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ENTREPRENEURIAL MINDSET IN DEPARTMENT OF DEFENSE (DoD)

ORGANIZATIONS: ANTECEDENTS AND OUTCOMES

THESIS

Christopher C. Wood, Captain, USAF

AFIT/GAQ/ENV/04M-14

**DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY**

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

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AFIT/GAQ/ENV/04M-14

ENTREPRENEURIAL MINDSET IN DEPARTMENT OF DEFENSE (DoD)
ORGANIZATIONS: ANTECEDENTS AND OUTCOMES

THESIS

Presented to the Faculty

Department of Systems and Engineering Management

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Air Education and Training Command

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Acquisition Management

Christopher C. Wood, BA, MA

Captain, USAF

March 2004

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ENTREPRENEURIAL MINDSET IN DEPARTMENT OF DEFENSE (DoD)

ORGANIZATIONS: ANTECEDENTS AND OUTCOMES

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Abstract

Department of Defense (DoD) and Air Force senior leaders have called for transforming the way the military conducts business. One way to achieve this transformation is by promoting a more entrepreneurial approach. The purpose of this study was to determine to what extent an entrepreneurial mindset exists in DoD organizations and to identify key antecedents and outcomes associated with this mindset. An electronic survey was used to gather data from members of innovative DoD organizations. Descriptive statistics and correlation analysis were then used to assess the extent of an entrepreneurial mindset in the sample organizations and to identify key antecedents and outcomes. The results of this study show a high degree of an entrepreneurial mindset exists in the sample organizations and that appropriate use of rewards, management support, a supportive organizational structure, and risk taking and failure tolerance are key antecedents that positively influence this mindset. In addition, results show that an entrepreneurial mindset in the sample organizations is positively related to increased levels of job satisfaction, perceived organizational contribution, organizational commitment, memory orientation, and overall organizational performance. The results of this study provide senior leaders with a distinct set of factors they can promote and support in order to influence entrepreneurial behavior in their organizations. Further, this study shows that these factors may lead to positive outcomes that maximize organization performance.

Acknowledgements

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Christopher C. Wood

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ENTREPRENEURIAL MINDSET IN DEPARTMENT OF DEFENSE (DoD)

ORGANIZATIONS: ANTECEDENTS AND OUTCOMES

I. Introduction

Background

Department of Defense (DoD) and Air Force senior leaders have called for transforming the way the military conducts business (Rumsfeld, 2002; Roche and Ryan, 2001). Achieving this transformation requires new, innovative ways to accomplish the mission and to do things better, faster, and cheaper. Defense Secretary Rumsfeld (2002: 29) posits, “We must transform not only our armed forces but also the Defense Department that serves them—by encouraging a culture of creativity and risk taking. We must promote a more entrepreneurial approach...”

McGrath and MacMillan (2000) contend that an entrepreneurial approach, or mindset, is manifested through five behaviors common among “habitual entrepreneurs,” to include passionately seeking new opportunities, pursuing opportunities with great discipline, pursuing only the very best opportunities, focusing on adaptive execution, and engaging the energy of people within and outside the organization. McGrath and MacMillan arrived at this set of behaviors based on their experience as entrepreneurs, scholars in the fields of entrepreneurship and strategic management, and consultants

helping businesses capitalize on uncertainty (Mahoney and Kor, 2001; McGrath and MacMillan, 2000).

Empirical studies of these entrepreneurial behaviors preceding McGrath and MacMillan's defining characteristics include MacMillan's (1986), who looked at the differences between experienced and novice entrepreneurs and argued that habitual entrepreneurs learn from their experiences and thus have a distinct advantage over their less-experienced counterparts. McGrath (1996) similarly suggested that habitual entrepreneurs' experience enables greater ability to recognize and capitalize upon business opportunities. McGrath, MacMillan, and Scheinberg (1992) examined entrepreneurs and non-entrepreneurs in eight different countries and found a common set of values among the entrepreneurs, even given varying cultures. Birley and Westhead (1993) studied the differences in new businesses established by these two types of entrepreneurs, finding that habitual entrepreneurs tended to be younger than those without experience were and more willing to use personal resources when starting new ventures.

Entrepreneurial behaviors are widely regarded as positively affecting organization performance (Kanter, 1989; Covin and Slevin, 1991; Hamel, 1999). McGrath and MacMillan (2000) provide many examples of how the entrepreneurial behaviors they observed in large, global companies such as Citibank, GE, and Honda led to breakthrough products and services, development of new technologies, and increased performance.

Along with the studies that contend entrepreneurial activity in organizations results in attractive outcomes, a number of researchers have focused on examining the

organizational factors that promote this type of behavior within organizations. The literature centers on five factors, to include appropriate use of rewards (Sathe, 1985; Sykes, 1992); management support (Kuratko et al., 1993); resource availability (Damanpour, 1991; Slevin and Covin, 1997); a supportive organizational structure (Covin and Slevin, 1991; Hornsby et al., 1993); and risk taking and failure tolerance (Sathe, 1985; Stopford and Baden-Fuller, 1994).

A wealth of research exists regarding entrepreneurial activity, the factors that promote individual entrepreneurial behaviors in organizations, and the outcomes associated with an entrepreneurial approach in private sector organizations. Yet, little is known about the extent to which these behaviors, antecedents, and outcomes exist within public sector organizations; especially within DoD. Research on public sector entrepreneurship has included examinations of inventors in national laboratories (Kassicieh and Radosevich, 1996), the role of state and local governments in promoting entrepreneurial activity (Goetz and Freshwater, 2001) and innovative policy within government organizations (Weinstock, 2002). However, no known research exists that examines the entrepreneurial posture, antecedents, and outcomes in DoD organizations.

Research Question and Hypotheses

The purpose of this research is to answer the following question: to what extent does an entrepreneurial mindset exist in DoD organizations and what are its antecedents and outcomes? In order to answer the research question I will test the following hypotheses:

Hypothesis 1: Perceptions regarding the appropriate use of rewards are positively related to the entrepreneurial mindset of organizational members.

Hypothesis 2: Perceptions regarding management support of entrepreneurial activity are positively related to the entrepreneurial mindset of organizational members.

Hypothesis 3: Perceptions regarding resource availability are positively related to the entrepreneurial mindset of organizational members.

Hypothesis 4: Perceptions regarding a supportive organizational structure are positively related to the entrepreneurial mindset of organizational members.

Hypothesis 5: Perceptions regarding risk taking and failure tolerance are positively related to the entrepreneurial mindset of organizational members.

Hypothesis 6: An entrepreneurial mindset in DoD organizations is positively related to the job satisfaction of organizational members.

Hypothesis 7: An entrepreneurial mindset in DoD organizations is positively related to the perceived organizational contribution of organizational members.

Hypothesis 8: An entrepreneurial mindset in DoD organizations is positively related to the affective commitment of organizational members.

Hypothesis 9: An entrepreneurial mindset in DoD organizations is positively related to the normative commitment of organizational members.

Hypothesis 10: An entrepreneurial mindset in DoD organizations is positively related to the memory orientation among organizational members.

Hypothesis 11: An entrepreneurial mindset in DoD organizations is positively related to overall organizational performance.

Benefits

This research effort has the potential to produce very useful information for our military's senior leaders. Specifically, this study will provide senior leaders insight into the factors that influence innovative behaviors in their organizations and the outcomes associated with these behaviors. The results of this study may provide senior leaders with a distinct set of factors they can promote and support in order to influence

innovative behavior in their organizations. Further, promoting these factors may lead to positive outcomes that maximize organization performance.

Thesis Structure

The remainder of this thesis is organized as follows: Chapter II will provide a review of the literature related to entrepreneurial mindset, its antecedents, and outcomes. Chapter III will discuss the research methodology employed in conducting this research effort. Chapter IV will provide data analysis and results. Finally, Chapter V will provide conclusions and recommendations for future research.

II. Literature Review

This chapter presents a theoretical model of the entrepreneurial mindset and discusses the relevant literature within the context of the model. First, this chapter discusses commonly referenced definitions of various dimensions of entrepreneurship and provides a definition of entrepreneurial mindset for use in this study. Next, this chapter presents a theoretical model of the entrepreneurial mindset. Antecedents and outcomes associated with an entrepreneurial mindset are then discussed within the context of the model. Finally, this chapter discusses the purpose and importance of studying entrepreneurship, its antecedents, and outcomes in DoD organizations.

Defining Entrepreneurial Mindset

There are many terms used to describe the extent to which individuals or organizations are entrepreneurial. These terms include entrepreneurial mindset (McGrath and MacMillan, 2000), entrepreneurial orientation (Miles and Arnold, 1991), corporate entrepreneurship (Zahra, 1991), and intrapreneurship (Pryor and Shays, 1993). Table 1 presents key facets of commonly referenced definitions of these entrepreneurial concepts. The literature demonstrates a wide array of terminology when defining these terms, to include such facets as flexibility, innovativeness, and action-orientation (Chittipeddi and Wallett, 1991); goal-orientation and optimism (Kuratko et al., 1993); and new organization creation and renewal (Sharma and Chrisman, 1999; Kuratko et al., 2001). However, proactiveness, innovation, and risk taking appear frequently in the definitions of entrepreneurial concepts (Miller, 1983; Morris and Paul, 1987; Covin and Slevin, 1989; Miles and Arnold, 1991; Lumpkin and Dess, 1996; Covin and Slevin, 1991).

Table 1. Key facets of commonly referenced definitions of entrepreneurial concepts.

<i>Term</i>	<i>Sources</i>	<i>Facets</i>
Entrepreneurial Mindset	McGrath and MacMillan (2000)	Seeks opportunities Uses great discipline Pursues the best opportunities Focus on adaptive execution Engages everyone's energy
	Chittipeddi and Wallett (1991)	Flexibility Innovativeness Action-orientation
	Kuratko, et al. (1993)	Action-orientation Goal-orientation Optimism
Entrepreneurial Orientation	Miller (1983) Morris and Paul (1987) Covin and Slevin (1989) Miles and Arnold (1991)	Innovation Proactiveness Risk taking
	Lumpkin and Dess (1996)	Autonomy Innovativeness Risk taking Proactiveness Competitive aggressiveness
Corporate Entrepreneurship	Covin and Slevin (1991) Zahra (1991)	Proactiveness Innovation Risk taking
	Sharma and Chrisman (1999) Kuratko, Ireland, and Hornsby (2001)	New organization creation Renewal Innovation
Intrapreneurship	Pryor and Shays (1993)	Entrepreneurship within the company
	Adams (1995)	Taking advantage of in-house genius

Many definitions of entrepreneurship and its components contain the same key facets, but the authors sometimes present them in a slightly different manner. Miller (1983) defined an entrepreneurial organization as one characterized by innovation, risk taking, and being the first to come up with 'proactive' innovations. Covin and Slevin (1989, 1991) similarly define an organization's entrepreneurial posture according to proactiveness, innovation, and risk taking. Their original definition of an entrepreneurial posture referred to a firm characterized by frequent and extensive innovation, an aggressive competitive nature, and a strong risk-taking propensity (1989). In 1991, Covin and Slevin refined their conceptualization of firm-level entrepreneurship and defined it according to an organization's risk-taking propensity, proactiveness, and reliance on innovation. Additional examples of entrepreneurial definitions based on proactiveness, innovation, and risk taking include Morris and Paul's (1987) definition of entrepreneurial orientation as the inclination of an organization's top management to take calculated risks, be innovative, and to act in a proactive manner, and Zahra's (1991) definition of corporate entrepreneurship as the activities that strengthen a company's ability to be innovative, take risk, and seize business opportunities.

Lumpkin and Dess (1996) clarify the dimensions of proactiveness, innovation, and risk taking in their review of the entrepreneurial orientation literature and provide definitions of each. They define proactiveness as an organization's processes designed to anticipate and act on future needs (1996). Innovation is defined by Lumpkin and Dess (1996) as an organization's propensity to encourage and support new ideas and creative processes that may produce new products, services, or technological processes. Finally,

Lumpkin and Dess (1996) define risk taking as behavior, such as making large and risky resource commitments, aimed at securing high returns by seizing business opportunities.

While the definitions of entrepreneurial concepts presented show much consistency incorporating proactiveness, innovation, and risk taking as their key components, the literature reveals definitions exist that highlight different facets as well. For example, McGrath and MacMillan define an entrepreneurial mindset according to five characteristics common among habitual entrepreneurs (2000). These traits include energetically seeking opportunities, pursuing these opportunities with discipline, targeting only the best opportunities, focusing on adaptive execution, and involving as many people as possible to capitalize on selected opportunities (McGrath and MacMillan, 2000). Four of the five traits are straightforward. The fifth, adaptive execution, refers to the ability to change direction quickly as opportunities evolve and to be able to execute, versus over-analyzing an idea or situation (McGrath and MacMillan, 2000).

Lumpkin and Dess (1996) highlight additional facets in their discussion of an organization's entrepreneurial orientation. Lumpkin and Dess (1996) suggest there are five key dimensions of an entrepreneurial orientation, to include a propensity to act autonomously, an inclination towards innovation and risk taking, a tendency to act in an aggressive competitive manner, and proactiveness in seizing opportunities in the marketplace. Therefore, while including proactiveness, innovation, and risk taking among the core facets of an entrepreneurial orientation, Lumpkin and Dess (1996) also suggest two additional dimensions: autonomy and competitive aggressiveness. Some additional examples of definitions highlighting different key facets include Sharma and Chrisman's (1999) definition of corporate entrepreneurship as the process whereby

individuals within an existing organization create a new organization, stimulate renewal, or spur innovation within that organization, and Pryor and Shays' (1993) definition of intrapreneurship as simply entrepreneurship within an existing company. A very broad interpretation of entrepreneurship is reflected by Stevenson and Jarillo's (1990) view of the concept as the pursuit of opportunities regardless of existing resources, while an example of a narrow interpretation is Gartner's (1988) definition of entrepreneurship as the creation of new organizations.

For the purposes of this study, the definition of entrepreneurial mindset is as follows: an entrepreneurial mindset refers to thinking and behavior characterized by proactiveness, innovation, and risk taking. Providing a definition of entrepreneurial mindset for this study is important for two reasons. First, as discussed above, there are many terms used to describe entrepreneurship and its components. Succinctly defining entrepreneurial mindset for use in this study is intended to provide readers with a fundamental understanding of the phenomenon being investigated. In addition, presenting a precise definition is necessary in order to determine appropriate measures to gauge the extent to which this phenomenon exists in the organizations included in this study.

Theoretical Framework of the Entrepreneurial Mindset

Figure 1 presents a theoretical model that is used to guide this research effort. As suggested in the model, the entrepreneurial mindset appears to be influenced by a number of key organizational factors. The mindset, when fostered among employees, leads to a number of meaningful outcomes for organizations.

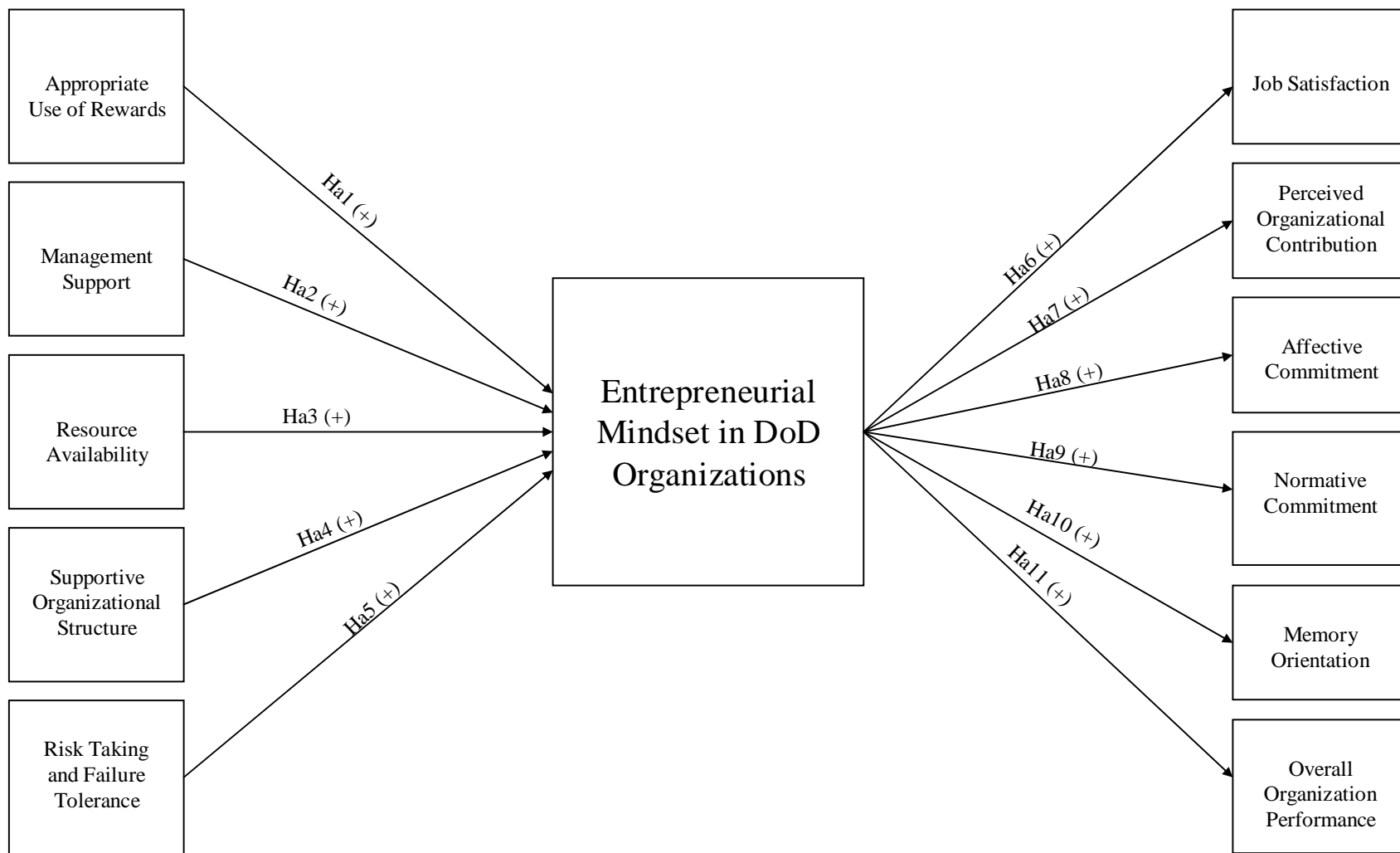


Figure 1. A Model of Entrepreneurial Mindset in DoD Organizations.

The focus of this study is on the extent of an entrepreneurial mindset in DoD organizations, the organizational factors that promote this type of activity, and the subjective outcomes that result from these behaviors. Therefore, the discussion that follows will briefly overview the literature relating to individual-level antecedents and objective outcomes of entrepreneurship. Discussion of the organizational antecedents and subjective outcomes will be discussed in greater detail.

Antecedents

Individual Characteristics

Characteristics that foster an entrepreneurial mindset can be explained in terms of both individual and organizational factors. While not the focus of this study, some of the key individual factors that have been related to entrepreneurial activities are discussed. Often, several of the personal factors revolve around the personality of the budding entrepreneur. Three widely discussed personality traits are a high need for achievement (McClelland, 1961; Begley and Boyd, 1987; Johnson, 1990), risk taking (Begley and Boyd, 1987; McGrath et al., 1992; Busenitz, 1999; Stewart and Roth, 2001), and internal locus of control (Robinson et al., 1991; Cromie, 2000). Need for achievement reflects one's desire for challenge, personal responsibility for outcomes, and for feedback (McClelland, 1961). Johnson (1990) reviewed 23 studies and found a consistent, positive relationship between high need for achievement and entrepreneurship.

Risk taking is another individual factor that is commonly found among successful entrepreneurs. Stewart and Roth (2001), in their meta-analytic review of the existing literature on entrepreneurial risk taking, found entrepreneurs have a moderately higher level of risk taking propensity than non-entrepreneurs. The third personality trait studied

as a predictor of successful entrepreneurship is locus of control, which refers to the extent to which individuals believe their actions influence what happens to them (Gibson et al., 2002). People who believe they control what happens to them have an internal locus of control, while those who believe their lives are controlled by outside events have an external locus of control (Gibson et al., 2002). Robinson et al. (1991), in their study of entrepreneurs and non-entrepreneurs, found that entrepreneurs had higher personal control expectations than non-entrepreneurs. While it is important to recognize the potential influence of individual characteristics on entrepreneurial behavior, this study does not seek to examine the psychological attributes of members of the participating organizations. Rather, this study's focus is on the organizational factors that promote entrepreneurial activity.

Organizational Characteristics

The organizational characteristics that have been related to entrepreneurial activity seem to converge around five distinct factors. These five factors are the appropriate use of rewards; management support; resource availability; a supportive organizational structure; and risk taking and failure tolerance. Table 2 provides a summary of these factors. All five factors are important to this study of entrepreneurship in DoD organizations, as they may provide senior leaders with a distinct set of factors they can promote and support in order to spur entrepreneurial activity in their organizations.

Table 2. Common factors of entrepreneurial activity in organizations.

<i>Factor</i>	<i>Definition</i>	<i>Sources</i>
Appropriate Use of Rewards	The extent to which an organization has an effective reward system.	Sathe (1985) Sykes (1992) Twomey and Harris (2000) Hornsby et al. (2002)
Management Support	The extent to which management is willing to facilitate and promote entrepreneurial activity in the organization.	Damanpour (1991) Kuratko et al. (1993) Pearce et al. (1997) Hornsby et al. (2002)
Resource Availability	The extent to which resources (including time) are available for entrepreneurial activity.	Damanpour (1991) Stopford and Baden-Fuller (1994) Slevin and Covin (1997) Hornsby et al. (2002)
Supportive Organizational Structure	The extent to which organizations formally support entrepreneurial activities.	Sathe (1985) Zahra (1991) Covin and Slevin (1991) Hornsby and Naffziger (1992) Hornsby et al. (2002)
Risk Taking and Failure Tolerance	The extent to which organizations are willing to take risks and have tolerance for failure.	Sathe (1985) Jennings and Lumpkin (1989) Hornsby et al. (1999)

Appropriate Use of Rewards. A number of studies suggest organizations must have effective systems in place to promote individual entrepreneurial activity in organizations (Sathe, 1985; Sykes, 1992; Twomey and Harris, 2000; Hornsby et al., 2002). These systems can include both extrinsic and intrinsic rewards. Sykes (1992) conducted a case study of compensation plans for corporate entrepreneurs at eight major corporations and found that compensation plans based on performance helped in

retention and recruitment of the most talented employees. Although military basic pay scales are fixed, the possibility for additional compensation based on performance exists through the Innovative Development through Employee Awareness (IDEA) program. DoD civilian employee compensation includes an annual bonus element tied to performance and civilian employees are also eligible for award through the IDEA program. Organizations can also reward employees by providing appropriate recognition for entrepreneurial achievement. Twomey and Harris (2000), in their study of the link between Human Resource Management systems and entrepreneurship, found a high correlation between reward and recognition systems and entrepreneurial behavior among employees. Based on these studies, I propose:

Hypothesis 1: Perceptions regarding the appropriate use of rewards are positively related to the entrepreneurial mindset of organizational members.

Management Support. The second factor promoting entrepreneurial activity in organizations is management support, which indicates the willingness of managers to foster and promote entrepreneurial activity in an organization (Hornsby, Kuratko, and Zahra, 2002). Studies, which support this factor, include Damanpour (1991), Kuratko et al. (1993), and Pearce et al. (1997). Damanpour's study (1991) of potential determinants of organizational innovation, one of the three primary facets of entrepreneurship, found a positive relationship between managerial attitude toward change and an internal climate conducive to innovation. Kuratko et al. (1993), in their assessment of strategies for entrepreneurial activity, provide a number of recommendations for creating a climate that is conducive to entrepreneurial activity in an organization. These recommendations include setting explicit goals, providing a system of feedback and positive reinforcement,

placing emphasis on individual responsibility, and rewarding employees based upon results (1993). Pearce et al. (1997) found that managers who exhibit entrepreneurial behavior have a positive impact on their subordinates, who reported increased levels of satisfaction. Based on this discussion, I suggest:

Hypothesis 2: Perceptions regarding management support of entrepreneurial activity are positively related to the entrepreneurial mindset of organizational members.

Resource Availability. A third organizational antecedent found consistently in the literature is resource availability (Damanpour, 1991; Stopford and Baden-Fuller, 1994; Slevin and Covin, 1997; Hornsby et al., 2002). This factor suggests that employees must believe they have the resources (including time) for entrepreneurial activities (Hornsby, Kuratko, and Zahra, 2002). Damanpour's (1991) examination of antecedents to innovation found a positive relationship between slack resource availability and innovative activity in organizations. Slevin and Covin (1997) suggest that time can be used to an organization's advantage in fostering entrepreneurial activity, but that it requires organization leaders to keep the organization aligned with the operating environment and prevent the fire-fighting mode that consumes excess resources.

Accordingly, I propose:

Hypothesis 3: Perceptions regarding resource availability are positively related to the entrepreneurial mindset of organizational members.

Supportive Organizational Structure. An organizational structure supportive of entrepreneurial activities is the fourth factor commonly seen in the literature (Sathe, 1985; Zahra, 1991; Covin and Slevin, 1991; Hornsby and Naffziger, 1992). This factor, seen in various ways, includes providing formal channels, by which ideas are submitted,

evaluated, and implemented (Hornsby, Kuratko, and Zahra, 2002). Zahra's exploratory study of the predictors and financial outcomes of corporate entrepreneurship (1991) found evidence that several components of formal organizational structure were positively related to entrepreneurial activity in an organization. These components included formal efforts to process information about an organization's external environment, formal communication processes, and efforts to share information across different units or levels in the organization (Zahra, 1991). Covin and Slevin (1991) suggest that entrepreneurial activity in an organization is positively affected by an organizational structure that includes decentralized decision-making, a flatter organizational structure, and open communication channels. Based on this literature, I suggest:

Hypothesis 4: Perceptions regarding a supportive organizational structure are positively related to the entrepreneurial mindset of organizational members.

Risk Taking and Failure Tolerance. Finally, risk taking and failure tolerance frequently appears in the literature as an organizational characteristic that fosters entrepreneurial activity (Sathe, 1985; Jennings and Lumpkin, 1989; Stopford and Baden-Fuller, 1994). As noted earlier, risk taking is one of the key components of the entrepreneurial mindset and a key individual antecedent of entrepreneurial activity. In this case, risk taking refers to the organization as a whole possessing a willingness to take risks and tolerate failure when it occurs (Hornsby, Kuratko, and Montagno, 1999). For example, Jennings and Lumpkin (1989), in their study of entrepreneurship in 56 financial institutions, found that entrepreneurial organizations typically encourage calculated risk taking and do not penalize managers if risky projects fail. Thus, I propose:

Hypothesis 5: Perceptions regarding risk taking and failure tolerance are positively related to the entrepreneurial mindset of organizational members.

A central theme among studies that have explored the entrepreneurial mindset is that leaders should provide an environment, or climate, to foster entrepreneurial activity. These studies, conducted in the private sector, included examinations of major corporations (Sykes, 1992), divisions of an electric utility system with 18,000 employees (Pearce et al., 1997), large firms from European manufacturing industries (Stopford and Baden-Fuller, 1994), and Fortune 500 industrial firms (Zahra, 1991). This sample of organizations represents large, established companies that may resemble DoD organizations in characteristics such as number of employees, diversity of operating locations, and hierarchical organizational structures. The prevailing dissimilarity between the firms cited above and the DoD is the profit focus of the private sector firms. Studies indicate that entrepreneurial activity is not limited to particular industry sectors (Morris and Jones, 1999) or strictly to the size and age of an organization (Chittipeddi and Walleth, 1991). Therefore, the antecedents identified in the private sector studies may be applicable to public sector organizations as well and should be tested in a study of entrepreneurial mindset in DoD organizations.

Outcomes

In general, organizations that encourage entrepreneurial activity are interested in positive outcomes. These outcomes can be objective measures, such as profitability and earnings per share, or subjective measures, such as employees' job satisfaction, commitment to the organization, and perceived organizational performance. Most empirical studies exploring the outcomes of entrepreneurship have focused on the

objective measures of organizational performance in private sector firms (Birley and Westhead, 1990; Zahra, 1991; Cooper, 1993; Zahra and Covin, 1995; Covin and Miles, 1999). Zahra and Covin (1995) provide strong evidence of the link between entrepreneurial activity and financial performance in their study of 108 firms using data collected over a seven-year period. However, these types of outcomes are not consistent with public sector firms such as the DoD, as public sector organizations are not focused on generating profit. The DoD, in particular, offers a unique environment because of its enormous size, budget, and bureaucratic nature. Therefore, this study of entrepreneurial mindset in DoD organizations focuses on subjective outcomes.

Lumpkin and Dess (1996), in proposing a framework for investigating the link between an entrepreneurial orientation and firm performance, point out that while financial measures of performance such as growth, market share, and profitability are important, additional, non-financial measures may be just as important in the study of entrepreneurial outcomes. The commitment and satisfaction of organizational members are among the non-financial factors suggested for study by Lumpkin and Dess (1996). Non-financial factors examined in this review are job satisfaction, perceived organizational contribution, commitment, memory orientation, and overall organizational performance.

Job Satisfaction. Job satisfaction, as presented by Dormann and Zapf (2001), is defined as a pleasurable or positive emotional state resulting from the assessment of one's job or job experiences. Job satisfaction is an appropriate outcome measure in this study because it has been associated with a variety of positive organizational outcomes. For instance, studies have shown that employees who are satisfied with their job are more

productive (Wagner and Gooding, 1987) and have lower rates of intention to leave the organization (Trevor, 2001; Tett and Meyer, 1993). More important, job satisfaction has also been linked to entrepreneurship (Hindle and Cutting, 2002; Blanchflower and Oswald, 1998; Cromie, 1987; Powell and Bimmerle, 1980). Hindle and Cutting (2002) found that pharmacists who had received formal entrepreneurship education reported higher levels of job satisfaction than their counterparts that had received no entrepreneurial training. Studies by Cromie (1998) and Powell and Bimmerle (1980) suggested individuals' entrepreneurial aspirations were based in part because of a desire for an increased level of job satisfaction. Based on this discussion, I propose:

Hypothesis 6: An entrepreneurial mindset in DoD organizations is positively related to the job satisfaction of organizational members.

Perceived Organizational Contribution. Another non-financial outcome that may be of interest to DoD organization leaders is perceived organizational contribution. This construct is derived from the literature on perceived organizational support, which refers to employees' perceptions that their organization values their contributions to the organization (Rhoades and Eisenberger, 2002). As with job satisfaction, employees' perceived organizational support has been linked to positive organizational outcomes such as increased performance (Armeli et al., 1998; George and Brief, 1992) and decreased turnover intent (Wayne et al., 1997). Shepherd and Krueger (2002) provide a link between entrepreneurship and perceived contribution to the organization. In their study of entrepreneurial teams, Shepherd and Krueger (2002) suggest that entrepreneurial activity is positively related to teams' perceptions that their actions are desirable to the organization. Accordingly, I propose:

Hypothesis 7: An entrepreneurial mindset in DoD organizations is positively related to the perceived organizational contribution of organizational members.

Commitment. As set forth by Allen and Meyer (1990), organizational commitment can be viewed as a three-component model, consisting of affective commitment, continuance commitment, and normative commitment. Affective commitment reflects employees' emotional attachment to the organization, continuance commitment reflects employees' view of the costs associated with leaving the organization, and normative commitment refers to employees' feelings of obligation to remain with the organization (Allen and Meyer, 1990). Organizational commitment is appropriate for inclusion as an outcome measure in this study, because the literature suggests a positive relationship between commitment and favorable organizational outcomes such as higher levels of motivation and greater organizational effectiveness (Perry and Wise, 1990). In addition, Romzek (1990) contends that increased organizational commitment is necessary to retain quality, public sector employees. Mullins et al. (2001) found that an entrepreneurial environment resulted in greater organizational commitment among all levels of employees. Thus, I suggest:

Hypothesis 8: An entrepreneurial mindset in DoD organizations is positively related to the affective commitment of organizational members.

Hypothesis 9: An entrepreneurial mindset in DoD organizations is positively related to the normative commitment of organizational members.

Memory Orientation. According to Hult et al. (2000), memory orientation is one of the primary dimensions of organizational learning and it is defined as the degree to which organizational members stress communication and sharing of knowledge (2000). As with the previously discussed outcomes of an entrepreneurial posture, memory

orientation may be a consequence of importance to DoD leaders. Jaworski and Kohli (1993) suggest that greater levels of organization-wide communication and knowledge sharing result in greater organizational commitment and esprit de corps among employees. Chaston et al. (2001), in their study of manufacturing firms in England, found that entrepreneurial firms possessed higher levels of organizational learning and better managed information than their non-entrepreneurial counterparts. Slater and Narver (1995) suggested that entrepreneurship was a key piece of an organization's foundation for organizational learning. Based on this literature, I propose:

Hypothesis 10: An entrepreneurial mindset in DoD organizations is positively related to the memory orientation among organizational members.

Overall Organizational Performance. Job satisfaction, perceived organizational contribution, organizational commitment, and memory orientation are all attractive outcomes, but perhaps the most important goal of leaders is to increase their organization's performance. Two approaches for measuring overall organizational performance are objectively, such as in terms of specific financial measures, or judgmentally, such as through employee assessments of organization performance (Jaworski and Kohli, 1993). Overall organizational performance is an important outcome for inclusion in this study because it may show our senior leaders that entrepreneurial behaviors lead to increased organizational performance. Therefore, I propose:

Hypothesis 11: An entrepreneurial mindset in DoD organizations is positively related to overall organizational performance.

Purpose of This Study

Entrepreneurship is a widely studied phenomenon, as are the factors that promote entrepreneurial activity and the outcomes associated with this type of behavior. This

review has shown that previous research indicates a distinct set of factors that promote entrepreneurial activity in organizations and has consistently found a positive relationship between entrepreneurial behavior and desired outcomes. One would expect to find similar antecedents and outcomes associated with entrepreneurial activity in public sector organizations such as the DoD. A thorough review of the extant literature found no empirical studies of entrepreneurship in DoD organizations. To address this research gap, the researcher examines the extent to which an entrepreneurial mindset exists in DoD organizations, the factors promote this activity and the outcomes that are associated with this behavior.

III. Methodology

This chapter details the methodology used to answer this study's primary research question: to what extent does an entrepreneurial mindset exist in DoD organizations and what are its antecedents and outcomes? Topics addressed in this chapter include the sample, procedures, measures, and analysis used to complete this research effort.

Sample

A sample of innovative DoD organizations was invited to participate in this study. Criteria for classifying organizations as innovative were (1) articles highlighting innovativeness and (2) awards recognizing innovativeness. According to Lumpkin and Dess (1996), innovativeness refers to an organization's propensity to encourage and support new ideas and creative processes that may produce new products, services, or technological processes. Electronic databases were searched for articles depicting innovative DoD organizations. In addition, the Air Force Manpower and Innovation Agency (AFMIA), which hands out annual awards to innovative teams and organizations, was contacted to identify past award recipients. They identified fifteen previous award recipients. Air Force Online News archives covering October 2002 to September 2003 were searched to find organizations recently recognized as innovative.

Using the established criteria, 26 innovative organizations were identified as potential study participants. Table 3 presents the name and location of each organization, the reason they were identified as innovative, and the source(s) of the information.

Organizations highlighted in **bold** were study participants. The organizations represent

Table 3. Innovative DoD organizations.

<i>Organization</i>	<i>Reason</i>	<i>Source(s)</i>
C-5A Galaxy Torque Deck Repair Team, 443 rd Airlift Wing, Lackland AFB, TX	2003 Chief of Staff Team Excellence Award Winner	AFMIA; AF News, 19 Sep 03
Night Operations Team from Air Mobility Command's Directorate of Operations, Scott AFB, Ill	2003 Chief of Staff Team Excellence Award Winner	AFMIA; AF News, 19 Sep 03
Commercial Air Resource Evacuation Team, 374 th Aeromedical Evacuation Squadron, Yokota Air Base, Japan	2003 Chief of Staff Team Excellence Award Winner	AFMIA; AF News, 19 Sep 03
Solid State Phased Array Radar Trainer Team, 381 st Training Group, Vandenberg AFB, CA	2003 Chief of Staff Team Excellence Award Winner	AFMIA; AF News, 19 Sep 03
F100 Engine Supply Chain Process Improvement Team, Oklahoma City Air Logistics Center, Tinker AFB, OK	2003 Chief of Staff Team Excellence Award Winner	AFMIA; AF News, 19 Sep 03
Air Force Research Laboratory Mesa Research Site, Mesa, AZ	2003 Defense Department Modeling and Simulation Award Winner	AF News, 18 Sep 03
Defense Advanced Research Projects Agency (DARPA), Arlington, VA	Innovativeness	Aviation Week and Space Technology, 18 Aug 03
74 th Fighter Squadron, Pope AFB, NC	2003 Secretary of Defense Maintenance Award Winner	AF News, 16 Sep 03
Joint Direct Attack Munitions Joint Program Office, Eglin AFB, FL	2003 David Packard Excellence in Acquisition Award Winner	AF News, 5 June 03
Passive Attack Weapon Program Quick Reaction Capability Team, Eglin AFB, FL	2003 David Packard Excellence in Acquisition Award Winner	AF News, 5 June 03

Table 3. Innovative DoD organizations (continued).

<i>Organization</i>	<i>Reason</i>	<i>Source(s)</i>
363 rd Expeditionary Security Forces Team, Prince Sultan Air Base, Saudi Arabia	2002 Air Force Productivity Excellence Award Winner	AFMIA; AF News, 15 Apr 03
C-5 Pylon Conebolt Corrosion Team, Robins AFB, GA	2002 Air Force Productivity Excellence Award Winner	AFMIA; AF News, 15 Apr 03
Internet-Based Advanced Distributed Team, Randolph AFB, TX	2002 Air Force Productivity Excellence Award Winner	AFMIA; AF News, 15 Apr 03
System Capable of Progressive Expansion Team, Keesler AFB, MS	2002 Air Force Productivity Excellence Award Winner	AFMIA; AF News, 15 Apr 03
Systems Control Course System Administration Team, Keesler AFB, MS	2002 Air Force Productivity Excellence Award Winner	AFMIA; AF News, 15 Apr 03
F-15 Wing Shop Lean Depot Repair Team, F-15 Wing Shop, Robins AFB, GA	2002 Chief of Staff Team Excellence Award Winner	AFMIA
Combat Intelligence Center Battle Management System Team, 48 th Operational Support Squadron, RAF Lakenheath	2002 Chief of Staff Team Excellence Award Winner	AFMIA
Global Positioning System User Equipment Diminishing Manufacturing Sources and Material Shortages Team, GPS Program Office, Robins AFB, GA	2002 Chief of Staff Team Excellence Award Winner	AFMIA
Air Force Flight Test Center Base Energy Team, 95 th Civil Engineering Group, Edwards AFB, CA	2002 Chief of Staff Team Excellence Award Winner	AFMIA
C-17 Electronic Testing and Evaluation of Student Training Team, Charleston AFB, SC	2002 Chief of Staff Team Excellence Award Winner	AFMIA

Table 3. Innovative DoD organizations (continued).

<i>Organization</i>	<i>Reason</i>	<i>Source(s)</i>
Air Force Command and Control Battlelab, Hurlburt Field, FL	Innovativeness	AF News, 7 Feb 03
Air Force Unmanned Aerial Vehicle Battlelab, Eglin AFB, FL	Innovativeness	AF Times, 25 Nov 02
Air Force Information Warfare Battlelab, Lackland AFB, TX	Innovativeness	Network World 6 May 02
Air Force Air Expeditionary Force Battlelab, Mountain Home AFB, ID	Innovativeness	AFMC News, 18 May 01
Air Force Force Protection Battlelab, Lackland AFB, TX	Innovativeness	AF News, 7 May 01
Air Force Space Battlelab, Falcon AFB, CO	Innovativeness	Aviation Week and Space Technology, 16 Mar 98

19 different DoD installations and a wide variety of geographic regions. Twenty-three organizations were based in the United States and three were based overseas.

Nineteen of the 26 organizations identified as potential study participants had received one of five awards. The Chief of Staff Team Excellence Award, which recognizes outstanding team performance and shares best practices within the Air Force (AFMIA, 2003). The Defense Department Modeling and Simulation Award distinguishes units for excellence, innovation, and achievement in advancing state-of-the-art modeling and simulation (DMSO, 2003). The Defense Maintenance Award looks at mission accomplishments, effective use of maintenance resources, innovative management accomplishments, and quality-of-life programs when determining award

winner (Drohan, 2003). The David Packard Excellence in Acquisition Award recognizes organizations that have demonstrated exemplary innovation and best acquisition practices (DPAP, 2003). Finally, the Air Force Productivity Excellence Award recognizes teams who have made substantial improvements in productivity (AFMIA, 2003).

Seven of the 26 organizations were identified as potential study participants through articles that highlighted innovativeness in DoD organizations. Examples include the Air Force Command and Control Battlelab applying existing software to processes previously done by hand (Lopez, 2003), the Air Force Unmanned Aerial Vehicle Battlelab exploring the use of commercial items with potential military application and using existing military equipment in new capacities (Rolfson, 2002), and the Air Force Information Warfare Battlelab spending time testing and cultivating new ideas and products to determine their military utility (Messmer, 2002).

An effort was made to contact each organization's leadership via telephone to explain the purpose of this study and to solicit each organization's participation. In each case where successful contact was made, I spoke with the leader or the next person in charge of the organization. Seven organizations, with 337 assigned personnel, agreed to participate in the study (a 27% organization participation rate). It is important to note the possibility of selection bias in the sample organizations (Leedy and Ormrod, 2001). Some organizations declined to take part in the study because they did not feel the study was appropriate for their organization, because the majority of the unit was deployed to locations away from the unit's home base, or because many personnel assigned to the organization at the time they were recognized as innovative had already been reassigned.

Procedures

A 77-item, web-based questionnaire was used to gather data for this study (a copy is provided at Appendix A). A senior leader from each organization acted as a liaison between the researcher and the organization's members. All correspondence, as discussed below, was sent to the liaisons for distribution to unit members. To maximize the survey response rate, some of the strategies recommended by Simsek and Veiga (2000) were used. Approximately one week prior to making the questionnaire available, an invitation message was sent to each participating organization explaining the purpose of the study, providing advance notice of the survey, and explaining that the survey could be accessed and completed anonymously. The message also contained contact information in case potential participants had questions. When the survey was ready to be administered, a message that included an internet link to the instrument was sent to each organization. This message contained a brief reminder of the purpose of the research, instructions for accessing the internet link, and again highlighted the anonymity of the survey. A follow-up message was sent to each organization approximately one week after the questionnaire was made available and a second follow-up message was sent approximately one month later. One-hundred and thirteen of the 337 members assigned to the participating organizations completed the questionnaire, yielding a 34% response rate. Table 4 presents a demographic summary of the entire sample and of those who completed the questionnaire. The table shows that respondents appear to be representative of the entire sample. However, the possibility of response bias still exists.

Table 4. Demographic summary.

<i>Category</i>	<i>Entire Sample</i>		<i>Respondents*</i>	
	<i>#</i>	<i>%</i>	<i>#</i>	<i>%</i>
Rank				
E-1 thru E-4	1	0	0	0
E-5 thru E-6	8	2	2	2
E-7 thru E-9	32	10	15	13
O-1 thru O-3	52	15	14	12
O-4 thru O-6	80	24	30	27
GS-1 thru GS-5	17	5	0	0
GS-6 thru GS-10	19	6	3	3
GS-11 thru GS-15	63	19	12	11
Contractor	65	19	23	20
No response	—	—	<u>14</u>	<u>12</u>
Total	337	100	113	100
Gender				
Male	277	82	89	79
Female	60	18	15	13
No response	—	—	<u>9</u>	<u>8</u>
Total	337	100	113	100

* Of the 113 respondents, 14 did not report their rank and 9 did not report gender

Measures

The questionnaire for this study was developed to measure (1) the entrepreneurial mindset, (2) perceptions of the factors that influence entrepreneurial actions, and (3) perceptions of the outcomes associated with these entrepreneurial behaviors. Table 5 summarizes the name and definition of each construct, an example item of each construct, and the type of response scale used to measure each construct.

Entrepreneurial mindset. A nine-item scale adopted from Covin and Slevin (1989) was used to measure the entrepreneurial posture, or mindset, in organizations. This scale included items that gauge the three facets of an entrepreneurial mindset (innovativeness, proactiveness, and risk taking). All items were measured using two anchor responses and a seven-point response scale. Respondents were asked to characterize the entrepreneurial posture of their organizations in terms of the nine items. For example, respondents were asked (1) whether the top managers of their organization favor, “a strong emphasis on supporting tried and true services and/or business practices or a strong emphasis on R&D, technological leadership, and innovations,” (2) whether their organization, “typically responds to actions which other organizations initiate or typically initiates actions which other organizations respond to,” and (3) whether the top managers of their organization have, “a strong preference for low-risk projects (with normal and certain outcomes) or a strong preference for high-risk projects (with chances of very attractive outcomes).” Higher scores indicate a greater degree of an entrepreneurial mindset. Covin and Slevin (1989) conducted a factor analysis that indicated it was appropriate to combine the nine items into a single scale. The coefficient alpha for their nine-item scale was .87.

Table 5. Measures.

<i>Construct</i>	<i>Definition</i>	<i>Example Items</i>		<i>Response Scale</i>
Entrepreneurial Mindset (Covin and Slevin, 1989)	Measures the extent to which respondents characterize their organization's entrepreneurial mindset, in terms of the tendency toward innovation, proactiveness, and risk-taking.	In general, the top managers of my organization favor...		Seven-point anchor response.
		A strong emphasis on supporting tried and true services and/or business practices.	1 to 7	A strong emphasis on R&D, technological leadership, and innovations.
		My organization...		
		Typically responds to actions which other organizations initiate.	1 to 7	Typically initiates actions which other organizations then respond to.
		In general, the top managers of my organization have...		Seven-point anchor response.
		A strong preference for low-risk projects (with normal and certain outcomes).	1 to 7	A strong preference for high-risk projects (with chances of very attractive outcomes).

Table 5. Measures (continued).

<i>Construct</i>	<i>Definition</i>	<i>Example Item</i>	<i>Response Scale</i>
Appropriate Use of Rewards (Hornsby et al., 2002)	Measures the extent to which respondents feel their organization has an effective reward system.	The rewards I receive are dependent upon my work on the job.	Five-point Likert-type.
Management Support (Hornsby et al., 2002)	Measures the extent to which respondents feel management is willing to facilitate and promote entrepreneurial activity in the organization.	My organization is quick to use improved work methods.	Five-point Likert-type.
Resource Availability (Hornsby et al., 2002)	Measures the extent to which respondents feel they have resources (including time) available for entrepreneurial activity.	I always seem to have plenty of time to get everything done.	Five-point Likert-type.
Supportive Organizational Structure (Hornsby et al., 2002)	Measures the extent to which respondents feel they have a supportive organizational structure.	On my job I have no doubt of what is expected of me.	Five-point Likert-type.

Table 5. Measures (continued).

<i>Construct</i>	<i>Definition</i>	<i>Example Item</i>	<i>Response Scale</i>
Risk Taking and Failure Tolerance (Hornsby et al., 2002)	Measures the extent to which respondents feel they have discretion and autonomy to engage in entrepreneurial activity in the organization.	This organization provides freedom to use my own judgment.	Five-point Likert-type.
Job Satisfaction (Cammann et al., 1983)	Measures the extent to which respondents view their job positively.	All in all, I am satisfied with my job.	Seven-point Likert-type.
Perceived Organizational Contribution (Lynch et al., 1999)	Measures the extent to which respondents believe they make contributions to the organization.	I encourage others to try new and more effective ways of doing their job.	Seven-point Likert-type.
Affective Commitment (Allen and Meyer, 1990)	Measures the extent to which respondents are emotionally attached to the organization.	I really feel as if this organization's problems are my own.	Seven-point Likert-type.
Normative Commitment (Allen and Meyer, 1990)	Measures the extent to which respondents feel obligation to remain with the organization.	I was taught to believe in the value of remaining loyal to the organization.	Seven-point Likert-type.

Table 5. Measures (continued).

<i>Construct</i>	<i>Definition</i>	<i>Example Item</i>	<i>Response Scale</i>
Memory Orientation (Hult et al., 2003)	Measures the extent to which respondents view particular aspects of the learning process within their organization, such as the inter-connectedness of various parts of the organization and whether mechanisms exist for sharing knowledge and experiences.	We have specific mechanisms for sharing lessons learned in our organization.	Seven-point Likert-type.
35 Overall Organizational Performance (Hult et al., 2003)	Measures the extent to which respondents assess their organization's performance in general and relative to other organizations.	Regarding our overall performance, during the last year, we... Performed poorly in general. 1 to 7 Performed excellent in general.	Seven-point anchor response.

Due to a technical data error with the web-based survey instrument, the three items that focused on innovativeness and one item that assessed proactiveness were discarded from the final survey data. This resulted in a five-item scale used to measure the entrepreneurial mindset in the participating organizations. The coefficient alpha for this scale was .90. As noted, the data error affected the items that gauge the innovation facet of an entrepreneurial mindset. Therefore, the resulting five-item scale does not capture the entire domain of the entrepreneurial mindset as defined in this study. This represents a limitation of the study, which will be discussed further in Chapter V.

Factors that promote entrepreneurial actions. A forty-three item scale, taken from Hornsby, Kuratko, and Zahra's Corporate Entrepreneurship Assessment Instrument (2002) was used to gauge the factors that promote entrepreneurial actions within organizations. All items were measured using a Likert-style, five-point response format that ranged from 1 = *strongly disagree* to 5 = *strongly agree*.

Appropriate use of rewards, measured with five items, reflected the extent to which study participants feel their organization has an effective reward system. An example item is: "The rewards I receive are dependent upon my work on the job." Hornsby, Kuratko, and Zahra reported a coefficient alpha of .75 for this scale in their study (2002). The coefficient alpha in this study was .84.

Management support was measured with 17 items. These items measured the extent to which respondents feel management is willing to facilitate and promote entrepreneurial activity in the organization. An example item is: "My organization is quick to use improved work methods." The coefficient alpha for this scale in Hornsby, Kuratko, and Zahra's study (2002) was .89 and in this study was .90.

Six items were used to measure resource availability. These items measured the extent to which people feel they have time available for entrepreneurial activity. An example item is: “I always have plenty of time to get everything done.” The coefficient alpha for this scale was .77 in Hornsby, Kuratko, and Zahra’s study (2002) and .79 in this study.

Supportive organizational structure was also measured. Five items were used to measure the extent to which people feel they have a supportive organizational structure for entrepreneurial activity. An example item is: “On my job I have no doubt of what is expected of me.” The coefficient alpha for this scale was .64 in Hornsby, Kuratko, and Zahra’s study (2002) and .67 in the current study.

Risk taking and failure tolerance was measured with 10 items. These items measured the extent to which people feel they have discretion and autonomy to engage in entrepreneurial activity in the organization. An example item is: “This organization provides freedom to use my own judgment.” The coefficient alpha was .87 in Hornsby, Kuratko, and Zahra’s study (2002) and .81 in this study.

Outcomes. Job satisfaction, perceived organizational contribution, affective commitment, normative commitment, memory orientation, and overall organizational performance were measured as outcomes. Unless otherwise noted, a seven-point, Likert-style response format that ranged from 1 = *strongly disagree* to 7 = *strongly agree* was used.

Job satisfaction was measured with three items that came from scales developed by Cammann et al. (1983). These items measured the extent to which respondents view their job positively. An example item is: “All in all, I am satisfied with my job.” The

coefficient alpha was .77 for this scale in Cammann et al.'s study (1983) and .94 in this study.

Perceived organizational contribution was measured with three items from Lynch et al.'s eight-item scale to measure perceived organizational support (1999). These items were used to assess the extent to which people believe they make contributions to the organization. An example item is: "I encourage others to try new and more effective ways of doing their job." The coefficient alpha was .90 for Lynch et al.'s original scale (1999) and .73 in this study.

Affective commitment and normative commitment were both measured using scales presented by Allen and Meyer (1990). Eight items were used to measure affective commitment. These items measured the extent to which respondents are emotionally attached to the organization. Five items were used to measure normative commitment. These items measured the extent to which people feel obligation to remain with the organization. Coefficient alphas in Allen and Meyer's study (1990) were .87 for affective commitment and .79 for normative commitment. The coefficient alphas in this study were .86 and .70, respectively.

Eight items developed by Hult et al. (2003) were used to measure memory orientation. The items were used to measure the extent to which respondents view particular aspects of the learning process within their organization, such as the interconnectedness of various parts of the organization and whether mechanisms exist for sharing knowledge and experiences. An example item is: "We have specific mechanisms for sharing lessons learned in our organization." The coefficient alpha was .87 in Hult et al.'s study (2003) and .78 in this study.

Finally, overall organizational performance was measured using two items from Hult et al. (2003). These items measured the extent to which people assess their organization's performance in general and relative to other organizations. Items were measured using two anchor responses and a seven-point response scale. For example, one of the items asked respondents to characterize whether their organization, during the past year, "performed poorly, in general or performed excellent, in general." Hult et al. (2003) reported a coefficient alpha of .88 for this scale, while it was .92 in this study.

Analysis

Initial data analysis included assessment of the individual items from the survey instrument and calculation of descriptive statistics for each scale used in the study. In addition, Chronbach's coefficient alphas were calculated for the scales to determine internal reliability.

The entrepreneurial mindset scale was then analyzed to assess the extent to which an entrepreneurial mindset exists in the participating organizations. Next, to evaluate the study's eleven hypotheses, a correlation analysis of entrepreneurial mindset and all of the antecedent factors and outcomes in this study was conducted.

Finally, a mediated regression analysis was conducted to test the mediating effect of entrepreneurial mindset between the antecedents and outcomes in this study.

Summary

This chapter has addressed the sample, procedures, measures, and analysis used to complete this research effort. The next chapter will present the results of the data analysis.

IV. Analysis

The Entrepreneurship in DoD Organizations survey (Appendix A) was designed to collect data for the purpose of answering this study's primary research question: to what extent does an entrepreneurial mindset exist in DoD organizations and what are its antecedents and outcomes? The conceptual model for this study, presented in Figure 1 in Chapter II, was developed based on a thorough review of the literature related to entrepreneurial mindset, its antecedents, and outcomes.

This chapter evaluates the primary research question and eleven hypotheses using the data collected. First, the descriptive statistics for the variables used in the study are presented. Second, scale reliability is established. Next, the entrepreneurial mindset in the sample organizations is assessed and this study's eleven hypotheses are evaluated. Finally, this chapter presents the results of a mediated regression analysis conducted to test the mediating effect of entrepreneurial mindset between the antecedents and outcomes in this study.

Descriptive Statistics

Table 6 provides a summary of the descriptive statistics for the variables used in this study. The table includes the name of each variable, the number of items in each scale, and the mean and standard deviation for each scale. In addition, due to the variety of response scales used in the study, the scale minimum and maximum are reported. The Cronbach's coefficient alphas for each scale, indicating scale reliabilities, are included in the table as well. The table shows the variable means all tend to favor the high end of their scales. For example, the entrepreneurial mindset variable had a mean of 4.94 on a

Table 6. Descriptive statistics and reliabilities for study variables.

<i>Variable (items)</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>	<i>Alpha*</i>
Entrepreneurial Mindset (5)	1.60	7.00	4.94	1.17	.90
Appropriate Use of Rewards (5)	1.20	5.00	3.60	0.72	.84
Management Support (17)	1.41	4.53	3.43	0.60	.90
Resource Availability (6)	1.33	4.67	3.10	0.70	.79
Supportive Organizational Structure (5)	1.00	4.80	3.18	0.65	.67
Risk Taking and Failure Tolerance (10)	1.60	4.60	3.56	0.55	.81
Job Satisfaction (3)	1.33	7.00	5.64	1.38	.94
Perceived Organizational Contribution (3)	3.67	7.00	5.58	0.71	.73
Affective Commitment (8)	1.25	6.75	4.70	1.15	.86
Normative Commitment (5)	1.20	7.00	4.56	0.95	.70
Memory Orientation (4)	1.25	6.75	4.26	1.16	.78
Overall Organizational Performance (2)	1.00	7.00	5.82	1.16	.92

* Cronbach's coefficient alpha.

seven-point scale, the means of the antecedent variables ranged from 3.10 (resource availability) to 3.60 (appropriate use of rewards) on a five-point scale, and the means of the outcome variables ranged from 4.26 (memory orientation) to 5.82 (overall organizational performance on a seven-point scale).

Reliability

Cronbach's coefficient alphas were calculated for each of the scales to evaluate the reliability of the measures. Nunnally (1978) suggests a Cronbach's alpha of .70 as a rule-of-thumb acceptable level. As noted in Table 6, all of the measures exceeded this threshold with the exception of the scale measuring supportive organization structure (alpha = .67). Although the alpha level for this variable was slightly below the suggested level, this did not preclude the variable from further analysis. However, this does suggest an extra measure of caution when interpreting results using this scale.

Assessment of Entrepreneurial Mindset

The extent to which an entrepreneurial mindset exists in the sample organizations was assessed using the same method employed by Covin and Slevin (1989). That is, the mean rating of the scale was used to determine the extent of an entrepreneurial mindset, with a higher score indicating a higher degree of an entrepreneurial mindset. The five-item scale had a mean score of 4.94 on the seven-point scale and a standard deviation of 1.17 (see Table 6). This result indicated a high degree of an entrepreneurial mindset was observed in the participating organizations.

Hypotheses Test Results

Pairwise correlations of the study's variables were calculated and evaluated to test the study's eleven hypotheses. Table 7 reports the correlations for all variables.

Table 7. Correlation matrix of the study variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Entrepreneurial Mindset	-											
2. Appropriate Use of Rewards	.52**	-										
3. Management Support	.68**	.63**	-									
4. Resource Availability	.12	.08	.33**	-								
5. Supportive Organizational Structure	.32**	.51**	.45**	.28**	-							
6. Risk Taking and Failure Tolerance	.51**	.40**	.70**	.25**	.30**	-						
7. Job Satisfaction	.55**	.47**	.56**	.12	.37**	.54**	-					
8. Perceived Organizational Contribution	.26**	.31**	.24**	.18	.21*	.23*	.30**	-				
9. Affective Commitment	.49**	.44**	.45**	.04	.28*	.45**	.83	.33**	-			
10. Normative Commitment	.21*	.15	.33**	-.01	.11	.28**	.33**	.02	.35**	-		
11. Memory Orientation	.60**	.59**	.66**	.13	.52**	.43**	.54**	.28**	.52**	.36**	-	
12. Overall Organizational Performance	.66**	.45**	.59**	.13	.32**	.48**	.65**	.27**	.61**	.20*	.59**	-

The symbol * indicates $p < .05$, ** indicates $p < .01$

Hypothesis 1: Perceptions regarding the appropriate use of rewards are positively related to the entrepreneurial mindset of organizational members.

SUPPORTED. As predicted, there was a significant and positive correlation between the appropriate use of rewards by organizations and the entrepreneurial mindset of the organizations' members, exhibited by a positive correlation of .52, which was significant ($p < .01$).

Hypothesis 2: Perceptions regarding management support of entrepreneurial activity are positively related to the entrepreneurial mindset of organizational members.

SUPPORTED. This hypothesis was supported. As predicted, management support of entrepreneurship indeed was related to the entrepreneurial mindset of the organization members. This was exhibited by a positive correlation of .68, which was significant ($p < .01$).

Hypothesis 3: Perceptions regarding resource availability are positively related to the entrepreneurial mindset of organizational members.

NOT SUPPORTED. A positive association was predicted between resource availability and entrepreneurial mindset in organizations. While a positive relationship was observed ($r = .12$), it was not significant ($p > .05$).

Hypothesis 4: Perceptions regarding a supportive organizational structure are positively related to the entrepreneurial mindset of organizational members.

SUPPORTED. As expected, a positive and significant correlation between a supportive organizational structure and entrepreneurial activity was discovered. The positive correlation of .32 was significant ($p < .01$).

Hypothesis 5: Perceptions regarding risk taking and failure tolerance are positively related to the entrepreneurial mindset of organizational members.

SUPPORTED. This hypothesis was confirmed by the data. There was indeed a high correlation between risk taking and failure tolerance in the participating organizations and an entrepreneurial mindset among members, exhibited by the positive correlation of .51, which was significant ($p < .01$).

Hypothesis 6: An entrepreneurial mindset in DoD organizations is positively related to the job satisfaction of organizational members.

SUPPORTED. This hypothesis was borne out. Entrepreneurial mindset was highly correlated with job satisfaction in the sample organizations. This was confirmed by the positive correlation of .55, which was significant ($p < .01$).

Hypothesis 7: An entrepreneurial mindset in DoD organizations is positively related to the perceived organizational contribution of organizational members.

SUPPORTED. This hypothesis was confirmed by the data. The positive significant correlation between entrepreneurial mindset and perceived organizational contribution was demonstrated by the positive correlation of .26, which was significant ($p < .01$).

Hypothesis 8: An entrepreneurial mindset in DoD organizations is positively related to the affective commitment of organizational members.

SUPPORTED. This hypothesis was supported. The positive correlation coefficient of .49, which was significant ($p < .01$), supported the hypothesis that entrepreneurial mindset in DoD organizations was positively related to the affective commitment of the organization members.

Hypothesis 9: An entrepreneurial mindset in DoD organizations is positively related to the normative commitment of organizational members.

SUPPORTED. This hypothesis was supported by the data. A positive significant relationship between entrepreneurial mindset in DoD organizations and the

normative commitment of organization members was shown by a positive correlation of .21, which was significant ($p < .05$).

Hypothesis 10: An entrepreneurial mindset in DoD organizations is positively related to the memory orientation among organizational members.

SUPPORTED. Hypothesis 10 was confirmed by the data. There was indeed a positive significant correlation between entrepreneurial mindset in the sample organizations and memory orientation, exhibited by the positive correlation of .60, which was significant ($p < .01$). We can now turn to the final hypothesis.

Hypothesis 11: An entrepreneurial mindset in DoD organizations is positively related to overall organizational performance.

SUPPORTED. A strong, positive relationship between an entrepreneurial mindset in DoD organizations and overall organizational performance was exhibited, with a positive correlation coefficient of .66, which was significant ($p < .01$).

Mediated Regression Analysis

After calculating descriptive statistics and conducting correlation analysis to evaluate this study's primary research question and its associated eleven hypotheses, a mediated regression analysis was conducted to test the mediating effect of entrepreneurial mindset between the antecedents and outcomes in this study. This analysis followed the mediated regression approach recommended by Baron and Kenny (1986).

According to Baron and Kenny (1986), a mediator variable serves as the mechanism through which an independent variable is able to influence a dependent variable. Baron and Kenny (1986) recommend a three-step process for conducting a mediated regression analysis. First, the mediator is regressed on the independent variable; second, the dependent variable is regressed on the independent variable; and

third, the dependent variable is simultaneously regressed on both the independent variable and the mediator.

Baron and Kenny (1986) suggest the following conditions must be met for a mediating effect to be present. First, the independent variable (the antecedents in this study) must be significantly related to the mediator variable (entrepreneurial mindset) in the first regression equation. Second, the independent variable must be significantly related to the dependent variable (the six outcomes in this study) in the second equation. Third, the mediator must be significantly related to the dependent variable in the third regression equation. Finally, the effect of the relationship between the independent variable and dependent variable must be weaker in the third equation than in the second equation. Full mediation is supported when the independent variable has no effect on the dependent variable when the mediator is included as a second variable in the regression equation. Partial mediation exists when the independent-dependent relationship is still significant, but weaker when controlling for the mediator.

As noted, this analysis followed Baron and Kenny's (1986) recommended approach. For the first step in this analysis, entrepreneurial mindset (the mediator) was regressed on the antecedents in this study. The results were significant ($p < .01$) and produced an adjusted R-squared of .34.

In the second step, each of the six outcomes in this study (job satisfaction, perceived organizational contribution, affective commitment, normative commitment, memory orientation, and overall organization performance) was regressed on the antecedents. In this step, all six coefficients were significant ($p < .05$) and the adjusted R-squared values ranged from .42 (memory orientation) to .04 (normative commitment).

For the third step, each of the six outcomes was regressed simultaneously on the antecedents and on entrepreneurial mindset. Four of the six relationships (between the antecedents and job satisfaction, affective commitment, memory orientation, and overall organizational performance) that were significant in step two met the requisite conditions for a mediating effect to be present. That is, the mediator had a significant coefficient ($p < .05$) and there was a decrease in magnitude from the second equation to the third equation for the independent variable (the antecedents). The four significant models produced R-squared values of .38, .27, .49, and .46, respectively.

Figure 2, which depicts the mediated model of an entrepreneurial mindset in DoD organizations, and Table 8, which presents the results of the mediated regression analysis, show that an entrepreneurial mindset mediates the relationship between the antecedents and four of the outcomes (job satisfaction, affective commitment, memory orientation, and overall organizational performance). Entrepreneurial mindset was not significantly related with the other dependent variables (perceived organizational contribution and normative commitment) in the third equation, indicating no mediating effect.

Summary

This chapter provided the results of the data analysis used to address this study's primary research question and its eleven associated hypotheses. Descriptive statistics for the variables used in the study were presented, scale reliability was established, the entrepreneurial mindset in the sample organizations was assessed, and this study's eleven hypotheses were evaluated. Finally, this chapter presented the results of a mediated regression analysis conducted to test the mediating effect of entrepreneurial mindset between the antecedents and outcomes in this study.

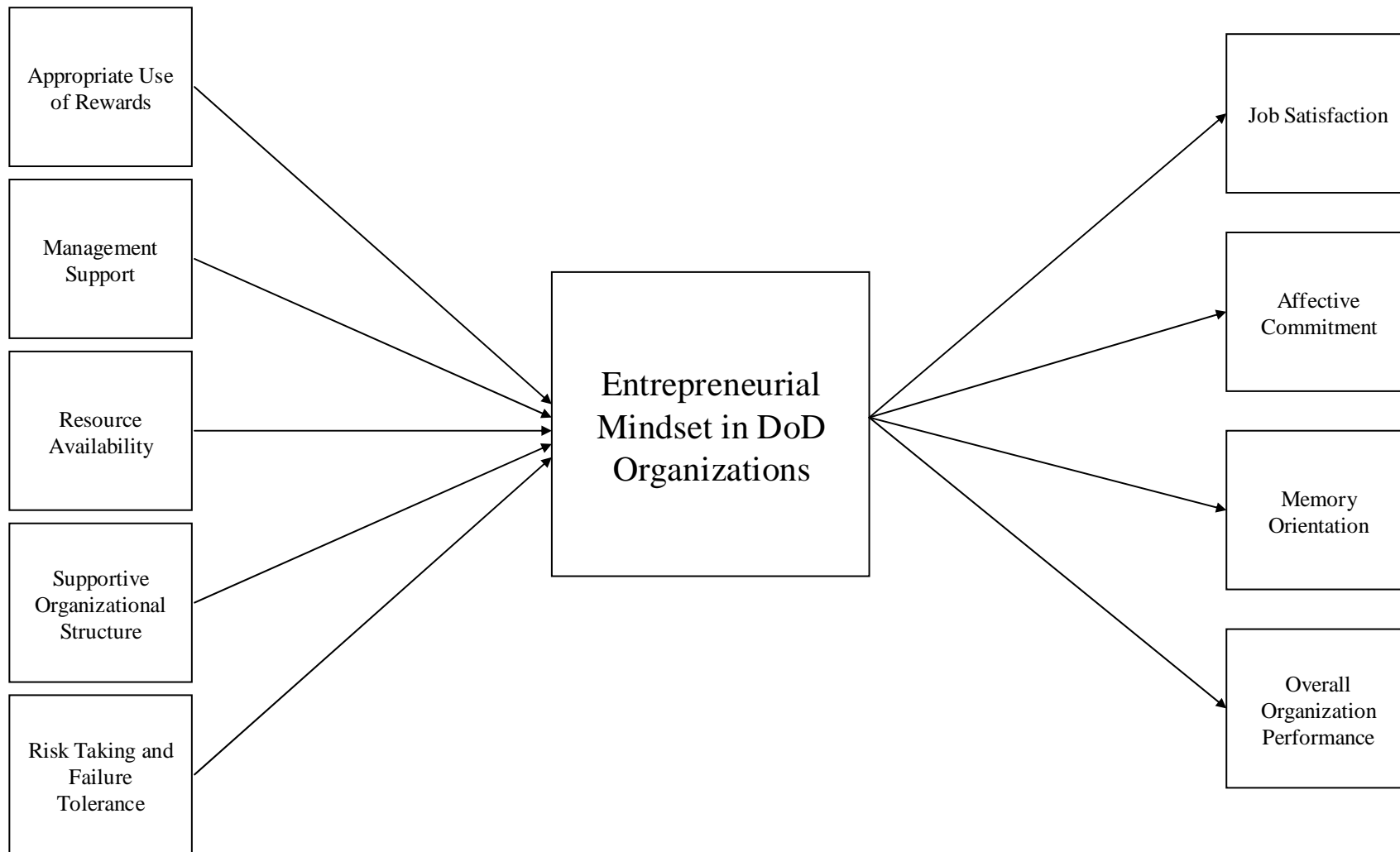


Figure 2. Mediated Model of Entrepreneurial Mindset in DoD Organizations

Table 8. Results of the 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>Equation F value</i>
			<u>AA</u>	<u>EM</u>		
(1)	EM	AA	1.51**		.34	59.23**
(2)	JS	AA	1.71**		.31	52.39**
(3)	JS	AA, EM	1.31**	.38**	.38	35.07**
			<u>AA</u>	<u>EM</u>		
(1)	EM	AA	1.51**		.34	59.23**
(2)	PC	AA	.52**		.10	13.67**
(3)	PC	AA, EM	.42*	.06ns	.10	7.25**
			<u>AA</u>	<u>EM</u>		
(1)	EM	AA	1.51**		.34	59.23**
(2)	AC	AA	1.15**		.20	28.95**
(3)	AC	AA, EM	.63*	.34**	.27	21.97**
			<u>AA</u>	<u>EM</u>		
(1)	EM	AA	1.51**		.34	59.23**
(2)	NC	AA	.48*		.04	6.21*
(3)	NC	AA, EM	.34ns	.09ns	.04	3.56*
			<u>AA</u>	<u>EM</u>		
(1)	EM	AA	1.51**		.34	59.23**
(2)	MO	AA	1.66**		.42	82.31**
(3)	MO	AA, EM	1.15**	.33**	.49	54.90**

Table 8. Results of the mediated regression analysis (continued).

<i>Equation</i>	<i>Dependent Variable</i>	<i>Independent Variable(s)</i>	<i>Regression Coefficients</i>		<i>Adjusted R-squared</i>	<i>Equation F value</i>
			<u>AA</u>	<u>EM</u>		
(1)	EM	AA	1.51**		.34	59.23**
(2)	OP	AA	1.37**		.29	46.11**
(3)	OP	AA, EM	.59**	.52**	.46	49.50**

Labels: EM = Entrepreneurial Mindset, AA = Antecedents, JS = Job Satisfaction, PC = Perceived Organizational Contribution, AC = Affective Commitment, NC = Normative Commitment, MO = Memory Orientation, OP = Overall Organizational Performance

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

V. Conclusions and Recommendations

This chapter addresses the conclusions, benefits, and limitations of this study and provides recommendations for future research.

Conclusions

The purpose of this study was to determine the extent to which an entrepreneurial mindset exists in DoD organizations and to determine its antecedents and outcomes. The results indicated that the entrepreneurial mindset existed in the sample organizations. The distribution of scores was skewed to the right, favoring the high end of the scale. This result was expected, as the sample organizations that were invited to participate in this study were identified as innovative. As noted in Chapter III, these organizations had been recognized for innovativeness either in articles highlighting their achievements or through receipt of awards that recognized innovative behavior.

Table 9 presents a summary of the eleven hypotheses test results. As shown in the table, four of the five hypotheses that predicted a positive relationship between the antecedent factors and an entrepreneurial mindset were supported. Perceptions regarding appropriate use of rewards, management support, supportive organizational structure, and risk taking and failure tolerance were all positively related to an entrepreneurial mindset in the sample organizations.

The results suggest that reward systems in the sample organizations spur entrepreneurial activity. This is consistent with the findings of Sykes (1992) and Twomey and Harris (2002) whose studies found effective reward systems promoted individual entrepreneurial activity. While consistent with the literature, this is an

Table 9. Summary of hypotheses test results.

<i>Hypothesis</i>	<i>Result</i>
Ha 1: Perceptions regarding the appropriate use of rewards are positively related to the entrepreneurial mindset of organizational members.	Supported
Ha 2: Perceptions regarding management support of entrepreneurial activity are positively related to the entrepreneurial mindset of organizational members.	Supported
Ha 3: Perceptions regarding resource availability are positively related to the entrepreneurial mindset of organizational members.	Not Supported
Ha 4: Perceptions regarding a supportive organizational structure are positively related to the entrepreneurial mindset of organizational members.	Supported
Ha 5: Perceptions regarding risk taking and failure tolerance are positively related to the entrepreneurial mindset of organizational members.	Supported
Ha 6: An entrepreneurial mindset in DoD organizations is positively related to the job satisfaction of organizational members.	Supported
Ha 7: An entrepreneurial mindset in DoD organizations is positively related to the perceived organizational contribution of organizational members.	Supported
Ha 8: An entrepreneurial mindset in DoD organizations is positively related to the affective commitment of organizational members.	Supported
Ha 9: An entrepreneurial mindset in DoD organizations is positively related to the normative commitment of organizational members.	Supported

Table 9. Summary of hypotheses test results (continued).

<i>Hypothesis</i>	<i>Result</i>
Ha 10: An entrepreneurial mindset in DoD organizations is positively related to the memory orientation among organizational members.	Supported
Ha 11: An entrepreneurial mindset in DoD organizations is positively related to overall organizational performance.	Supported

interesting finding considering leaders of DoD organizations may not have as much flexibility to influence rewards as their private-sector counterparts. Results also indicate management support of entrepreneurship in the sample organizations positively influences entrepreneurial behavior. This supports studies by Damanpour (1991) and Pearce et al. (1997), who argued that greater levels of entrepreneurial activity in organizations result from the willingness of management to facilitate and support this type of behavior. As expected, a positive link between a supportive organizational structure and entrepreneurial activity was discovered. This result is in line with findings by Zahra (1991) and Covin and Slevin (1991), whose studies found positive relationships between components of formal organization structures and entrepreneurial activity in organizations. Finally, results suggest that members of the sample organizations perceive an environment that advocates risk taking and is tolerant of failure. This supports similar findings by Jennings and Lumpkin (1989), who found entrepreneurial organizations encourage calculated risk taking and do not penalize team members when risky projects fail.

The hypothesis that predicted a positive link between resource availability and an entrepreneurial mindset in the sample organizations was not supported. The survey items that comprised the resource availability scale focused on the extent to which respondents feel they have time available for entrepreneurial activity. The results suggest that there is not a significant relationship between time availability and an entrepreneurial mindset in the sample organizations. This result is surprising, given previous studies that suggest a positive relationship between resource availability and entrepreneurial activity among organization members (Damanpour, 1991; Slevin and Covin, 1997).

The six hypotheses that predicted a positive relationship between an entrepreneurial mindset in the organizations and the outcome variables (job satisfaction, perceived organizational contribution, affective commitment, normative commitment, memory orientation, and overall organizational performance) were supported.

A positive link was found between an entrepreneurial mindset and job satisfaction, which is consistent with the extant literature (e.g. Hindle and Cutting, 2002; Cromie, 1998; Powell and Bimmerle, 1980). There was also a positive correlation between an entrepreneurial mindset and perceived organizational contribution, providing support for Shepherd and Krueger's (2002) suggestion that entrepreneurial activity is positively related to members' perceptions that their actions are desirable to the organization. The data supported both hypotheses that predicted a positive relationship between an entrepreneurial mindset and facets of organizational commitment, indicating participants feel greater emotional attachment to their organizations and a greater desire to remain with their organizations. This supports the findings of Mullins et al. (2001), who found an entrepreneurial climate led to increased levels of organizational commitment among employees. Results also indicate that memory orientation is positively affected by an entrepreneurial mindset. As noted in Chapter II, memory orientation is one of the key dimensions of organizational learning, which refers to organization-wide communication and knowledge sharing (Hult et al., 2000). The results support Slater and Narver's (1995) suggestion that entrepreneurship is a key piece of a foundation for organizational learning. Finally, the predicted positive relationship between an entrepreneurial mindset in DoD organizations and overall organizational performance was supported. This result is perhaps the best indicator of the potential

benefits associated with an entrepreneurial mindset in DoD organizations. Ultimately, leaders want to maximize the performance of their organizations. The results of this study suggest that leaders who instill an entrepreneurial mindset in their organizations may realize significant increases in levels of organizational performance.

The mediated regression analysis conducted to test whether an entrepreneurial mindset mediates the relationship between the antecedents and outcomes in this study revealed four cases where the requisite conditions for a significant mediating effect were met. Specifically, the results of this analysis indicated that an entrepreneurial mindset partially mediates the effect of the study's antecedent variables on four of the study's outcome variables: job satisfaction, affective commitment, memory orientation, and overall organizational performance. That is, an entrepreneurial mindset acts as a mechanism by which the organizational antecedents in this study influence job satisfaction, affective commitment, memory orientation, and overall organizational performance.

Benefits and Contributions

This study resulted in information that will provide senior leaders with insight into the factors that influence entrepreneurial activity in their organizations and the outcomes associated with these behaviors. Specifically, this research identified a positive link between four separate organizational characteristics and entrepreneurial behavior in the sample organizations. This research also found a positive relationship between entrepreneurial behavior in the organizations and six meaningful outcomes. These findings may provide a great source of information for our senior leaders looking for ways to maximize the performance of their organizations. That is, leaders who promote

and support the factors of an entrepreneurial mindset identified in this study may realize increased levels of positive outcomes that maximize organization performance.

Limitations

Although the results of this study are encouraging, there are several limitations. The primary limitation with this study deals with sampling bias. The sample organizations were chosen based on specific criteria that highlighted entrepreneurial DoD organizations. This sampling frame may be inherently biased by its nature and may not be an accurate representation of the population under study. The population is entrepreneurial DoD organizations. This sampling frame may not be representative because there may be a number of entrepreneurial DoD organizations that were not identified by this study. While this study's sample may have been appropriate for an exploratory study of an entrepreneurial mindset in DoD, future research should include a greater cross-section of DoD organizations in the sampling frame.

A second limitation of this study is the technical data error that affected the data collection and analysis. This technical error resulted in elimination of four questionnaire items, three of which focused on innovation, which was conceptualized as one of three key dimensions of an entrepreneurial mindset. Discarding the affected questionnaire items resulted in a scale that did not capture the entire domain of the entrepreneurial mindset as defined in this study.

Another limitation of this study deals with validity. As noted, this study relied upon previous research to establish the validity of the measures used in this research. All twelve scales used in the study were adopted from previously published studies that reported the validity and reliability of the scales. The sample size in this study precluded

use of factor analyses to confirm the construct validity of the scales and thus limits the validity of this study. Future research using these measures should attempt to generate larger sample sizes so confirmatory factor analyses can be conducted.

Recommendations for Future Research

Future research should improve on the limitations of this research effort. First, future researchers should attempt to replicate this study and address the sampling bias, eliminate technical data error, and test the validity of the scales. The sample could be improved by identifying and enlisting the participation of a greater cross-section of DoD organizations, not just those classified as innovative. It would be interesting to compare the results of innovative and non-innovative organizations. The technical data error can be addressed by more closely monitoring survey responses as they are received or by reverting to a more traditional, pencil and paper survey. Finally, the validity issue can be improved by generating a large enough sample size that confirmatory factor analyses can be conducted.

Another recommendation for future research is to consider alternative antecedents and outcomes of an entrepreneurial mindset in DoD organizations. While this study presented and tested a conceptual model of entrepreneurship in DoD organizations, the researcher does not claim the model to be comprehensive. While the extant literature indicates the antecedents of entrepreneurial behavior in organizations converge around five distinct factors, additional significant factors may exist. This study examined six subjective outcomes, but many more exist. Future research may also include objective outcome measures applicable to DoD such as cost savings or cycle time.

Summary

The purpose of this study was to determine to what extent an entrepreneurial mindset exists in DoD organizations and to determine its antecedents and outcomes. The results indicated that the mindset existed in the sample organizations. In addition, this study identified a distinct set of factors that were perceived to positively influence an entrepreneurial mindset in the sample organizations and found positive relationships between this mindset and a number of meaningful outcomes. Military leaders can use the results of this research to promote a more entrepreneurial approach in their organizations as we continue our transformation process.

Appendix: Entrepreneurship in DoD Organizations Survey

A Study of Entrepreneurship in DoD Organizations

This study is designed to assess the extent to which innovative behaviors exist in your 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 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. If you would like to receive a summary of the results of this survey, contact Captain Christopher Wood 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 Christopher Wood using the contact information provided below.

Captain Christopher C. Wood
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INSTRUCTIONS

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

Section I PERCEPTIONS OF THE ORGANIZATION

We would like to understand how innovative you feel your organization and its leadership are. The following questions will help us do that. For each statement, please fill in the circle for the number that indicates the extent to which you agree the statement is true.

① Strongly Disagree	② Disagree	③ Neither Agree nor Disagree	④ Agree	⑤ Strongly Agree	
1. Individual risk takers are often recognized for their willingness to champion new projects, whether eventually successful or not.	①	②	③	④	⑤
2. I seldom have to follow the same work methods or steps for doing my major tasks from day to day.	①	②	③	④	⑤
3. I feel that I am always working with time constraints on my job.	①	②	③	④	⑤
4. Upper management is aware and very receptive to my ideas and suggestions.	①	②	③	④	⑤
5. In my organization, developing one's own ideas is encouraged for the improvement of the organization.	①	②	③	④	⑤
6. Many top managers have been known for their experience with the innovation process.	①	②	③	④	⑤
7. I have the freedom to decide what I do on my job.	①	②	③	④	⑤
8. My manager would tell his or her boss if my work was outstanding.	①	②	③	④	⑤
9. This organization provides the chance to do something that makes use of my abilities.	①	②	③	④	⑤
10. Promotion usually follows the development of new and innovative ideas.	①	②	③	④	⑤
11. There is little uncertainty in my job.	①	②	③	④	⑤
12. This organization provides freedom to use my own judgment.	①	②	③	④	⑤
13. I have much autonomy on my job and am left on my own to do my own work.	①	②	③	④	⑤

① Strongly Disagree	② Disagree	③ Neither Agree nor Disagree	④ Agree	⑤ Strongly Agree	
14. During the past three months, my work load was too heavy to spend time on developing new ideas.	①	②	③	④	⑤
15. There is considerable desire among people in the organization for generating new ideas without regard to crossing departmental or functional boundaries.	①	②	③	④	⑤
16. My supervisor will give me special recognition if my work performance is especially good.	①	②	③	④	⑤
17. My organization is quick to use improved work methods.	①	②	③	④	⑤
18. Senior managers encourage innovators to bend rules and rigid procedures in order to keep promising ideas on track.	①	②	③	④	⑤
19. The “doers” are allowed to make decisions on projects without going through elaborate justification and approval procedures.	①	②	③	④	⑤
20. It is basically my own responsibility to decide how my job gets done.	①	②	③	④	⑤
21. People are encouraged to talk to workers in other departments of this organization about ideas for new projects.	①	②	③	④	⑤
22. Money is often available to get new project ideas off the ground.	①	②	③	④	⑤
23. My job is structured so that I have very little time to think about wider organizational problems.	①	②	③	④	⑤
24. The term “risk taker” is considered a positive attribute for people in my work area.	①	②	③	④	⑤
25. This organization provides the chance to be creative and try my own methods of doing the job.	①	②	③	④	⑤
26. On my job I have no doubt of what is expected of me.	①	②	③	④	⑤
27. My organization is quick to use improved work methods that are developed by workers.	①	②	③	④	⑤
28. My supervisor will increase my job responsibilities if I am performing well in my job.	①	②	③	④	⑤
29. My co-workers and I always find time for long-term problem solving.	①	②	③	④	⑤
30. Harsh criticism and punishment result from mistakes made on the job	①	②	③	④	⑤

① Strongly Disagree	② Disagree	③ Neither Agree nor Disagree	④ Agree	⑤ Strongly Agree	
31. I always seem to have plenty of time to get everything done.	①	②	③	④	⑤
32. I almost always get to decide what I do on my job.	①	②	③	④	⑤
33. People are often encouraged to take calculated risks with new ideas around here.	①	②	③	④	⑤
34. I have just the right amount of time and work load to do everything well.	①	②	③	④	⑤
35. A worker with a good idea is often given free time to develop that idea.	①	②	③	④	⑤
36. There are several options within the organization for individuals to get financial support for their innovative projects and ideas.	①	②	③	④	⑤
37. My manager helps me get my work done by removing obstacles.	①	②	③	④	⑤
38. The rewards I receive are dependent upon my work on the job.	①	②	③	④	⑤
39. I feel that I am my own boss and do not have to double-check all of my decisions.	①	②	③	④	⑤
40. This organization supports many small and experimental projects realizing that some will undoubtedly fail.	①	②	③	④	⑤
41. My job description clearly specifies the standards of performance on which my job is evaluated.	①	②	③	④	⑤
42. In the past three months, I have always followed standard operating procedures or practices to do my major tasks.	①	②	③	④	⑤
43. I clearly know what level of work performance is expected from me in terms of amount, quality, and timeliness of output.	①	②	③	④	⑤

Questions number 44 through 52 have a different response format. Each statement has two anchor responses and a seven-point response scale. Please fill in the circle for the number that indicates your response given the 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.
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In this case, selecting **⑥** means you feel quite strongly that your organization favors allowing managers' operating styles to range freely from the very formal to the very informal.

44. *In general, the top managers of my organization favor...*

A strong emphasis on supporting tried and true services and/or business practices.	① ② ③ ④ ⑤ ⑥ ⑦	A strong emphasis on R&D, technological leadership, and innovation.
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45. *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.
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46. *Changes...*

In services and/or business practices have been mostly of a minor nature	① ② ③ ④ ⑤ ⑥ ⑦	In services and/or business practices have usually been quite dramatic.
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47. *My organization...*

Typically responds to actions which other organizations initiate.	① ② ③ ④ ⑤ ⑥ ⑦	Typically initiates actions which other organizations then respond to.
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48. *My organization...*

Is very seldom the first organization to introduce new administrative techniques, operating technologies and business practices.	① ② ③ ④ ⑤ ⑥ ⑦	Is very often the first organization to introduce new administrative techniques, operating technologies and business practices.
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49. *My organization...*

Typically seeks to avoid change preferring a "live-and-let-live" posture.	① ② ③ ④ ⑤ ⑥ ⑦	Typically adopts a very aggressive, "undo-the-status-quo" posture.
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50. *In general, the top managers of my organization have...*

A strong preference for low-risk projects (with normal and certain outcomes).

① ② ③ ④ ⑤ ⑥ ⑦

A strong preference for high-risk projects (with chances of very attractive outcomes).

51. *In general, the top managers of my organization believe that...*

It is best to explore options gradually via timid, incremental behavior.

① ② ③ ④ ⑤ ⑥ ⑦

Bold, wide-ranging acts are necessary to achieve the unit's objectives.

52. *When confronted with decision-making situations involving uncertainty, my organization's leadership...*

Typically adopts a cautious "wait-and-see" posture in order to minimize the probability of making costly decisions.

① ② ③ ④ ⑤ ⑥ ⑦

Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities.

Section II

GENERAL PERCEPTIONS OF YOUR JOB AND ORGANIZATION

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

① Strongly Disagree	② Disagree	③ Slightly Disagree	④ Neither Agree nor Disagree	⑤ Slightly Agree	⑥ Agree	⑦ Strongly Agree				
1. I do not feel emotionally attached to this organization				①	②	③	④	⑤	⑥	⑦
2. Organizational conversation keeps alive the lessons learned from history				①	②	③	④	⑤	⑥	⑦
3. I do not feel like part of the family at my organization.				①	②	③	④	⑤	⑥	⑦
4. I could be very happy to spend the rest of my career with this organization.				①	②	③	④	⑤	⑥	⑦
5. In general, I don't like my job				①	②	③	④	⑤	⑥	⑦
6. All in all, I am satisfied with my job.				①	②	③	④	⑤	⑥	⑦
7. I encourage others to try new and more effective ways of doing their job.				①	②	③	④	⑤	⑥	⑦
8. I think that people these days move from company to company too often				①	②	③	④	⑤	⑥	⑦
9. I continue to look for new ways to improve the effectiveness of my work.				①	②	③	④	⑤	⑥	⑦
10. I think that I could easily become as attached to another organization as I am to this one				①	②	③	④	⑤	⑥	⑦
11. I do not feel a strong sense of belonging to my organization.				①	②	③	④	⑤	⑥	⑦
12. We audit unsuccessful organizational endeavors and communicate the lessons learned				①	②	③	④	⑤	⑥	⑦
13. We have specific mechanisms for sharing lessons learned in our organization.				①	②	③	④	⑤	⑥	⑦

① Strongly Disagree	② Disagree	③ Slightly Disagree	④ Neither Agree nor Disagree	⑤ Slightly Agree	⑥ Agree	⑦ Strongly Agree				
14. I make constructive suggestions to improve the overall functioning of my work group.				①	②	③	④	⑤	⑥	⑦
15. This organization has a great deal of personal meaning for me.				①	②	③	④	⑤	⑥	⑦
16. Jumping from organization to organization does not seem at all unethical to me				①	②	③	④	⑤	⑥	⑦
17. In general, I like working here.				①	②	③	④	⑤	⑥	⑦
18. I really feel as if this organization's problems are my own.				①	②	③	④	⑤	⑥	⑦
19. I was taught to believe in the value of remaining loyal to the organization.				①	②	③	④	⑤	⑥	⑦
20. One of the major reasons I continue to work for the Air Force is that I believe that loyalty is important and therefore feel a sense of moral obligation to remain				①	②	③	④	⑤	⑥	⑦
21. Formal routines exist to uncover faulty assumptions about the organization.				①	②	③	④	⑤	⑥	⑦
22. I enjoy discussing my organization with people outside it.				①	②	③	④	⑤	⑥	⑦
23. Things were better in the days when people stayed with the organization for most of their careers.				①	②	③	④	⑤	⑥	⑦

For the final two questions, each statement has two anchor responses and a seven-point response scale. As with the questions you answered in Section I, above, please fill in the circle for the number that indicates your response given the statement.

24. Regarding our overall performance, during the <i>last year</i> , we...												
Performed poorly in general.				①	②	③	④	⑤	⑥	⑦	Performed excellent in general.	
25. 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 excellent relative to other organizations.	

Section III

BACKGROUND INFORMATION

This section contains items regarding your personal characteristics. These items are very important for statistical purposes. Respond to each item by typing your answer in the text box provided or using the drop down menu to select the appropriate response that best describes you.

1. What is your age? (Text box for age fill-in)
2. What is your gender? (Male/Female options)
3. What is your rank? (Enlisted/Officer/GS and number options will be listed in drop down menus)
4. How long have you been in your current organization (where organization is defined as SPO/Squadron/Directorate)? (Text box for years and month fill-ins)
5. How many layers of management separate you from the leader of your organization (where leader refers to SPO Director/Squadron Commander/Director)?

THANK YOU FOR PARTICIPATING

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Vita

Captain Christopher C. Wood was born in Ithaca, NY and graduated from Dryden High School in 1988. He enlisted in the Air Force in 1992 and was assigned to Yokota Air Base, Japan. Captain Wood received a Bachelor of Arts degree in Business and Management from the University of Maryland in 1996, received a Master of Arts degree in Economics from Temple University in 1999, and was commissioned upon completing Air Force Officer Training School in 2000.

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14. ABSTRACT Department of Defense (DoD) and Air Force senior leaders have called for transforming the way the military conducts business. One way to achieve this transformation is by promoting a more entrepreneurial approach. The purpose of this study was to determine to what extent an entrepreneurial mindset exists in DoD organizations and to identify key antecedents and outcomes associated with this mindset. An electronic survey was used to gather data from members of innovative DoD organizations. Descriptive statistics and correlation analysis were then used to assess the extent of an entrepreneurial mindset in the sample organizations and to identify key antecedents and outcomes. The results of this study show a high degree of an entrepreneurial mindset exists in the sample organizations and that appropriate use of rewards, management support, a supportive organizational structure, and risk taking and failure tolerance are key antecedents that positively influence this mindset. In addition, results show that an entrepreneurial mindset in the sample organizations is positively related to increased levels of job satisfaction, perceived organizational contribution, organizational commitment, memory orientation, and overall organizational performance. The results of this study provide senior leaders with a distinct set of factors they can promote and support in order to influence entrepreneurial behavior in their organizations. Further, this study shows that these factors may lead to positive outcomes that maximize organization performance.						
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