characteristics antecedent to include only this measure since it was the only measure with positive correlation to other antecedents.

Context

Both Memory Orientation and Learning Orientation showed strong and significant ($p < .01$) correlations to several antecedents and the Entrepreneurial Mindset. Additionally, the reliabilities on these measures were also well above the .70 rule-of-thumb (Nunnally, 1978). These findings support the work by Hult, Snow and Kandemir (2003) and suggest future research could possibly benefit from the inclusion of additional factors in Organization Learning (i.e. Team Orientation and Systems Orientation).

Process

Unlike Hornsby, Kuratko, and Zahra's study, this research did not show Time Availability to correlate significantly ($p < .05$) to the Entrepreneurial Mindset, although overall it did show a significant positive correlation with Context (both Memory Orientation and Learning Orientation) and two Process factors (Management Support and

Work Discretion). Additionally, since the coefficient alphas for Organizational Boundaries was very low, ranging from .46 to .55, future researchers should consider whether or not these two factors should be included in future models.

Benefits and Contributions

Our findings suggest that, while the entrepreneurial mindset was not strongly present in the organizations we studied, neither was it absent. The relatively average ratings for this scale suggest that, while the Air Force has room for improvement in this area, it might be making strides toward its goal of transformation.

Since Process was one of the strongest predictors of the Entrepreneurial Mindset, senior leaders should pay particular attention to how they structure their organization. This is of particular interest since Process is arguably the antecedent over which leaders have the most control. As found in research, senior leaders should make specific efforts to ensure they are actively and publicly supporting entrepreneurial activities within the organization (Higdon, 2000), develop an appropriate award structure (Hornsby, Kuratko & Zahra, 2002; Kuratko et al., 1993; Sathe, 1988). Additionally, senior leaders should empower their employees (Sathe, 1988) to make decisions and decide how they will tackle their job responsibilities.

Although not as large, there was also a significant influence by Context, or the culture of an organization, on the overall entrepreneurial mindset, which supports research by Higdon (2000). This is also important as senior leaders need to be aware of their organization's culture and then work to make it one which is conducive to the entrepreneurial mindset. Such cultures would emphasize learning through education or

training (Thornberry, 2003), a clear vision for the organization (Quinn, 1996), and organizational spontaneity (George & Brief, 1992).

Limitations

Although benefit can be gained for this research, there were a few limitations. First, as discussed, the overall response rate was low—only 11%. Increasing the response rate and expanding the sample across more organizations could give researchers a better grasp for the total level of the entrepreneurial mindset across DoD. Additionally, there is the possibility of a sampling bias based on the selected sample. Although AFIT respondents were included to try to get a broader cross section of the Air Force, it may still introduce a bias as respondents were all selected for graduate programs. Their view of their last organization may not be entirely representative of the entire population. Future research should expand the sample to include an even greater cross-section of DoD, to include sister services.

Recommendations for Future Research

Future research should improve one this study's limitations, especially on the sample size and composition. Including an even greater cross-section of the entire DoD could prove extremely interesting and a stronger measure of the pervasiveness of the entrepreneurial mindset across the department.

Additionally, future research should consider decreasing the Individual Characteristics antecedent, as discuss, to possibly only include Agreeableness. This would also help shorten the survey and potentially increase response rates. The Context antecedent should also be reviewed and Team Orientation and Systems Orientation (Hult, 1998) should be considered for possible inclusion. Furthermore, upon review of Process,

Time Availability and Organizational Boundaries should be carefully examined and possibly eliminated or reviewed with caution in future studies.

Conclusion

This study sought to test a comprehensive model of the entrepreneurial mindset in an effort to provide senior leaders within DoD with a tool to encourage the entrepreneurial mindset in any organization. Research showed the entrepreneurial mindset was in fact present in DoD, and that the easiest antecedent for senior leaders to influence, Process, was also the most influential antecedent in entrepreneurial organizations. Future leaders should make specific efforts to create a culture and management policies that are conducive to the entrepreneurial mindset because they can make a difference as the department continues its quest for innovation.

A Study of Entrepreneurship in DoD Organizations

This study is designed to assess the extent to which innovative behaviors exist in your current organization. The goal of this survey is to make senior leaders aware of the factors that influence innovative behaviors in their organizations so they can promote and support these factors in order to maximize organization performance.

Privacy Notice

The following information is provided as required by the Privacy Act of 1974:

Purpose: To obtain information regarding entrepreneurship in DoD organizations.

Routine Use: The survey results will be used to determine whether an entrepreneurial mindset exists in DoD organizations and to identify the factors that precede this mindset. A final report will be provided to participating organizations. No individual data will be revealed and only members of the Air Force Institute of Technology research team will be permitted access to the raw data.

Anonymity: We would greatly appreciate your participation in this survey. **ALL ANSWERS ARE STRICTLY ANONYMOUS.** Therefore, you should not include your name anywhere on this questionnaire. All responses received via e-mail will be printed and the electronic copy will be destroyed, ensuring your responses will remain anonymous. If you would like to receive a summary of the results of this survey, contact Captain Gretchen Rhoads using the contact information provided below.

Participation: Participation is voluntary. No adverse action will be taken against any member who does not participate in this survey or who does not complete any part of the survey.

Contact Information: If you have any questions or comments about the survey, contact Captain Gretchen Rhoads using the contact information provided below or Major Bryan Hudgens at bryan.hudgens@afit.edu.

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Captain Gretchen R. Rhoads
AFIT/ENV BLDG 640 Box 4422
2950 Hobson Way
Wright-Patterson AFB OH 45433-7765
Email: gretchen.rhoads@afit.edu
Fax: DSN 986-4699; commercial (937) 656-4699

INSTRUCTIONS

- Base your answers on your own thoughts & experiences
- Please read and answer each question before submitting your results

Section I

BACKGROUND INFORMATION

This section contains items regarding your personal characteristics. These items are very important for statistical purposes. Respond to each item by “clicking” the appropriate response that best describes you.

1. What is your age?

- <25 years 25-35 35-45 >45 years

2. What is your gender?

- Male Female

3. What is your rank?

- Enlisted Officer GS Other

4. How long have you been with your current organization? (where organization is defined as SPO/Squadron/Directorate)?

- < 3 months 4-12 months 1-2 years > 3 years

5. Which of the following best describes **your last organization**?

- Air Combat Command (ACC)
- Air Education & Training Command (AETC)
- Air Force Materiel Command (AFMC)
- Air Force Space Command (AFSPC)
- Air Force Special Ops Command (AFSOC)
- Air Mobility Command (AMC)
- Pacific Air Forces (PACAF)
- U.S. Air Forces in Europe (USAFE)
- Air Force Reserve Command (AFRC)
- HQ U.S. Air Force
- Other (egs. DRU, FOA, ANG, USAFA, ROTC)

6. What is your role in your organization?

- Supervisory Non-Supervisory Senior Leadership

Section II Perceptions of the Individual

We would like to understand a little about you as an individual. The following questions will help us do that. For each statement, please place an "X" in the column that indicates the extent to which you agree the statement is true.

<i>I see myself as someone who...</i>	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
1. is talkative.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
2. tends to find fault with others.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
3. does a thorough job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
4. is depressed, blue.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
5. is original, comes up with new ideas.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
6. is reserved.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
7. is helpful and unselfish with others.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
8. can be somewhat careless.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
9. is relaxed, handles stress well.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
10. is curious about many different things.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
11. is full of energy.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
12. starts quarrels with others.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
13. is a reliable worker.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>

14. can be tense.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. is ingenious, a deep thinker.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. generates a lot of enthusiasm.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. has a forgiving nature.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. tends to be disorganized.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. worries a lot.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. has an active imagination.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. tends to be quiet.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. is generally trusting.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. tends to be lazy.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. is emotionally stable, not easily upset.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. is inventive.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. has an assertive personality.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. can be cold and aloof.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. perseveres until the task is finished.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. can be moody.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. values artistic, aesthetic experiences.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. is sometimes shy, inhibited.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. is considerate and kind to almost everyone.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. does things efficiently.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. remains calm in tense situations.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. prefers work that is routine.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. is outgoing, sociable.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. is sometimes rude to others.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. makes plans and follows through with them.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. gets nervous easily.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. likes to reflect, play with ideas.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. has few artistic talents.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. likes to cooperate with others.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. is easily distracted.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. is sophisticated in art, music, or literature.	①	②	③	④	⑤	⑥	⑦
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section III
PERCEPTIONS OF ORGANIZATION STRUCTURE

We would like to understand your perceptions of your current organization, its structure, and its leadership. The following questions will help us do that. For each statement, please “click” on the box that best indicates the extent to which you agree the statement is true.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. My organization is quick to use improved work methods.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
2. My organization is quick to use improved work methods that are developed by workers.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
3. In my organization, developing one’s own ideas is encouraged for the improvement of the corporation.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
4. Upper management is aware and very receptive to my ideas and suggestions.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
5. Promotion usually follows the development of new and innovative ideas.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
6. Those employees who come up with innovative ideas on their own often receive management encouragement for their activities.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
7. The “doers” are allowed to make decisions on projects without going through elaborate justification and approval processes.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
8. Senior managers encourage innovators to bend rules and rigid procedures in order to keep promising ideas on track.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
9. Many top managers have been known for their experience with the innovation process.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
10. Money is often available to get new project ideas off the ground.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
11. Individuals with successful innovative projects receive additional reward and compensation for their ideas and efforts beyond the standard reward system.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
12. There are several options within the organization for individuals to get financial support for their innovative projects and ideas.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
13. Individual risk takers are often recognized for their willingness to champion new projects, whether eventual successful or not.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>

14. People are often encouraged to take calculated risks with new ideas around here.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
15. The term “risk taker” is considered a positive attribute for people in my work area.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
16. This organization supports many small and experimental projects realizing that some will undoubtedly fail.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
17. A worker with a good idea is often given free time to develop that idea.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
18. There is considerable desire among people in the organization for generating new ideas without regard to crossing departmental or functional boundaries.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
19. People are encouraged to talk to workers in other departments of this organization about ideas for new projects.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
20. I feel that I am my own boss and do not have to double check all of my decisions.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
21. Harsh criticism and punishment result from mistakes made on the job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
22. This organization provides the chance to be creative and try my own methods of doing the job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
23. This organization provides freedom to use my own judgment.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
24. This organization provides the chance to do something that makes use of my abilities.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
25. I have the freedom to decide what I do on my job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
26. It is basically my own responsibility to decide how my job gets done.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
27. I almost always get to decide what I do on my job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
28. I have much autonomy on my job and am left on my own to do my own work.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>

29. I seldom have to follow the same work methods or steps for doing my major tasks from day to day.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
30. My manager helps me get my work done by removing obstacles.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
31. The rewards I receive are dependent upon my work on the job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
32. My supervisor will increase my job responsibilities if I am performing well in my job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
33. My supervisor will give me special recognition if my work performance is especially good.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
34. My supervisor would tell his boss if my work was outstanding.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
35. There is a lot of challenge in my job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
36. During the past three months, my workload was too heavy to spend time on developing new ideas.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
37. I always seem to have plenty of time to get everything done.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
38. I have just the right amount of time and workload to do everything well.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
39. My job is structured so that I have very little time to think about wider organizational problems.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
40. I feel that I am always working with time constraints on my job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
41. My co-workers and I always find time for long-term problem-solving.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
42. In the past three months, I have always followed standard operating procedures or practices to do my major tasks.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
43. There are many written rules and procedures that exist for doing my major tasks.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
44. On my job I have no doubt of what is expected of me.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
45. There is little uncertainty in my job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>

46. During the past year, my immediate supervisor discussed my work performance with me frequently.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
47. My job description clearly specifies the standards of performance on which my job is evaluated.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>
48. I clearly know what level of work performance is expected from me in terms of amount, quality, and timeliness of output.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>

Section IV

PERCEPTIONS OF ORGANIZATION CULTURE

We would like to understand how you felt, in general, about your job and organization (where organization is defined as SPO/Squadron/Directorate). The following questions will help us do that. For each statement, please “click” on the box for the number that indicates the extent to which you agree the statement is true.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor	Slightly Agree	Agree	Strongly Agree
1. We agree that our ability to learn is the key to improvement.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
2. The basic values of this organization include learning as a key to improvement.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
3. Once we quit learning we endanger our future.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
4. The sense around here is that employee learning is an investment not an expense.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
5. We have specific mechanisms for sharing lessons learned in our organization.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
6. We audit unsuccessful organizational endeavors and communicate the lessons learned.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
7. Organizational conversation keeps alive the lessons learned from history.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
8. Formal routines exist to uncover faulty assumptions about the organization.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>

Section V

PERCEPTIONS OF THE ENTREPRENEURIAL MINDSET

We would like to understand how you feel about the pervasiveness of the entrepreneurial mindset, or the level of innovation, risk-taking, and pro-activeness, in your organization.

The following questions will help us do that. The following questions have a different response format. Each statement has two anchor responses and a seven-point response scale. Please “click” on the box that indicates your response to each statement.

EXAMPLE:

In general, the operating management philosophy in my organization favors...

A strong insistence on a uniform managerial style throughout the organization.	①	②	③	④	⑤	⑥	⑦	Managers’ operating styles allowed to range from the very formal to the very informal.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

In this case, selecting ⑥ means you feel quite strongly that your last organization favored allowing managers’ operating styles to range freely from the very formal to the very informal. As with the questions you answered in Section I, above, please “click” on the box for the number that indicates your response given the statement.

1. *In general, the top managers of my firm favor...*

A strong, emphasis on the marketing of tried and true products or services.	①	②	③	④	⑤	⑥	⑦	A strong emphasis on R&D, technological leadership, and innovations.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2. *How many new services and/or business practices has your organization developed in the past 5 years?*

No new services and/or business practices.	①	②	③	④	⑤	⑥	⑦	Very many new services and/or business practices.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3. *Changes in new services and/or business practices have been...*

Mostly of a minor nature.	①	②	③	④	⑤	⑥	⑦	Usually quite dramatic.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<i>4. My organization...</i>								
Typically responds to action which other organizations initiate.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>	Typically initiates actions which other organizations then respond to.
<i>5. My organization...</i>								
Is very seldom the first organization to introduce administrative techniques, operating technologies, and business practices.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>	Is very often the first organization to introduce administrative techniques, operating technologies, and business practices.
<i>6. My organization typically...</i>								
Seeks to avoid competitive change, preferring instead a 'live-and-let-live' posture.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>	Adopts a very aggressive "undo-the-status-quo" posture.
<i>7. In general, the top managers of my organization have...</i>								
A strong proclivity for low-risk projects (with normal and certain outcomes).	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>	A strong proclivity for high-risk projects (with chances of very attractive outcomes).
<i>8. In general, the top managers of my organization believe that...</i>								
It is best to explore options gradually via timid, incremental behavior.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>	Bold, wide-ranging acts are necessary to achieve the organization's objectives.
<i>9. When confronted with decision-making situations involving uncertainty, my organization's leadership...</i>								
Typically adopts a cautious, "wait-and-see" posture in order to minimize the probability of making costly decisions.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities.

Section VI

PERCEPTIONS OF ENTREPRENEURIAL MINDSET OUTCOMES

We would like to understand how you feel about the outcomes of the entrepreneurial mindset in your organization (where organization is defined as SPO/Squadron/Directorate). The following questions will help us do that. For each statement, please “click” the box for the number that indicates the extent to which you agree the statement is true.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
1. I would be very happy to spend the rest of my career with this organization.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
2. I really feel as if this organization’s problems are my own.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
3. I do not feel a strong sense of “belonging” to my organization.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
4. I do not feel “emotionally attached” to this organization.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
5. I do not feel like “part of the family” at my organization.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
6. This organization has a great deal of personal meaning for me.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
7. If a good friend of mine told me that he/she was interested in working in a job like mine I would strongly recommend it.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
8. All in all, I am very satisfied with my current job.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
9. In general, my job measures up to the sort of job I wanted when I took it.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>
10. Knowing what I know now, if I had to decide all over again whether to take my job, I would.	① <input type="checkbox"/>	② <input type="checkbox"/>	③ <input type="checkbox"/>	④ <input type="checkbox"/>	⑤ <input type="checkbox"/>	⑥ <input type="checkbox"/>	⑦ <input type="checkbox"/>

The final two have a different response format. Please “click” on the box that indicates your response given the statement.

11. Regarding our overall performance, during the <i>last year</i> , we...								
Performed poorly in general.	①	②	③	④	⑤	⑥	⑦	Performed excellently in general.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. Regarding our overall performance, during the <i>last year</i> , we...								
Performed poorly relative to other organizations.	①	②	③	④	⑤	⑥	⑦	Performed excellently relative to other organizations.
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

THANK YOU FOR PARTICIPATING

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Vita

Captain Gretchen R. Rhoads was born in Cincinnati, Ohio. She graduated from the United States Air Force Academy in May 1998 with a Bachelor of Science degree in English, with a minor in French. Captain Rhoads was commissioned upon graduation and was immediately assigned to Hanscom Air Force Base, Massachusetts as a contracts manager. In September 2001, she was transferred to Randolph Air Force Base, Texas, where she served as an executive officer. In August 2003, Captain Rhoads began classes at the Air Force Institute of Technology at Wright-Patterson Air Force Base, Ohio. Upon graduation, Captain Rhoads will be assigned to the 11th Contracting Squadron, Bolling Air Force Base, Maryland.

REPORT DOCUMENTATION PAGE				<i>Form Approved OMB No. 074-0188</i>	
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