OUTCOME EXPECTANCY IN A UNITED STATES AIR FORCE (USAF) SYSTEM PROGRAM OFFICE (SPO): A CASE STUDY

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PREFACE

This study was conducted to provide new insight concerning outcome expectancy in the setting of a complex aerospace organization.

I sincerely thank my doctoral committee for guidance and support in the completion of this research, and Col. Dave Gothard and his staff for their tremendous support and cooperation by opening their organization to me.

I owe a special thank you to my wife, Marcia Weale Drew, and children, Lauren and Stephen Drew, for their patience, understanding, and support throughout this whole process. A special thanks is owed to my father, John J. Drew, for the love of learning he instilled in me.

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CHAPTER I

INTRODUCTION

> As Mackenzie set out for Driel once more, he was struck by the ambivalence of the thinking at Corps headquarters–and by the dilemma that created for him. Obviously the fate of the British 1st Airborne still hung in the balance. No one as yet had made any definite decisions. But what should he tell Urquhart? "After seeing the situation on both sides of the river," he says, "I was convinced a crossing from the south would not be successful and I could tell him that. Or, I could report, as I was told, that everyone was doing his best, that there would be a crossing and we should hold on. Which was better? Tell him that in my opinion there wasn't a chance in hell of anyone getting over? Or that help was on the way?" Mackenzie decided on the latter, for he felt it would help Urquhart "to keep people going if I put it that way." (Ryan, 1974, p. 540)

Understanding the thinking processes and perceptions of the human mind is a complex task. Comprehending the collective mind and motivations of those at work together is even more complex. The difficulty comes from numerous internal and external forces and dynamics bearing upon the individuals involved, their work team with which they work most closely, and the larger even more complex organization around them. This understanding is further complicated by myriad relationships and interrelationships that exist within and without the working environment itself. How one motivates individuals and their collective teams to achieve high levels of performance has been the subject of extensive academic and managerial inquiry. From this quest has come numerous theories, one of which is known as Expectancy Theory, which proposes that the strength of a tendency to behave in a certain manner depends on the strength of an

expectation that the action will result in a given outcome and on the attractiveness of that outcome to the individual. First identified by Victor Vroom (1964), the focus of Expectancy Theory is on three distinct links, effort to performance, performance to reward, and reward to personal goals. Each of these is explored herein and will be further defined. At the core of Vroom's theory is the belief that behavior results from conscious choices among alternatives made by individuals in order to maximize pleasure or minimize pain. The theory suggests that individuals consider various outcomes associated with various levels of performance, and choose the appropriate level of effort necessary to achieve the desired level of reward.

> Performance is also determined by the individual's expectation that desired outcomes will occur as a result of successful performance of the task, and this expectation is potentially independent of self-efficacy beliefs. Even if an individual believes he or she has the ability to perform the task (self-efficacy), he or she is less likely to persist if there is no expected association between performance and desired outcomes (outcome expectancy). (Riggs & Knight, 1994, p. 756)

Most of the current research regarding Expectancy Theory has been conducted at the individual level, and some intriguing lessons have been learned. For instance, individual level studies have suggested that the experience of personal success or failure in efforts to perform tasks has an effect on subsequent expectations concerning personal ability to perform future tasks (self-efficacy) and expectations that future performance of tasks will result in desirable outcomes (outcome expectancy) (Bandura, 1977, 1986; Bandura, Adams, & Beyer 1977; Cervone & Peak, 1986; Matthieu, Martineau, & Tannenbaum, 1993; Riggs & Knight, 1994). A team's historical record of performance may have a significant impact on whether its members believe their team possesses the ability to perform a given task. This belief, or disbelief, may find its origin in collective

efficacy issues wherein the team members do not possess a collective belief in their collective capability; or in outcome expectancy issues wherein the team members may believe in their collective capability, but experience has taught them that external factors may make successful performance attainable or unattainable. To further complicate matters, just as both can be considered independent from each other, both possess at least one common theme, the level of task persistence. It appears that both efficacy and expectancy have an effect on the level of effort an individual or team of individuals places towards task completion, and can have a tremendous effect on performance results (Bandura, 1986; Riggs & Knight, 1994).

A review of current work team related literature would convince the reader that limited conclusions can be drawn and that the results of any single research effort are highly dependent upon a wide variety of independent and interdependent variables. These make universal "truths" regarding conclusions on manipulating teams to increased performance elusive if not non-existent. Indeed, how one views the dynamics and performance of work teams as a whole seems to a large extent to be dependent on one's parallax and the context of the individual teams being examined. This approach recognizes what the author believes are at least two common themes in group performance and motivation related literature: that group development and cognitive processes are directly related to group effectiveness, and that these processes occur in myriad patterns (Miller, 1997).

This study focuses on a particular segment of the aerospace industry where complex organizational structures, relying on Integrated Product Teams (IPTs), are being called on for enhanced performance and increased output due to economic imperatives.

The individuals and work teams studied are from a highly complex and technical government aircraft logistics and engineering support organization. Further, the teams studied are integrated teams with their membership coming from several traditional aerospace fields and professional skill sets from within the same organization. In these cases an individual's reporting official may not be the team lead that is responsible for the bulk of that individual's time and effort. In fact, some of these teams are temporary, with individuals placed together for a time to accomplish a specific task, then disbanded only to be re-formed in different team patterns later. Such an ever-changing environment could make it difficult for teams to establish a history of success. Robbins (1983) defined organizational complexity as the degree of differentiation found within the organization. He distinguished horizontal differentiation, the degree of horizontal separation between units, from vertical differentiation, the depth of organizational hierarchy. He also added the dimension of spatial dispersion to account for organizations with geographically dispersed units. The organizational environment in which this study was conducted meets all of these standards of complexity.

In a recently released government publication the Federal Aviation Administration (FAA, 1998) called for needed changes to various human factors within the Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA), Department of Defense (DoD), and the academic and industrial agencies which support them. Key areas addressed were human-centered automation, selection and training, human performance assessment, information management and display, and bioaeronautics. In examining productivity, the report emphasized that in an environment where operating and support costs account for 80% of system life cycle cost expenditures

and 50% of that cost is directly attributable to the cost of people, no organization can afford to ignore the human aspect of performance. The report theorized that individual, team, and organizational issues directly impact both safety and efficiency in aviation. Thus, one of the FAA's main objectives is to identify the intrinsic characteristics of teams that determine performance of aviation tasks. The report clearly outlined future needs as being able to better understand, measure more effectively, and improve efficiency of teams in the areas of complacency, workload, situational awareness, judgment, decision-making, and overall individual and team performance.

Statement of the Problem

Today's complex organizations rely more on the effectiveness of technologically advanced, high performance individuals and work teams than ever before. It is imperative that organizations and their leadership improve their understanding of individual and team perceptions and how they affect performance expectations and results. The National Plan for Civil Aviation Human Factors: An Initiative for Research and Application, theorized that "cognitive and interpersonal skills of individuals, characteristics of teams, and organizational factors directly shape the safety and efficiency of aviation operations" (FAA, 1998, p. 15.). A considerable amount of research and literature has addressed the role of personal outcome expectancy as it relates to cognitive and interpersonal skills of individuals (Bandura, 1977, 1997; Durham, Knight, & Locke, 1997), but there remains a lack of field research into the role of outcome expectancy in complex organizations. Whereas most team research has been conducted using concocted teams in a laboratory, it cannot be certain whether the resulting findings can be attributed to natural teams within

working organizations (Guzzo & Shea, 1992). This study answers the call for more field research in this area and addresses the specific motivation and performance needs of a United States Air Force (USAF) System Program Office (SPO). (Levine & Moreland, 1990; McGrath, 1986; Shea & Guzzo, 1987)

Purpose

The purpose of this study was to examine one particular motivation theory of the work environment, outcome expectancy, as it operates within the context of a USAF SPO. Both personal and collective perceptions of outcome expectancy were measured for their relationship to team performance. Feedback was collected from members of the SPO in regards to three elements of Vroom's (1964) Expectancy Theory that addresses expectancy, instrumentality, and valence. Additionally, focus group responses, organizational documentation, archival records, interviews, and direct observation were used to triangulate findings and as a means to ensure construct validity (Levy, 1988; Yin, 1994). Special attention was applied to the complex organization and Integrated Product Team (IPT) environment of the SPO. This study strove to provide organizational leadership and researchers with insight regarding the role of outcome expectancy as it relates to organizational life and performance.

Research Questions

This case study strove to provide organizational leadership and researchers with insight regarding the role of outcome expectancy in an USAF SPO. In addition, it attempted to answer several primary questions in regard to the organization studied.

1. Does a relationship exist between personal expectancy and team performance?
2. Does a relationship exist between collective expectancy and team performance?
3. Do workers believe they and their fellow team members are giving their best efforts?
4. Do workers perceive that they and their teams are adequately rewarded for their achievements?
5. Do the rewards workers and their teams are receiving for achievements have value to them?

Assumptions and Limitations

Several assumptions were made in this study. First, the subject organization was generally representative of complex organizations with limited external, outcome-based performance measures and complicated integrated team structures as frequently found in the aerospace-industrial complex. Second, each team of the organization possessed a set of goals or otherwise stated performance expectations (formal or informal) to which each team aspires. Third, management felt improvement of organizational effectiveness was needed, but that much of the human resource decision-making environment was beyond their control. Last, the tests given to the subjects were designed to measure individual perceptions, and were not an objective measure of the subject teams' performance. People often misperceive or misinterpret environmental characteristics and outcomes.

Nevertheless, "perceptions and evaluations of events are an important intervening link between environments and organizations' actions" (Child, 1972, p. 6).

There are a number of limitations to this study as well. The organization studied will be referred to in this research only as a System Program Office (SPO) due to the delicate nature of the work they perform. Access to the organization was not easily obtained and management expressed a number of concerns that were honored. Among these were time impacts on workers as subjects of the research. No specific parameters were set, but it was made clear that considerable discretion should be used. Since an employees' union was involved, management requested that the union be consulted prior to executing the survey. This was also done. Because the organization is a part of the United States Air Force, Air Force Instruction 36-2601, *Air Force Personnel Survey Program,* was also followed which placed further limits on data gathering. Finally, while every effort was made to collect input from all 125 members of the organization, some personnel were on business trips, some on vacation time or sick, and some simply chose not to respond (the union made it clear all responses were strictly voluntary).

While the subject organization is similar in many ways to other organizations, the results may not be readily generalized to the population of aerospace organizations. This is because management cultures and organizational structures in a field environment make controls over numerous variables extremely difficult if not impossible.

Definitions

The following are definitions of terms used in this study:

Aerospace Organization(s) - Organizations, industrial or government, whose primary role is the direct support of aircraft or aircraft program functions.

Complex Organization - The degree of differentiation found within the organization.

Group - For purposes of this study, group refers to a work team within the larger organizational context. It is used synonymously with team.

Collective Outcome Expectancy - The level of anticipated performance a group assigns to its own capabilities, given both internal and external factors.

Team - For purposes of this study, team refers to a work group within the larger organizational context. It is used synonymously with group.

Organization of the Study

Chapter I provides an introduction and rationale for this study. It includes a statement of the problem, purpose, research questions, assumptions and limitations, key definitions, and basic procedures for executing the study.

Chapter II provides an overview of the rather limited body of related literature available within the realm of outcome expectancy. This chapter examines current and past research in Expectancy Theory and its effect on team performance, the role and effects of organizational complexity, and various research issues critical to this study. It also describes the organization subject to this case study.

Chapter III explains the methodology used in the research and details instruments used, population studied, and methods used in gathering and analyzing data.

Chapter IV contains the specific findings of this research. Various tables are presented along with results.

Chapter V addresses conclusions drawn from the study, as well as recommendations for future research.

CHAPTER II

REVIEW OF LITERATURE

> [Sir Clowdisley] had been approached by a sailor, a member of the *Association's* crew, who claimed to have kept his own reckoning of the fleet's location during the whole cloudy passage. Such subversive navigation by an inferior was forbidden in the Royal Navy, as the unnamed seaman well knew. However, the danger appeared so enormous, by his calculations, that he risked his neck to make his concerns known to the officers. Admiral Shovell had the man hanged for mutiny on the spot . . . The flagship, the *Association*, struck first. She sank within minutes, drowning all hands. (Sobel, 1995, p. 12)

Today's leaders and managers of complex organizations demand insight into a vast array of problems associated with using and working with highly skilled teams and individuals. They need to better understand how to motivate them to higher levels of performance more than they need to hear of the latest management truths and theories. The teams they work with lie within the framework of a high involvement organization and require team members who are capable of self-management, self-direction, and self-control. These teams and their members must pursue dynamic organizational goals, be motivated towards high levels of task performance, and be focused on attaining and maintaining organization based personal competencies (Ford & Fottler, 1995; Gardner & Pierce, 1998; Lawler, 1992). This study focuses on three major aspects of this process within the life of a single complex organization. It examines the role of outcome expectancy as an application of the Expectancy Theory of motivation; it explores

expectancy from both individual and collective levels because teaming has become such a critical part of today's complex organizational environment; and it considers the impact and effects of organizational complexity on outcome expectancy. At the core of understanding expectancy is comprehending how people are motivated.

Review of Literature

Theories of Motivation

The proliferation of motivation and performance theories in recent years can be overwhelming without a clear understanding of how they are applied to the realities of organizational life. Expectancy Theory, the primary motivation theory addressed in this study, is but one of several motivation theories prevalent today. Two of the best known, Needs Hierarchy Theory and Motivation-Hygiene Theory, are commonly taught to all students of basic management motivation theory.

Needs Hierarchy Theory

The first, Needs Hierarchy, is best known by its main advocate Abraham Maslow and by his hierarchy of needs model. Maslow proposed a series of five needs, which must be met in sequence for the individual to achieve fulfillment. The needs were (1) physiological needs; (2) safety needs; (3) belonging needs; (4) esteem needs; and (5) self-actualization needs (Maslow, 1954, 1962). These he presents in the form of a pyramid diagram to imply that one, the top of the pyramid, self-actualization, is the goal or epitome of human endeavor; and two, the diagram represents a ladder on which the

climber must satisfy each lower level need before he or she ascends to the next higher need level. Some are quick to point out that the process of meeting needs is more iterative and less sequential (Kossen, 1981). Still, Maslow's model remains one of the foremost guides to understanding motivation in the fields of psychology and management.

Motivation-Maintenance Theory

The other most prominent theory of motivation comes from Frederick Herzberg (1966, 1976) and is known as the motivation-maintenance model. Herzberg's model is much more complex than related here, but part of it consists of a list of what he calls maintenance or hygiene factors. These are (1) company rules and policies (administration); (2) quality of supervision; (3) interpersonal relations with superiors, subordinates, and peers; (4) salary and certain types of employee benefits; and (5) working conditions and job security. These "dissatisfiers," which Herzberg calls them, can produce some satisfaction, but their primary role is their impact on dissatisfaction. He called them hygiene factors because they are environmental in nature. Herzberg concluded that these items are not motivators, and management should not expect to be able to motivate their employees to greater levels of productivity by simply improving on these factors (Haimon, Scott, & Conner, 1982).

Social Cognitive Theory

Maslow's and Herzberg's theories primarily focus on motivating the individual. A third, Social Cognitive Theory, is a theory of individual motivation often used when

addressing group motivated behavior (Bandura, 1989). There are two major variables which mold an individual's interactions within a team environment (Prussia & Kinicki, 1996). Input or context variables are environmental factors external to the team itself and over which the team has little control, and context variables which consist of task assignments, group structure, team membership, and the like. Process variables consist of the interpersonal relations and activities that occur within the team. Such variables might consist of intragroup communications and team cohesion. These are actions and attitudes over which the team has considerable control. Social Cognitive Theory proposes that context information affects three process mediators which in turn serve to motivate. The first is affective self-evaluations, which represent satisfaction with performance accomplishment, and dissatisfaction that drives the individual to exert greater effort. The second, personal goal setting, is the individual's ability to self-influence by personal challenge. The third variable, self-efficacy, describes the extent to which the individual believes he or she possesses the capability to successfully perform a specific task or behavior (Prussia & Kinicki, 1996).

Collective or group efficacy is different from the self-efficacy group members hold about themselves. Collective efficacy arises from group interaction and a process known as collective cognition. It is formed as members collectively acquire, store, manipulate, and exchange information regarding each other and their tasks, context, process, and previous performance (Gibson, 1996). However, each group remains unique and levels of collective efficacy will vary, even if a work team appears to be made up of individuals with similar skills, abilities, and resources (Campion, Medsker, & Higgs, 1993; Earley, 1993; Guzzo, Yost, Campbell, & Shea, 1993; Zander & Meadow, 1963).

The jury remains out on just how much influence collective efficacy has on performance. On the one hand, it is related to the level of effort a group expends, and has been shown to be a determinate of collective effectiveness (Campion, et al., 1993; Earley, 1993; Zaccaro, Blair, Peterson, & Zazanis, 1995). On the other, the relationship between collective efficacy beliefs and team performance has been observed as both modest and complex and evidently moderated by numerous other factors in the workplace (Campion, et al., 1993; Earley, 1993; Guzzo, et al., 1993; Parker, 1994; Prussia & Kinicki, 1996).

The first two motivation theories are important because they form the bedrock of managerial education for the past 30 years. Social cognitive theory is important because of the recurring theme of efficacy and its relationship to expectancy in much of the literature. In fact, the two constructs are seeing wide usage in a variety of fields. In one recent study of comparing the roles of efficacy to expectancy in curbing alcohol use by adolescents it was found that the combination of the two, as compared to each alone, was more accurate when trying to predict alcohol use (Flaga, 1999). The relationship remains complex.

Motivation and Inducement Systems

Leonard, Beauvais, and Scholl (1995) identify four types of inducement systems used by organizations to motivate employees, two of which are important to this study. The first of these is the Reward Inducement System which has traditionally been analyzed from a cognitive/instrumental perspective (Lawler, 1971). This system assumes to motivate increased effort leading to increased pay and addresses the instrumental value of pay to the worker. Pay represents an important form of social feedback that reinforces

positive self-concept and status. A pay increase serves to validate or enhance self-perceptions.

Hackman and Oldham (1976) support a Task Inducement System that relies on autonomy, task significance, feedback, task identity, and skill variety to motivate. In short, the employee performs the work because he or she finds it interesting or challenging. The significance of the work and one's contribution to its success are a very important motivating force. Goal internalization is the source of motivation when the individual recognizes the task's importance to fulfilling organizational or other intrinsic goals. This task system induces motivation from four sources: intrinsic process, internal and external self-concept, and goal internalization (Leonard, et al, 1995).

Outcome Expectancy

Expectancy Theory, also sometimes known as Valence-Instrumentality-Expectancy Theory, deals with the expectation that a certain outcome will result from one's level of effort. It emphasizes individual differences and explains how these individual goals and desires influence behavior. Humans are seen as thinking individuals who make conscious behavioral choices based on their expectations about the future. As the theory was originally constructed by Victor Vroom (1964), individuals use these conscious choices to either maximize pleasure or minimize pain. This becomes the motivation that drives productivity. The individual will consider the range of outcomes associated with a choice of behaviors (which translate into performance levels), and consciously select the behaviors that will result in the greatest reward for him or her

personally. The theory considers three different but related areas and how they impact motivation. These are expectancy, instrumentality, and valence.

There are a number of factors that contribute to an individuals' expectancy perceptions. Among them are the level of confidence in the skills required for the task; the amount of support expected from co-workers and management; the quality and quantity of resources (materials and personnel); the availability of needed and useful information; and previous success at performing work tasks. These factors are further complicated when viewed from a collective perspective. Because organizations rely increasingly on the effectiveness of work teams, it is important that leadership better understand and interpret team issues and perspectives as well as self-issues (Watson, Johnson, & Merritt, 1998). Therefore understanding how behaviors affect expectancy and viewing collective outcome expectancy from both an individual and team perspective become critical.

Task persistence plays an important role in team performance and is considered dependent upon self-efficacy and outcome expectancy (Bandura, 1986). Put simply, individuals and teams who believe they have the ability to succeed in performing a given task or tasks, are more likely to persist in the attempted performance, even when success does not come easily (Riggs & Knight, 1994). Gardner and Pierce (1998) suggest that organizations can stack the deck in their favor by taking approaches to hire individuals who already possess high generalized self-efficacy and/or self-esteem; provide these employees with clear roles, organizational support, and task specific training; and create opportunities for success. Organizations would do particularly well if management provided direct encouragement to employees, and if overall organization structure sent

signals of inherent trust by valuing employees as competent and contributing individuals. The underlying assumption is that individual and team experiences of success or failure directly affect subsequent expectations regarding both the ability to perform (efficacy) and their expectation that future performance will result in positive outcomes (outcome expectancy) (Bandura, 1977, 1986; Bandura, Adams, & Beyer, 1977; Cervone & Peake, 1986; Matthieu et al., 1993). From a purely human perspective, anything an organization can do to ensure success in the present will only enhance its ability to ensure success in subsequent attempts.

Outcome expectancy, like self-esteem and self-efficacy, is a personal belief with considerable theoretical impact on performance. These beliefs refer to personal judgments concerning the consequences that work performance is anticipated to produce. Successful performance may rely on the individual expectation that successful task co ccessful task performance. This expectation is potentially efs. This is because even if individuals and teams have a nlikely to persist if no relationship between tcomes is evident (Riggs & Knight, 1998). recognize that despite their best organization itself, may short

Work teams

rience. But

explicitly stated and accepted by team members, it becomes the team level of aspiration. In one study (Zander, 1977), team members showed more varied tendencies than individuals to react to unexpectedly poor performance by discrediting the abilities involved or the importance of successful performance in the first place. Members with higher success aspirations than their teams as a whole were most active in executing such behaviors. Two major findings resulted from this study. First, team members evaluated their own teams based on the discrepancy between the team's level of aspiration and actual performance. Second, teams and their members raised their level of aspiration following a performance that exceeded previously set levels of aspiration. Interestingly, teams were less optimistic following poor performance than were individuals.

How much impact does the team leader have? The team leader's role has been found to be limited to developing team tactics, but without significance to overall team performance through team goal setting or team efficacy (Durham, Knight, & Locke, 1997). This is not without exception. In instances where particularly charismatic leadership is present, the leader has been able to influence performance through team goals and efficacy, specifically through the use of leadership vision (Kirkpatrick & Locke, 1996). To once again delineate the three parts of Expectancy Theory, each should be briefly reviewed independent of the other.

Effort - Performance Link (Expectancy) – Expectancy addresses the perceived relationship between an individual's exerting a chosen amount of effort and the resulting level of performance. This provides the first level of expectancy and an effort-performance linkage. This effort-performance link is based on the probability perceived

by the individual that performing to a given level will result in an outcome desirable to that individual. Assuming no extenuating circumstances exist, a worker will be motivated to try to perform a task if the worker believes the task can be accomplished. Ratzberg (1999) identifies five factors that contribute to worker expectancy perceptions.

1. The worker's level of confidence in the skills required for the task.
2. The amount of support that may be expected from superiors and subordinates.
3. The quality of the materials and equipment.
4. The availability of pertinent information regarding the task.
5. The worker's previous success at the task or similar tasks.

Performance - Reward Link (Instrumentality) – Instrumentality is the extent to which the outcome of an individual's performance results in a desired outcome. This performance-reward link is key to understanding how workers perceive their efforts will be rewarded. If the worker is convinced that good task performance will be instrumental to achieve gratifying results, then the worker will place high value on performing well. Vroom (1964) refers to the process of joining one outcome (high performance) to another outcome (reward) as "linking." However, if organizational management is to successfully motivate their workforce, they must identify and link high employee performance to desired outcomes and communicate this throughout the organization. These desired outcomes, or positive valence, relate performance to more specific personal goals and serve to further enhance the instrumentality effect.

Rewards - Personal Goals Link (Valence) – The third element, valence, considers the extent to which the individual values the outcome. This represents a rewards-personal goals link. The term valence refers to largely emotional attachments individuals assign to outcomes in terms of rewards. This assumes that people have individual preferences as to the various outcomes that could result from high performance. An outcome is positively valent if an individual would prefer having it to not having it. Rewards that individuals would not like to receive, such as stress, are negatively valent. Workers will attempt to achieve the level of job performance they believe will serve their own overall best interests.

In the end, there will be no motivation for workers to perform well if any of these three conditions occur.

1. The worker does not believe he or she can perform the task.
2. The worker does not believe successful performance will result in a positive outcome.
3. The worker believes that the outcome resulting from successful performance will not possess value for him or her personally (negatively valent) (Ratzberg, 1999).

Collective Expectancy

Much of the research regarding expectancy has been conducted at the individual level. Any attempt to expand and apply this research to the team level is both difficult and complex. As stated earlier, group development and cognitive processes are directly related to group effectiveness, and these processes occur in myriad patterns (Miller,

1997). It is the "myriad patterns" that occur within the team environment that make applying individual level research to the group level difficult. Three of the many human factors that make a difference are team composition, interdependence among and between individual members, and cohesion, all of which are absent in the study of the individual. Team level goals are also important in that they demonstrate a positive relationship to team cohesion. These factors form a core of related issues that need to be considered when addressing the collective environment of teams. But before these are examined more closely, a few additional sources and effects of outcome expectancy should be examined.

Sources and Effects of Outcome Expectancy

It would appear that the greatest source of positive outcome expectancy is a history of success, and both positive and valuable reward. Riggs and Knight (1994) indicate that the positive experience of past success within a team of individuals is positively related to a number of key factors. Among these are positive beliefs about personal ability, positive beliefs about the ability of one's team, a positive link between individual performance and rewards, a positive link between team performance and team rewards, a feeling of overall work satisfaction, and increased organizational commitment. This effect is so powerful that the desire for success increases with each prior success. This was especially true in teams where group motivation was found to be more likely to increase after success than to decrease after failure (Zander, 1971, 1977). Performance results are not always readily available to individuals and teams, but in some cases feedback from a significant source can be just as effective. Nadler (1979) concluded that

positive or negative feedback on task performance could alter the individuals' levels of effort. Task persistence has been shown to be one direct outcome dependent upon outcome expectancy (Bandura, 1986). In fact, Cohen (1998) has recently demonstrated that at least in men, outcome expectancy can make an important contribution to predicting active coping behavior and depressed mood. The study, a comparison of the effect on men versus women, showed "no effect" for women.

It appears that outcome expectancy finds its primary source in a combination of historical precedence and present efficacy, can be a significant force for affecting levels of effort in individuals and teams, and demonstrates a potential for enhancing individual coping mechanisms. Now we will consider some of the other factors related to team life and expectancy.

Related Issues

Team Composition – The likelihood of a team performing at a level superior to the best individual increases when five conditions are met: the task has multiple parts; available information is shared among the members; the task is reasonably complex; interdependence among members is necessary to complete the task; and there is sufficient time for the team to process the available information (Durham, Knight, & Locke, 1997; Hill, 1982; Schmitt & Klimoski, 1991). The situation is further enhanced if teams possess a balance of role profiles across individual membership (Belbin, 1981, 1993). Unfortunately, even when teams possess these advantages, they still often fail to utilize all the resources of their members (Hill, 1982).

Interdependence – It has been demonstrated that productivity and achievement in teams are strongly affected by the level of interdependence existing among members (Johnson & Johnson, 1989; Johnson, Maruyama, Johnson, Nelson & Shaw, 1981). Two forms of interdependence are resource and goal interdependence. Positive resource interdependence motivates members to obtain resources from other members, but does not necessarily motivate them to give resources to others. Positive goal interdependence motivates members to assist other members because each benefits from the other's success. In a study conducted by Johnson and Johnson (1989), positive goal interdependence resulted in higher performance, and better retention and interteam transfer of learning than did positive resource interdependence.

Cohesion – One well established concept in group effectiveness literature is cohesion. Cartwright (1968) defined a cohesive group as one in which members were attracted to one another and desired to remain a part of the team. Cohesive teams were also characterized by a high degree of commitment to the group task (Goodman, Ravlin, & Schminke, 1987; Klein & Mulvey, 1995). Thus an important determinant of motivation is the psychological identification with the team (Riggs & Knight, 1994; Shamir, 1990). The nature of individual relationships between team members appears to be a critical factor in cohesion. Leiter and Maslach (1988) studied 52 members of a hospital staff and found that pleasant contact between co-workers related to high feelings of personal accomplishment. Decreased organizational commitment was also found related to unpleasant co-worker contact, but was unrelated to positive contact. Finally, employees with high organizational commitment were found to interact with those having similar

commitment and possessed high levels of personal accomplishment. In short, individual team members tend to like and evaluate positively others whom they believe reciprocate such feelings (Glaman, Jones, & Rozelle, 1996). Team cohesiveness is enhanced when the team is allowed to set team goals, even if formal organizational goals already exist. Team set goals are more likely to succeed because they respect collective expectancy and efficacy beliefs (Durham, Knight, & Locke, 1997).

The Effect of Goals – Locke and Latham (1996) revealed specific, difficult goals, if accepted by the team members and the team as a whole, lead to increased performance over easy goals or no goals. However, having specific, difficult goals may be worse than an easy or no goal situation if the team members do not clearly understand how to go about accomplishing them (Noel, 1997). Interestingly, other studies reported that nonsignificant or even negative relationships resulted between team goals and team performance when goals were too difficult or perceived as impossible (Forward & Zander, 1971; Stedry & Kay, 1964; Zander, Forward, & Albert, 1969; Zander & Newcomb, 1967). Too difficult goals often demand a strategy search, which may actually decrease performance on complex tasks (Earley, Connolly, & Ekegren, 1989; Huber, 1985; Locke & Latham, 1990).

Individual team member goals and overall team goals must not conflict for both to be reasonably attainable. It is important for individual team member goals to be set in such a way that their attainment facilitates the accomplishment of the team's goals. Setting too difficult individual goals can have a similar effect. Many tasks performed within a team are interdependent, and if difficult individual goals are attempted on an

interdependent task, poorer performance may result than when only group level goals are set, or no goals at all are used (Mitchell & Silver, 1990).

The System Program Office

It is important to understand the complex environment of the System Program Office and some of the culture wherein its employees work. There is no single organization chart that adequately reflects the true complexity of this particular organization, and so, no single chart exists. While the Department of Defense (DoD) continues to manage its personnel by functional system, the Integrated Product Team (IPT) environment with its task orientation makes workers uncertain about a number of issues important to them such as fair evaluations and opportunities for promotion. Other factors such as goal setting, goal acceptance, and goal communication, understanding core values, and employee compensation systems also impact employee motivations. Locke and Latham (1996) revealed specific, difficult goals, if accepted by the team members and the team as a whole, lead to increased performance over easy goals or no goals. It is therefore important to examine the organization's use of goals. Core values are a key issue receiving a great deal of attention by senior Air Force leadership. What are the core values and do they have meaning for the workers? Finally, what are the forms and methods of compensation and reward currently in existence within and without the organization? First, one needs to understand how the SPO is structured.

Organization Structure

The SPO structure is aligned with the general IPT structure previously addressed. While some flexibility is allowed by the Air Force, the organization is required to have both a functional and IPT structure simultaneously. The organization's IPT structure is shown in Figure 1. The individuals and teams on the left half of the chart (white) are part of the "Air Vehicle Team" that provides direct engineering support to the aircraft. This includes the "Senior Manager IPT" who manages this portion from another state and possesses her own additional staff at that location. The "Deputy Manager IPT" is her on-site manager, and also performs a functional role as overall organization (IPT and Functional) Assistant Manager of the SPO. IPTs A through G represent various teams designed to address specific aircraft functionalities such as airframe and avionics. Within each of these engineering teams are individuals "matrixed" from the functional organization. Such individuals will serve the team lead in the conduct of their daily tasks, but responsibility for reporting on their performance falls to their functional team lead.

On the right side of the chart (gray) lies the non-air vehicle IPTs such as finance and logistics integration. This includes IPTs H, I, and J, along with all their sub level teams and two non-organizational teams serving within the same facility. In addition, there are a number of contractors working throughout the organization, which are not shown.

The functional organization did not have a formal organization chart according to the SPO's Human Resource Manager, but was recorded only in terms of who reports to whom for performance evaluation purposes. The functional organization has assigned managers

who are responsible for all workers with a specific job title such as logistician, engineer, program manager, equipment specialist, or item manager. These managers generally knew who their "people" were, but were not always directly familiar with their performance.

The SPO is managed by an Air Force Colonel who reports directly to another Colonel, called a System Program Director, who works in another state. The SPO workforce is largely civilian with only 6 of 125 employees being military.

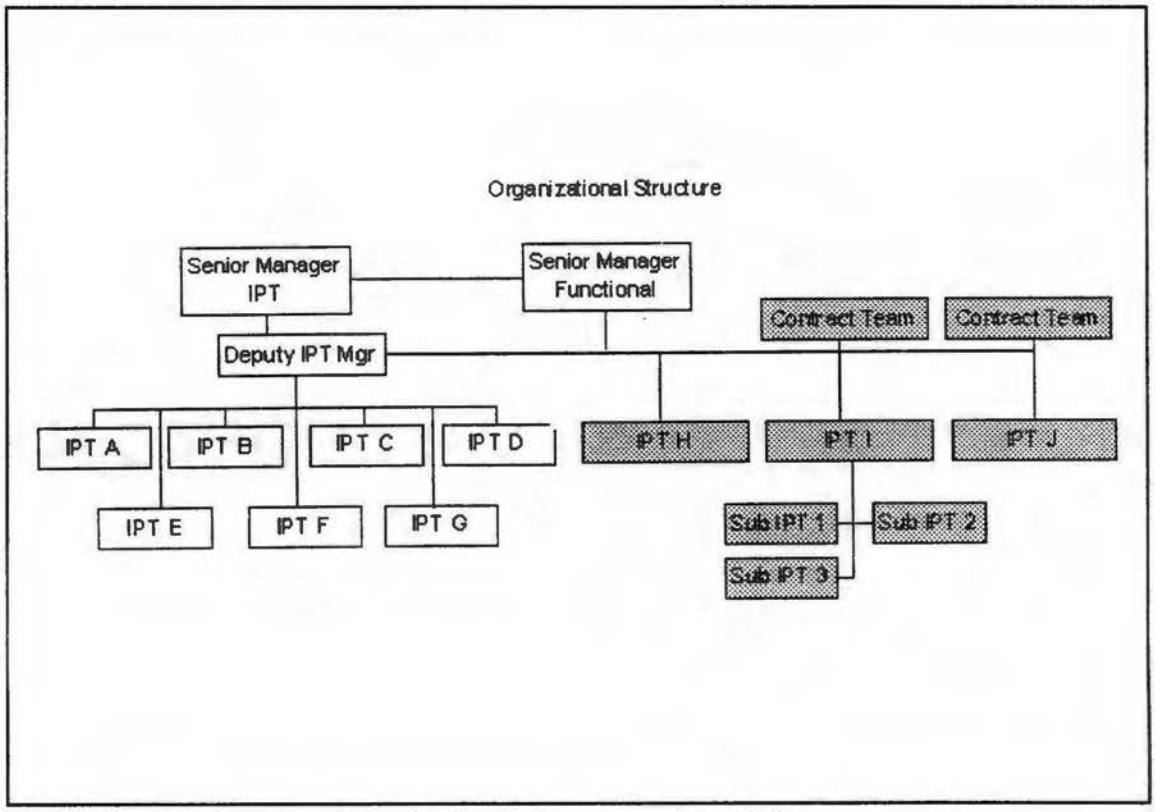

Figure 1. Organizational Structure of the SPO.

If this is difficult to understand, it is the complex organizational environment in which this study was conducted.

The Integrated Product Team (IPT) Environment

All acquisition organizations under the direction of the Secretary of Defense must structure themselves in accordance with what is known as the Integrated Product Team (IPT) environment. While the organization that is subject to this case study would meet the criteria of complexity without this environment, it is the IPT nature that further complicates matters.

The Department of Defense (DoD) supports a variety of processes required to support its primary purpose of war fighting, one of which is the acquisition process in which the DoD acquires goods and services. Included in this process is the acquisition of aircraft and aircraft parts and support. In 1995, the DoD mandated that all such organizations initiate Integrated Product and Process Development (IPPD) as a formal means for business management. IPPD had been used for several years by industry, and the DoD decided to attempt to replicate it in a military environment by means of a directive. Simply put, the IPPD is a management technique that simultaneously integrates acquisition activities by using multidisciplinary teams (IPTs) to optimize design, manufacturing, business, and supportability processes. The IPTs organize to accomplish specific tasks and form the foundation of the IPPD process (DoD Guide to IPPD, 1996).

At this point, it is probably useful to let the DoD speak for itself on the subject of IPTs.

> Integrated Product Teams are cross-functional teams that are formed for the specific purpose of delivering a product for an external or internal customer. IPT members should have complementary skills and be committed to a common purpose, performance objectives, and approach for which they hold themselves mutually accountable. IPTs are the means through which IPPD is implemented. Members of an integrated product team represent technical, manufacturing, business, and support functions and organizations which are critical to developing, procuring and supporting the product. Having these functions represented concurrently permits teams to consider more and broader alternatives quickly, and in a broader context, enables better and faster decisions. Once on a team, the role of an IPT member changes from that of a member of a particular functional organization, who focuses on a given discipline, to that of a team member, who focuses on a product and its associated processes. Each individual should offer his/her expertise to the team as well as understand and respect the expertise available from other members of the team. Team members work together to achieve the team's objectives. (DoD Guide to IPPD, 1996, p. 1-7)

Additional guidelines specify that all functional disciplines influencing the product throughout its lifetime should be represented; a clear understanding of team goals, responsibilities, and authority be established among all IPT internal and external participants; and extra-IPT resource requirements for staffing, funding, and facilities be identified.

Popick and Sheard (1996) of Loral Federal Systems identified ten lessons learned from implementing IPTs over their five-year experience. These were: (1) strong upper management commitment is required to implement IPTs because opposition will occur; (2) three to six months after initiating IPTs, a high level of frustration will occur with a strong organizational desire to revert to earlier forms of management and, again, strong management is required to "stay the course"; (3) time must be taken to clearly define the IPT purpose, end products, customers, process and product measures, resources, and incentives; (4) the consensus decision-making procedure must be clearly defined if it is to

be used and if used, should be allowed to make some important decisions at various levels in the organization; (5) leadership and IPTs must define, record, and commit to the new roles and responsibilities which should be reviewed periodically; (6) IPT membership must recognize what work is best done by the team, sub-teams, and individuals; (7) establish formal mechanism for communication between IPTs and identify dependencies early; (8) provide IPTs training that defines a core of engineering, interpersonal, IPT methods, and project management skills; (9) engineers and managers need to recognize and adopt a different way of doing engineering; and (10) IPT approaches require integration into the overall system of management with focus on establishing IPT empowerment and how performance appraisals and rewards will be administered in the team environment. This last point is especially critical to understanding expectancy in the IPT environment.

The subject organization in this case study is made primarily of IPTs that serve as multidisciplinary teams to manage and integrate critical processes in aircraft development and support. IPTs are used by the SPO to address programmatic issues by integrating members from every organization involved with the aircraft to include its own members, Air Staff and Major Command representatives, users, suppliers, and contractors. Each similar organization deploys its use of IPTs in a different manner, this SPO choosing to use a method known as physical IPTs. A Coopers and Lybrand (1997) study concerning IPTs identified two issues with physical IPTs that are a factor in employee expectancy and performance. Quoting from the report:

> First, functional resources tend to be used inefficiently because they are distributed among numerous teams. An organization using physical IPTs will normally require more personnel than an organization using virtual

> IPTs. Many of the benchmarked programs stated they would like to implement expanded use of physical IPTs but they are unable to do so because of insufficient personnel.
>
> Second, individuals allocated to physical IPTs have no central pool of functional resources to turn to for guidance. When all personnel of a given function sit within a few feet of each other, the junior personnel can learn by observing the activities of experienced personnel working in the same area. Within the functional group, seeking guidance means talking to the individual sitting next to you, rather than walking down the hall to locate a functional peer in another physical IPT. (Coopers & Lybrand, 1997, p.15A)

The first issue identifies a growing problem within the SPO and throughout other similar programs. The number of people available to do the work continues to shrink while the workload on the individual increases. While nothing has yet been decided by Air Force level leadership, employees within the SPO are bracing for a potential 40% cut in the workforce over the next several years. No mention has been made of a corresponding cut to workload.

The second issue is equally troublesome. Not only do individuals have difficulty maintaining contact with their functional lead, but much of the work they do is not related to their functional area of expertise. Worse, the less experienced person might not have an experienced person to turn to "down the hall." Available training is limited. Most function specific training is managed by the air base, not the SPO, and the base uses a centralized training monitor to allocate employees for training sessions. These limited training opportunities must be shared by all on-base organizations requiring the training. The SPO maintains an internal newcomer orientation and contracts for some management information systems training. It also maintains a contractor operated training monitor whose function is to ensure SPO personnel are considered for training opportunities. In

the same Coopers & Lybrand (1997) it was recommended that the organization take four steps to improve training. These were:

1. develop internal training using existing expertise to make up for unavailable or unaffordable external training;
2. contract for Item Management expertise to train item managers;
3. foster mentoring programs within functional groups; and,
4. include training in contracts with suppliers whenever possible.

No matter how good the training or how effective the IPT, no organization can be effective without direction.

Organizational Goals

The SPO has established long- and short-term goals for itself. Among these goals are developing a plan for worker career development and progression, and determining what "elements make up taking care of people" (System Program Office, personal communications, April 5, 1999). SPO leadership recognized in 1999 that it had failed to achieve key human relations "top issues" in 1997 and 1998 and recommitted to achieving them. These were:

1. improve team-building efforts;
2. assist workers in career progression; and
3. enhance training.

In the words of the leadership, "we have failed to take care of people and need to increase human effectiveness, and work on leadership's people skills." Many other operational goals were established to aid the organization in its efforts, but these are not directly

germane to this study. All IPTs are required to develop and utilize goals, making them available to the workers; however, this action was not universally taken among IPTs. Still, organizational goals exist to serve the organization and its employees, not the other way around.

Organizational Values

Organizational leadership recognizes and espouses traditional Air Force "Core Values" which are "integrity first, service before self, and excellence in all we do" (United States Air Force Core Values, 1997, p. 1). Such values are consistent with the traditional military concept of mission first, then people. This is a concept that has proven very effective in time of war or crisis, but its utility among civilian workers in a peacetime setting may be unrealistic as sufficient motivation to achieve "excellence in all we do."

Many are willing to serve well with integrity, and strive to do excellent work, but workers have shown they expect more from their working experience.

Organizational Compensation and Rewards

The SPO possesses and utilizes a number of rewards for recognizing worker performance. Among the available in-house rewards are bonuses, promotions, time-off, employee-of-the-month and employee-of-the-quarter awards with the recipient's picture prominently displayed and a choice parking spot for the period, and others. These will be discussed in greater detail later. Other DoD rewards are also available. Among these are the Defense Certificate of Recognition for Acquisition Innovation, Defense Acquisition

Executive Certificate of Achievement, David Packard Excellence in Acquisition Award, and others. Leaders at all levels are held responsible for ensuring workers are appropriately recognized for their contributions to improving acquisition programs (DoD Policy Memorandum, 1999). In addition, the Air Force, the air base where the SPO is located, and other related organizations have various awards for which the workers could potentially qualify.

All of the civilian workers in this study qualify for pay and benefits in accordance with the General Schedule of the U.S. Office of Personnel Management (OPM, 2000). The quantity of pay, amount of sick leave and annual leave, health insurance, and other benefits are all a function of job grade held, level within that grade (steps 1-10), and length of service. The military pay and benefit system is different but will not be addressed in any detail since military workers comprise less than 5% of the total population investigated.

In 1997, the SPO contracted with Coopers & Lybrand to conduct a review of its people programs. Its recommendations were to strengthen the employee-of-the-month program, increase peer level involvement in the employee-of-the-month program, and communicate clear selection process to employees (Coopers & Lybrand, 1997). The organization seems to have followed this advice and has a viable employee-of-the-month program. More could possibly be done. Organizational leadership has made a concerted effort to acquire human relations training for its employees and has contracted with at least two training organizations over the past two years to assist workers in reaching their potential both at home and on the job. Employees seem to have appreciated these opportunities, but survey respondents did not specifically reference either of these events.

Complexity in the Organization

Organizational composition and complexity brings only increased difficulty to understanding expectancy in the workplace. In cases where team members are allowed to choose to which teams they belong, the motivations of the prospective team members seem to be the most significant characteristic in determining an individual's preference for a team (Ostgaard, 1998). This is important to recognize because Ostgaard's study showed that the structural characteristics of the team accounted for the greatest variance in both satisfaction and performance, and that the personal characteristics of the individual team members accounted for the most variance in team commitment. Most teams are not "self chosen" and are assembled by organizations largely on the basis of individual skills attained, past individual performance, and in some cases, a modicum of concern for individual personalities. Such is the case in the SPO. This concern for personalities may deserve greater attention than it has been afforded. Hecht (1997) identified five personality dimensions (agreeableness, conscientiousness, extroversion, neuroticism, and openness to experience), and measured these against team performance by composition. Her study concluded that mean to high trait level teams were positively related to overall team performance. Additional study seems to validate that both team personality and intelligence do influence group performance; however, intelligence is influenced to a lesser degree. Intelligence alone is not a reliable predictor of group performance, and teams scoring high in deliberation and assertiveness outperform groups scoring low in these two traits (Monteiro, 1998). Too much intelligence may in fact work against productivity in what has been termed the "Apollo Syndrome" (Belbin, 1981).

This term is used to describe the condition in which a person possesses an overly important view of his or her role within the team. The ensuing struggle between multiple team members with this condition can be disastrous and explains why some high performance teams with "high octane" members fail.

If the right mix of individuals is important to team performance, not measuring their skills in advance can be a recipe for failure. In a study of restructuring efforts effect on workers, Sotelo (1997) found that failure to assess worker skills to meet future needs in a restructuring environment impeded success. The result was an adversarial culture between management and workers that lasted years.

Finally, in today's environment of concerns regarding gender integration, does gender impact team performance positively or negatively? The answer is clearly dependent upon the circumstances as is so in most human relations issues. However, in a recent report by Drake (1997), worker behavior appears to be governed more by work defined roles than by gender roles.

No single mediator has had or will have a greater impact on team tactics and processes than technology. Advances in technology are challenging our concept of time and cognitive abilities to process and digest information in a dynamic environment. To develop a quality product that meets user needs and to perform within budget and program milestones, require the expertise and shared understandings of an intact multidisciplinary team in design decision making. Collaboratively team members need to communicate on solutions for integrated product development, from their different disciplinary perspectives (Finley, 1998). Extensive research in a variety of work contexts has shown the negative effect of designing and implementing technical solutions without

regard for the social systems that use them (Foushee, 1984; Trist & Bonforth, 1951). Anyone with access to or information about organizations deploying technical systems is certain to have heard of numerous examples where this is the case. Managers who are sensitive to the need for a proper fit between situational needs and applied technology have higher job performance ratings (Daft, Lengel, & Trevino, 1987). Using computers to aid communication can reduce travel time, but teams that interact in on-line computer discussions almost always take longer to complete tasks than do face-to-face groups (Kiesler, Zabrow, Moses, & Geller, 1985; McGuire, Kiesler, & Siegel, 1987; Siegel, Dubrowski, Kiesler, & McGuire, 1986; Weisland, 1992). In addition, members of computer mediated groups make considerably more errors in recording the team's answers or solutions than did members of face-to-face teams (Straus & McGrath, 1994). Computer mediated teams were less productive than face-to-face teams, and especially so when productivity was a priority or when available time was minimized. This was especially true for teams with highly interdependent tasks.

Conventional management science teaches that only one equilibrium state exists in a normal organization, and an unstable system results in organizational entropy. As such, small change will result in small results and large changes in large results. An organization's system will move it toward instability and a loss of control (Von Krough & Roos, 1995). The idea of being in charge is a core management belief, and an unpredictable reality only serves to frustrate. Managers hold one another technically and morally responsible for success and failure in their departments or organizations (Gabriel, 1996). While all this might make good management sense, it may not be the best environment for maximum performance.

Complexity theory brings together research on complex systems from a variety of disciplines and identifies characteristics common to similar systems. A complex system is a system in which a large number of agents interact with one another. The human body is one such example. Such systems are adaptive and do not simply respond, but evolve or learn. What makes human systems even more complex than other non-human systems is our ability to apply double-loop learning. All systems use single-loop learning to adapt to a changing environment, but double-loop systems not only learn and adapt, but they also question the underlying assumptions made in the learning process itself (Argyris & Schon, 1978; Schon, 1987; Stacey, 1993). This questioning of assumptions is key to understanding the chaotic nature of complexity.

The term "edge of chaos" is used to describe the point at which stability and instability coexist. Change and creativity are possible through the process of double-loop learning. It is an embattled area between disintegration and stagnation, wherein the organization can be at its most spontaneous and adaptive (Waldrop, 1992). The effects of this tension with traditional concepts of controlled management are just now being explored.

Research Issues

Strength and Accuracy of Self-Perceptions

Beliefs do not necessarily relate to facts or logic and they possess tremendous power. When one really believes in something, one will act in accordance with that belief, even if at great personal cost. Expectations are in fact beliefs and determine what you are

capable of doing, willing to do, and will do (Ratzberg, 1999). Individual dispositions or personalities can also bear on our actions. Underlying this approach are three assumptions. There are various and individual differences in ways of behaving, individual behaviors are somewhat stable over time, and individual behavior is somewhat consistent across situations (Leonard, Beauvais, & Scholl, 1999; Pervin, 1975). While some social scientists continue to argue for one or the other side of the nature/nurture debate, most accept an interactionist viewpoint that states that behavior is a function of both personal disposition and environment (Mitchell & James, 1989; Pervin, 1989). In this model, self-perceptions are formed through interacting with the given environment. If feedback is unambiguous, plentiful, and consistent, strongly held self-beliefs are formed. If feedback is ambiguous, lacking, or inconsistent, weakly held self-perceptions form (Cantor & Kihlstrom, 1985; Kihlstrom & Cantor, 1984; Kihlstrom, Albright, Klein, Cantor, Chew, & Niedenthal, 1988).

The accuracy of many self-perceptions could certainly be called into question. But with so much overwhelming power wielded by self-perception, would the accuracy of personal perception be a relevant measure in terms of individual and collective expectancy? Kolb (1984), in referring to personal development and growth, stated that it is the process of learning from experience that shapes and actualizes the development of our view of potential performance. Learning is a social process, and individual development is formed by our surrounding cultural system of social knowledge. The lessons we learn may not always be accurate, but they are the lessons we remember.

Issues With Researching Perceived Performance

Performance is defined for the purposes of this study in a manner consistent with that in social learning theory (Bandura, 1977, 1986). It consists of team members' perceptions of the teams and members' ability to perform in a manner essential to the team's function; and beliefs that previous success, both at the team and individual level, are contingent on the aforementioned performance. Team members' perceptions and experience appear to weigh heavily when interpreting the effects of success or failure. This experience contributes positively to beliefs concerning personal ability, beliefs concerning the team's ability, perceived links between individual performance and reward as well as team performance and reward, work satisfaction, and organizational commitment (Riggs & Knight, 1994). Group effectiveness can be said to be measured by both group-level variables and individual perceptions, motivators, and characteristics.

What causes are directly attributable to attaining successful performance in teams is hotly debated. One study conducted by Wagner and Gooding (1987) revealed that group size, task interdependence, task complexity, and performance standards provided few significant moderating effects between participation and performance. This study was a meta-analysis of 118 correlations from 70 separate studies. Perhaps the driving force toward task accomplishment lies not in such process variables, but rather in context variables such as performance feedback. Zander (1971, 1977) concluded that a team's desire for success increases after having experienced earlier success, and team motivation was discovered to be more likely to increase following success than decrease following failure. In short, the positive effects (positive feedback) from success spur the team on

toward higher expectations, but the negative effects (negative feedback) from failure do not necessarily contain the opposite effect. Nadler (1979) concluded that performance feedback affects team members in one of two ways: feedback produces motivational effects which alter members' level of effort, or it provides curing effects that provide strategies for group task performance. Peters and Waterman (1982) in their popular book *In Search of Excellence* discovered that managers who demanded high performance often achieved greater performance levels than those with lower performance expectations. In fact, their study showed that imposing high performance standards, even in the form of negative feedback, resulted in increased performance through its effect on team goals and effort. In another study, it was found that teams receiving negative feedback set higher goals for future performance and subsequently perform at higher levels than teams who received only positive feedback (Mesch, Fark, & Podsakoff, 1994). Teams provided negative normative feedback served the same purpose as high performance standards.

One recurring theme in the literature is the ability of teams to meet individual needs under certain circumstances, which seems to have an overall positive effect on performance. The very environment and dynamic of team membership often meets the individual needs of at least some members and results in improved output (Taylor, 1997; Peters, 1997; and Schultz, 1997). The factors involved are both internal and external with some having apparent advantages. Internal factors such as team membership and diversity, and external factors such as freedom and challenge had positive effects on performance, while external factors such as workload pressure and cultural barriers, and one internal factor, habitual routines, had negative effects (Greenstein, 1997).

Studies of Organizations

Most group research has been done using experimental groups in a laboratory environment. It is therefore uncertain that conclusions drawn are readily generalizable to the population of groups as a whole (Guzzo & Shea, 1992). The recent call for more empirical research has been significant (Levine & Mooreland, 1990; McGrath, 1986; Shea & Guzzo, 1987). The need is more than academic. In one review of air transport accidents between 1968-1970, it was found that 60 occurred in which a breakdown in crew (team) communication played a significant role (Cooper, White, & Lauber, 1979). Helping unique organizations solve unique organizational problems is a worthy endeavor, and lessons learned by other similar organizations are certainly worthwhile. Research in a variety of contexts has identified the potential negative consequences of designing highly technical systems while disregarding the social systems in which they are formed (Foushee, 1984; Trist & Banforth, 1951). Case studies of specific organizational structures and processes aid in understanding the complexity of such issues and are especially effective when combining qualitative and quantitative data and information.

CHAPTER III

METHODOLOGY

Overview

The purpose of this study was to examine one particular motivation theory of the work environment, outcome expectancy, as it operates within the context of a United States Air Force (USAF) System Program Office (SPO). Both personal and collective perceptions of outcome expectancy were measured for their relationship to performance. Perceptions were collected from members of the SPO in regards to three elements of Vroom's (1964) Expectancy Theory, which address expectancy, instrumentality, and valence. Additionally, focus group responses, organizational documentation, archival records, interviews, and direct observation were used to triangulate findings and as a means to ensure construct validity (Levy, 1988; Yin, 1994). Special attention was applied to the complex organization and Integrated Product Team (IPT) environment of the SPO. This study strove to provide organizational leadership and researchers with insight regarding the role of outcome expectancy as it exists within organizational life and performance.

The results of the findings are presented in terms of what Stake (1995) calls naturalistic generalization. The findings possess direct specific value to the studied organization, but they also provide value to others based on the harmonious relationship

between the reader's experience and the case study. Data generated by this case study is designed to "resonate experientially with a broad cross section of readers, thereby facilitating a greater understanding of the phenomenon" (Tellis, 1997, p. 2).

Research Methodology

The researcher used case study methodology to achieve these research aims (Feagin, Orum, & Sjoberg, 1991; Tellis, 1997; Yin, 1984). This method uses inductive data and information analysis procedures to investigate research questions. Its main feature is a continuing comparative analysis between various data collection methodologies.

Research Subject

The unit of analysis (USAF SPO) included a total individual population of 125 government employees, divided into nine working teams, and represented a moderate sized division of a government aerospace support organization operating in an Integrated Product Team (IPT) environment. In cases where work teams within the System Program Office (SPO) were studied, a team was defined as a unit of employees with a common identity and given a level of interdependence for the achievement of organizational performance goals. Each person provided a survey (125) possessed both functional and task assignments within the SPO.

Data Collection

Data for this research were gathered from three primary sources. Questionnaires were provided to the entire population and utilized a set of Likert-like scales and a set of narrative response survey questions. A focus group was conducted using eight randomly selected individuals stratified by IPT from the SPO. Finally, documentation, archival records, and reports from within the organization and its larger government context were reviewed and a variety of interviews and direct observations were made. Data was collected in order to address the following research questions:

1. Does a relationship exist between personal expectancy and team performance?
2. Does a relationship exist between collective expectancy and team performance?
3. Do workers believe they and their fellow team members are giving their best efforts?
4. Do workers perceive that they and their teams are adequately rewarded for their achievements?
5. Do the rewards workers and their teams are receiving for achievements have value to them?

The United States Air Force in general, and the SPO in particular, have made certain assumptions regarding what motivates employees and have designed a reward inducement system to support these assumptions. Addressing these questions will aid the SPO in understanding the strengths and weaknesses of its assumptions.

Research Instruments

First, a questionnaire with three measurements, using Likert-scaled items on one side of the questionnaire, was deployed. These interval scales were previously developed and used with only slight modification (Riggs & Knight, 1994; Riggs, 1989; Riggs, Warka, Babasa, Harcourt, & Hooker, 1994). Item responses could range from 1 to 6 and were anchored as follows: 1 = *strongly disagree*, 2 = *disagree*, 3 = *disagree somewhat*, 4 = *agree somewhat*, 5 = *agree*, and 6 = *strongly agree*. A 9-item Team Success-Failure scale, an 8-item Personal Outcome Expectancy scale, and a 6-item Team Outcome Expectancy scale were used. These previously used scales have demonstrated good internal consistency reliability (Cronback's alpha ranged from .81 to .87) and predictive validity with measures of subsequent performance variables in a pilot study (Riggs, 1989). In previous applications of the scales, Pearson correlation coefficients on two of the scales, Team Success-Failure scale not measured, ranged from .10 to .50 (Jex & Gudanowski, 1990; Riggs & Knight, 1994). The responses to these scales were used to address research questions one and two and establish if an expectancy-performance relationship exists in the organization.

On the other side of the questionnaire was a set of survey questions that were used to provide additional insight not achievable through the measured data alone. This process provided a means for collecting feedback on a number of issues across a broad spectrum of the organization while minimizing interference. The narrative questions were developed by the researcher and designed with the specific purpose of drawing out a broad range of responses. Colleagues, who were personally familiar with the subjects,

reviewed the questions for clarity. Five additional research experts were also asked to review the questionnaires to ensure the questions met research aims. Questions were also reviewed in advance by the subject organization's senior manager and the employees' union leader to ensure they considered the questions valid.

Questions on this side were:

1. Do you give your best efforts at work, and if not, why?
2. Of all the rewards you could receive in your current job, what would you define as the best reward you could receive?
3. When you do your best work and achieve your assigned goals, how are you rewarded?
4. Is your current job position and the rewards received adequately meeting your personal goals? If not, what would you do different?
5. When your team does its best work and achieves its assigned goals, how is the team rewarded?
6. If management were able to reward your team for outstanding performance in any way, what kind of reward would it be?
7. Are the others in your work team (as a whole) giving their best efforts at work? Why do you think this?
8. What did the last reward you receive for your work performance look like?
9. Think of the last time your team completed a project successfully. How were they rewarded?

Each individual in the SPO was tested independently. They were instructed that completion of the questionnaire constituted consent to use the information on the part of

the subject. Questionnaires were distributed and collected by a third party to ensure anonymity to the researcher. Subjects were encouraged to complete and return questionnaires by a promise to donate $1.00 to the organization's charity project for each completed questionnaire returned. Subjects were provided written instructions as to how to complete the survey and scales. Subjects were allowed to answer the questions in their spare time so as not to interfere with their normal work requirements.

The results of the Likert scales were analyzed for correlation between personal outcome expectancy and team performance, and collective outcome expectancy and team performance using a Pearson correlation coefficient. This was done to determine the significance of the relationship, and to specifically address research questions one and two.

The narrative responses to the questionnaire were compiled into generally similar responses for ease of anecdotal analysis. These questions were designed to mine information from the subjects regarding perceptions of expectancy, instrumentality, and valence as shown in Table I.

Each narrative response consisted of one to four concepts with each concept being anchored by a word or common group of words. For instance, question one asked if respondents gave their best efforts at work. Positive responses consisted of "yes," "absolutely," "always," and others. These responses were then grouped under the heading "Gives Best Effort."

TABLE I

QUESTION TO TOPIC CORRELATION

Question Number	Expectancy Effort-Performance	Instrumentality Performance-Reward	Valence Reward-Personal Goals
1	X		
2		X	X
3	X	X	
4			X
5	X	X	
6		X	
7	X		
8			X
9		X	

Of the nine narrative questions, six were selected for nonparametric testing of significance (one-dimensional Chi Square) because they met two criteria. Responses could be cleanly converted into nominal scales with appropriate categories, and each of the six questions addressed one of the three linkages in Expectancy Theory at either the personal or collective level. These responses address Personal Effort (Question One), Personal Reward (Question Eight), Personal Value (Question Four), Collective Effort (Question Seven), Collective Reward (Question Five), and Collective Value (Question Six). Expected frequencies were used that reflect an equal distribution across all categories since past data was not available. This establishes a null hypothesis that states no specific

preference exists in all six cases. One test, Collective Reward, possessed a single degree of freedom and Yates correction for continuity was employed.

Eight individuals were randomly selected from the organization, 6.4% of the total population, and a focus group meeting was held to allow for group interaction and increased insight into why certain opinions were held. Unlike most focus groups, this group met only once and most of the participants were familiar with one another. The event lasted one hour and notes were taken. Recording of any kind, audio or video, was prohibited due to security considerations. Reasons behind the research were given and findings to that point presented. No attempt was made to arrive at agreement, but participants were facilitated by the researcher to address expectancy, instrumentality, and valence issues within their organizational context. The researcher was careful to use scripted questions in order to control for potential bias.

A third information collection method was for the researcher to review myriad documents and reports that shed light on expectancy and organizational issues germane to the subject organization. A series of headquarters level management documents concerning human resource issues was reviewed and considered in interpreting employee's expectancy responses. Multiple discussions between the researcher and various subjects, both formal and informal, took place. The head of human resources for the SPO was interviewed to fill in gaps where the researcher was unable to source various kinds of personnel information considered important to this study. Because the SPO is "sensitive" in regards to national security, names of individuals contacted and certain kinds of personnel data will not be reflected in this study.

The Oklahoma State University Institutional Review Board reviewed and approved this research on March 7, 2000. Approval is in Appendix C.

CHAPTER IV

FINDINGS

Survey Results

A survey was provided to all 125 members of the SPO who possess both a functional and IPT assignment. The questionnaire explained the importance and purpose of the research and requested their cooperation and assistance. A total of 74 instruments were returned, which resulted in a 59.2% response rate. Approximately 20% of the staff were not available to complete the questionnaire in the three days it was offered. Management, due to potential interference with operations, permitted no second survey offering.

The questionnaire consisted of two parts. The first portion contained three Likert like scales designed to measure team success-failure beliefs, personal expectancy beliefs, and collective expectancy beliefs. Part Two of the survey consisted of nine questions designed to capture worker narratives related to the three levels of Expectancy Theory (expectancy, instrumentality, and valence).

In addition to the survey, a stratified random sampling (by Integrated Product Team or IPT) of nine employees were selected for participation in a one-hour focus group session. Of the nine selected, eight were able to participate. The researcher used a series of questions to prompt the participants and recorded their responses.

Part One: Success and Expectancy Correlations

The purpose of this portion of the survey was to correlate personal and collective expectancy beliefs to team performance beliefs. This was done to answer research questions one and two, and to establish the existence of an expectancy-performance relationship in the organization.

Personal Outcome Expectancy – Team Success-Failure – The relationship ($r = 0.50$) between personal outcome expectancy ($M = 30.73$, $SD = 8.69$) and team success-failure ($M = 43.33$, $SD = 7.17$), using a significance level of .05 for a directional test, df of 64, and a critical value of .2108, supports a positive, modest relationship exists between these two variables in this organization.

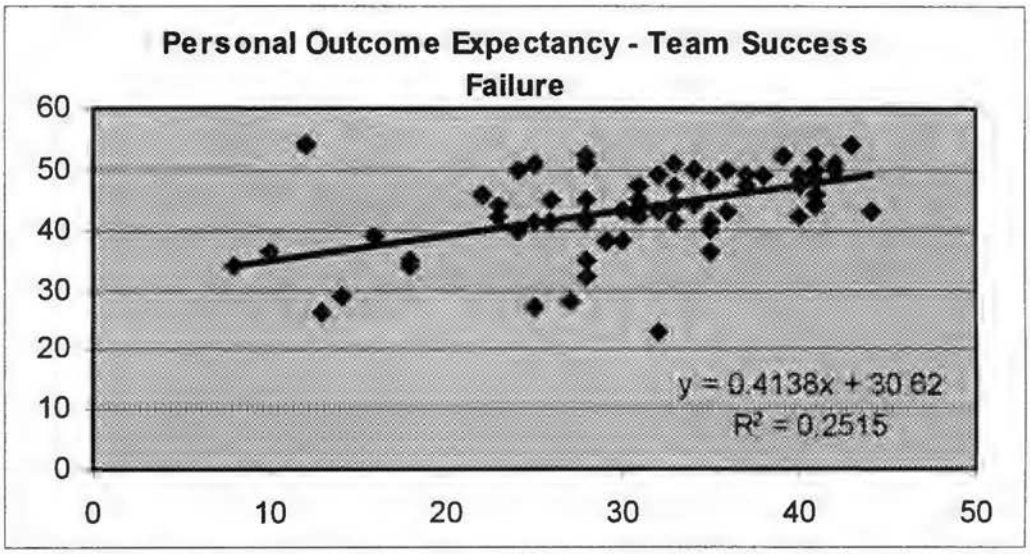

Figure 2. Personal Outcome Expectancy-Team Success Failure Scatter Plot.

Collective Outcome Expectancy – Team Success-Failure – The relationship (r = 0.56) between collective outcome expectancy (M = 31.21, SD = 4.26) and team success-failure (M = 43.23, SD = 7.04) using a significance level of .05 for a directional test, df of 69, and critical value of .2108, also supports a positive, modest relationship between these two variables in this organization.

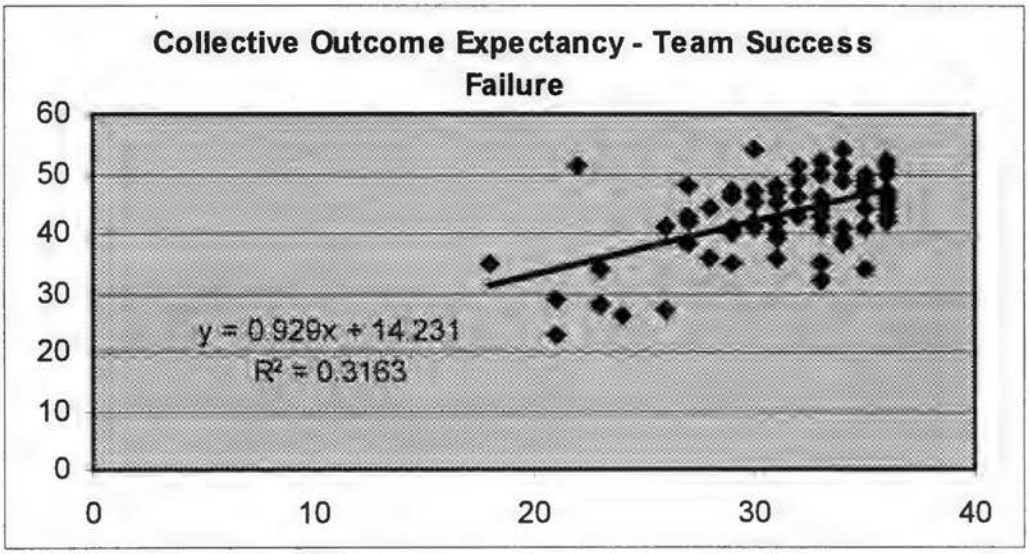

Figure 3. Collective Outcome Expectancy-Team Success Failure Scatter Plot.

The Box Plot graph (Figure 4) helps to further visualize the relation between the grouping and the variables.

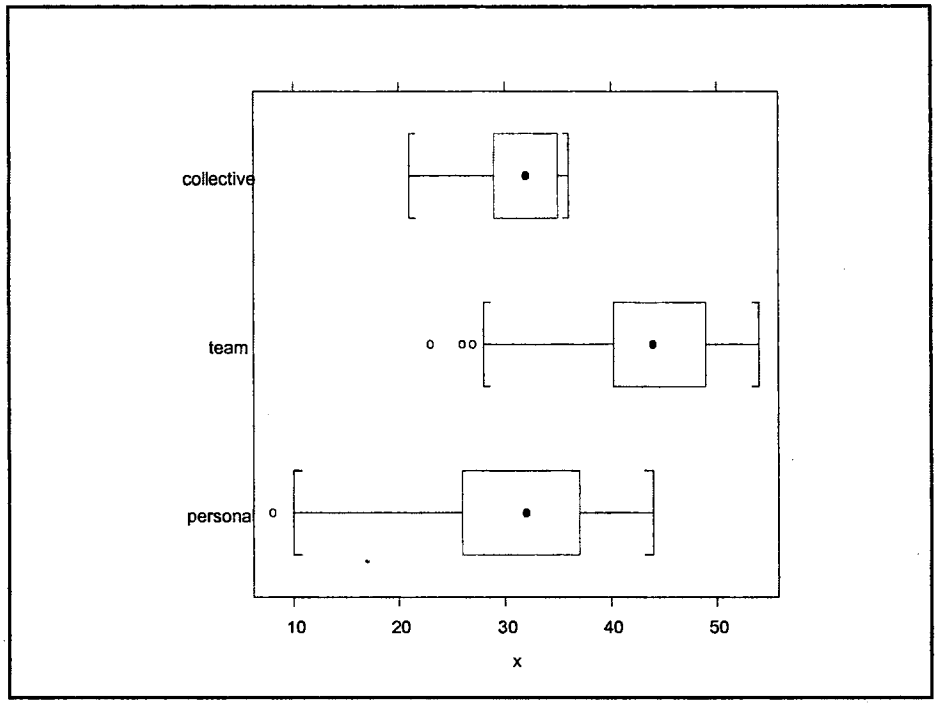

Figure 4. Box Plot.

Part Two: Narrative Responses

Narrative responses were solicited from nine questions on the survey instrument. The questions were designed to capture employee feedback regarding the three levels of Expectancy Theory. Questions one and seven addressed expectancy (effort – performance link). Questions three, five, eight, and nine related to instrumentality issues (performance – reward link). Questions two, four, and six addressed valence (award - personal goals or value link). The questions were related to team as well as individual issues.

Expectancy – Question One: "Do you give your best efforts at work, and if not, why?"

TABLE II

QUESTION ONE RESPONSES

Question 1	Personal Effort	Number
	Level of Effort	
Q101	Gives Best Effort	58
Q102	Sometimes Gives Best Effort	9
Q103	Does Not Give Best Effort	3
	Aids to Effort	
Q104	Integrity/Pride is Important to Giving Best Effort	8
Q105	Job has Intrinsic Value that Aids Doing Best Work	2
	Hindrances to Effort	
Q106	Others Lacking Integrity Hinders Ability to Give Best Effort	3
Q107	Work Overload Hinders Ability to Give Best Effort	3
Q108	Various Distractions Hinders Ability to Give Best Effort	2
Q109	Time Constraints Hinder Ability to Give Best Effort	1
Q110	Low Work Morale Hinders Ability to Give Best Effort	1
Q111	Lack of Training Hinders Ability to Give Best Effort	1
Q112	Working Outside of Job Category Hinders Giving Best Effort	1
Q113	Lack of Incentive Hinders Ability to Give Best Effort	1
Q114	Boredom Hinders Ability to Give Best Effort	1

Question Seven: "Are the others in your work team (as a whole) giving their best efforts at work? Why do you think this?"

TABLE III

QUESTION SEVEN RESPONSES

Question 7	Team Effort	Number
	Level of Effort	
Q701	Others Give Best Effort	37
Q702	Others Do Not Give Best Effort	15
Q703	Sometimes Others Give Best Effort	13
	Aids to Effort	
Q704	Integrity/Pride is Important to Giving Best Effort	7
Q705	Job has Intrinsic Value that Aids Doing Best Work	3
Q706	Good Teamwork Encourages Best Effort	3
	Hindrances to Effort	
Q707	Burnout Hinders Ability to Give Best Effort	5
Q708	Dysfunctional Workers Hinder Ability to Give Best Effort	5
Q709	Work Overload Hinders Ability to Give Best Effort	4
Q710	General Non-Productivity of Workforce Hinders	4
Q711	Others Lacking Integrity Hinders Ability to Give Best Effort	2
Q712	Lack of Training Hinders Ability to Give Best Effort	2
Q713	Poor Management	2
Q714	Boredom Hinders Ability to Give Best Effort	1

Instrumentality – Question Three: "When you do your best work and achieve your assigned goals, how are you rewarded?"

TABLE IV

QUESTION THREE RESPONSES

Question 3	How Rewarded	Number
	Positive Rewards	
Q301	Recognition/Praise	32
Q302	Money	11
Q303	Good Appraisals	7
Q304	Self-Satisfaction	6
Q305	Time-Off	6
Q306	Certificates/Letters	5
Q307	Respect of Co-Workers	2
Q308	Opportunity for Promotion	1
Q309	Taken to Lunch by Boss	1
Q310	Reward Nominations	1
	Negative Rewards	
Q311	No Rewards Received	20
Q312	Rewards Go to Others	2
Q313	Additional Work	1
Q314	Poor Appraisals	1

Question Five: "When your team does its best work and achieves its assigned goals, how is the team rewarded?"

TABLE V

QUESTION FIVE RESPONSES

Question 5	How is Team Rewarded	Number
	Positive Rewards	
Q501	Recognition/Praise	25
Q502	Time-Off	17
Q503	Letters/Certificates	10
Q504	Plaque	3
Q505	Boss Buys Lunch	2
Q506	Self-Satisfaction	2
Q507	Appraisals	1
Q508	Money	1
Q509	Promotions	1
Q510	Respect	1
Q511	Team Member of the Month	1
	Negative Rewards	
Q512	No Rewards Received	24
Q513	Rewards Go to Others	4

Question Eight: "What did the last reward you receive for your work performance look like?"

TABLE VI

QUESTION EIGHT RESPONSES

Question 8	How is the Individual Rewarded	Number
	Positive Rewards	
	Money	29
	s/Certificates	19
	Appraisals	8
		7
		3
		2
		2
		1

Question Nine: "Think of the last time your team completed a project successfully. How were they rewarded?"

TABLE VII

QUESTION NINE RESPONSES

Question 9	How is Team Rewarded (Most Recent)	Number
	Positive Rewards	
Q901	Praise	19
Q902	Time-Off	15
Q903	Letters/Certificates	14
Q904	Self-Satisfaction	2
Q905	Plaque	2
Q906	Boss Treated to Lunch	1
Q907	Nomination for Award	1
	Reward Nominations	
Q908	No Reward Given	24
Q909	Rewards only Given to Team Leads	2
Q910	Additional Work	2

Valence – Question Two: "Of all the rewards you could receive in your current job, what would you define as the best reward you could receive?"

TABLE VIII

QUESTION TWO RESPONSES

Question 2	Personal Reward Value	Number
	Direct Rewards	
Q201	Recognition/Praise	21
Q202	Advancement	19
Q203	Money	17
Q204	Time-Off	10
Q205	Fair Appraisal	10
Q206	Be Selected as Civilian of the Quarter	1
	Indirect Reward	
Q207	Achieve Personal Satisfaction	4
Q208	Achieve Work Proficiency	2
Q209	Receive Respect	2
Q210	Receive Training	2
Q211	Receive Management Support	1
Q212	Receive Fair Treatment	1
	Other Reward	
Q213	Leave the Organization	2
Q214	Have a Private Office	1
Q215	Have a Farewell Party	1
Q216	Ensure Nobody Dies	1
Q217	Fly the Aircraft	1

Question Four: "Is your current job position and the rewards received adequately meeting your personal goals? If not, what would you do different?"

TABLE IX

QUESTION FOUR RESPONSES

Question 4	Rewards to Personal Goals	Number
	Meeting Personal Goals	
Q401	Rewards Meet Personal Goals	31
Q402	Rewards Do Not Meet Personal Goals	24
Q403	Rewards Meet Some Personal Goals	5
	What Would Meet Personal Goals	
Q404	Promotion	5
Q405	Recognition/Praise	5
Q406	Money	4
Q407	Receive Reward Based on Performance	3
Q408	Leave Organization	3
Q409	Time-Off	2
Q410	Information on Promotion Requirements	2
Q411	More Voice in Decision Making	2
Q412	Opportunity to Utilize Individual Strengths	2
Q413	Work on Aircraft	2
Q414	Training	2
Q415	Consistency of Job Requirements	2
Q416	Travel	1
Q417	See End Results	1
Q418	Personal Satisfaction	1
Q419	More Stimulating Position	1
Q420	Retire	1
Q421	Understand Effort to Reward Relationship	1
Q422	No Rewards Would Meet Personal Goals	1

Question Six: "If management were able to reward your team for outstanding performance in any way, what kind of reward would it be?"

TABLE X

QUESTION SIX RESPONSES

Question 6	Team Reward Value	Number
	Direct Reward	
Q601	Time-Off	40
Q602	Recognition/Praise	21
Q603	Money	20
Q604	Letters/Certificates	11
Q605	Promotion	5
Q606	Team of the Quarter/Month	3
Q607	Lunch	2
Q608	Plaque	1
	Indirect Reward	
Q609	Training	2
Q610	Good Appraisals	1
Q611	Restructuring of Teams	1
Q612	Submission for Awards	1
	Other Reward	
Q613	Paid Trip to See Aircraft	1
Q614	All Team Members Receive Same Benefit	1

In addition to analyzing narratives using a word count technique to group responses, a one-dimensional Chi Square test of significance was conducted on six of the nine question responses because they met two criteria. Responses could be cleanly converted into nominal scales with appropriate categories, and each of the six questions addressed one of the three linkages in Expectancy Theory at either the personal or collective level. These responses address Personal Effort (Question One), Personal Reward (Question Eight), Personal Value (Question Four), Collective Effort (Question Seven), Collective Reward (Question Five), and Collective Value (Question Six). The null hypothesis in all six cases was that no specific preference exists among the variables.

Personal Effort was measured using Question One and resulted in $X^2 (2, \underline{N} = 71) = 67.29$, $\underline{p}<.05$.

TABLE XI

NUMBER OF WORKERS RESPONDING
QUESTION ONE

Personal Effort	Yes	Partial	No
Observed	56	11	4
Expected	23.67	23.67	23.67

Personal Rewards were identified by a variety of names, so the researcher grouped them into tangible, intangible, and no reward given categories. Question Eight was used to assess the significance of the responses. The results were $X^2 (2, \underline{N} = 72) = 73$, $\underline{p}<.05$.

TABLE XII

NUMBER OF WORKERS RESPONDING
QUESTION EIGHT

Personal Reward	Tangible	Intangible	None
Observed	58	4	10
Expected	24	24	24

Personal Value was a measure of whether the rewards received possessed personal value to the respondent. Test results indicated X^2 (2, $\underline{N}$ = 68) = 17.32, $\underline{p}$<.05.

TABLE XIII

NUMBER OF WORKERS RESPONDING
QUESTION FOUR

Personal Value	Yes	Neutral	No
Observed	34	7	27
Expected	22.67	22.67	22.67

Collective Effort was a measure of workers' perceptions regarding the efforts of their fellow workers. The test resulted in X^2 (2, $\underline{N}$ = 68) = 12.12, $\underline{p}$<.05.

TABLE XIV

NUMBER OF WORKERS RESPONDING
QUESTION SEVEN

Collective Effort	Yes	Partial	No
Observed	36	14	18
Expected	22.67	22.67	22.67

Collective Reward, unlike Personal Reward, was divided by the researcher into yes and no categories. Responses were much less specific and fell more clearly into these two categories. Test results indicated $X^2(2, N = 71) = 2.39$, $p > .05$. This was the only instance in which the results failed to reject the null hypothesis. Yates correction was used to correct for the single degree of freedom.

TABLE XV

NUMBER OF WORKERS RESPONDING
QUESTION FIVE

Collective Reward	Positive	Negative
Observed	42	29
Expected	35.5	35.5

Collective Value measured whether the reward teams received possessed personally perceived collective value to the respondent. Test results indicated X^2 (2, $\underline{N}$ = 99) = 11.02, $\underline{p}$<.05.

TABLE XVI

NUMBER OF WORKERS RESPONDING
QUESTION SIX

Collective Value	Money	Time-Off	Recognition	Other
Observed	21	39	19	20
Expected	24.75	24.75	24.75	24.75

Focus Group Results

The focus group was assembled to generate a free flow of ideas and concerns held by workers within the SPO in relation to employee expectations and motivation. The participants each read and signed a release form and were briefed regarding the nature of the research and their role in the focus group. All participants participated freely and the group met for just less than one hour. Prompting questions were used by the researcher to guide the discussion, but participants were left free to pursue issues as they arose.

Question: "In your view, what are some of the most important issues affecting the motivations and performance of government workers today?" The number one issue was pay. They felt that government workers traditionally traded pay for security, and that since

security was becoming a thing of the past, workers wanted to make up for the insecurity with increased pay. They perceived that their civilian counterparts (contractors) were better paid and this affected their motivation. One individual voiced the opinion that government and contract workers have similar frustrations, but that the trade-offs they make are different. This did not meet with general agreement. The group also stated that workers were concerned about more government jobs going to contractors. Another issue was raised by an individual concerning the organization's failure to recognize the Office of Primary Responsibility (OPR) or individual primarily responsible for a particular task. He felt that too many unqualified people questioned his authority and responsibility.

Question: "What about this organization, do similar issues exist here?" This brought a number of different issues to the table. Among them were insufficient direction, completing work that is requested by management and then not used, and having original work rewritten by management so that workers question why they wrote it in the first place. Most of the discussion centered on problems with the IPT structure and Integrated Weapon System Management (IWSM), the grandfather of the IPT. The SPO's IPT structure is actually part of a bigger organization with its headquarters in a different state. The SPO is also physically remote from its functional organization on the Air Force base and is often left out of the local functional infrastructure and activities. As a result, the SPO is a part of neither IPT nor functional decision making in regards to personnel issues. This split between the IPT organization seems to have caused significant disparity between the two. Along the same line, since IPT leads are not directly responsible in most cases for the people in their team (this task falls to the functional managers), they tend to be very task oriented and not interested in their team as individuals.

Question: "Do you believe it is possible for the average employee of this organization to see a direct correlation between their level of effort and performance outcomes?" The answer was a qualified "yes." Training was raised as one of the single greatest failings of the organization. People were left to figure things out on their own. Another issue was that no one is responsible for an entire task, making it difficult to place praise or blame. The group all believed that the majority of tasks were understaffed and workers overworked. This left little time for doing the things necessary for promotion.

Question: "If this same person is clearly meeting performance requirements, would they expect to receive corresponding rewards?" The answer was probably not. The group chose to address a number of hindrances to instrumentality. One offered that the reward for doing good work was more work. Another stated his displeasure with the appraisal system. One of the higher ranking individuals with experience giving awards added that there was too much paperwork and justification involved for managers to offer rewards from within the system. Countering this statement, a participant suggested that time-off was what he thought was an excellent benefit. Another said saying "good job" more often might be an adequate reward in many cases.

Question: "Using the same individual and assuming they are able to perform well and receive rewards for their performance, do you believe the rewards are meeting their personal goals?" The group chose not to answer this question. They did address the value of the Employee-of-the-Month and Quarter programs and felt they had value to people. They also recognized the potential negative impact to those not selected.

Question: "Do you see this effort-performance-reward differently in terms of team performance?" The group ran out of time before this question could be pursued at any

length. One participant stated she preferred team awards to individual awards because of its bonding effect. She felt the team needed to work together for them all to win as individuals.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to investigate outcome expectancy in a United States Air Force (USAF) System Program Office (SPO) using case study methodology. Personal and collective perceptions of outcome expectancy were measured for their relationship to team performance and feedback was collected from members of the SPO in regards to three elements of Vroom's (1964) Expectancy Theory that addresses expectancy, instrumentality, and valence. Other sources of information included focus group responses, organizational documentation, archival records, interviews, and direct observation, which were used to triangulate findings and their resulting interpretation. The Integrated Product Team (IPT) environment of the SPO was considered a significant context variable. This study was intended to provide organizational leadership and researchers with insight regarding the role of outcome expectancy as it relates to organizational life and performance.

Research Questions One and Two: Expectancy-Performance Relationship

The research appears to indicate that a modest relationship exists between workers expectancy beliefs and their team performance at both the personal and collective levels. The personal outcome expectancy and team success-failure scales reflected a correlation coefficient of $r = 0.50$, and the collective outcome expectancy and team success-failure scales resulted in $r = 0.56$. Two issues require consideration, the survey response rate and outlying responses. The response rate was considered acceptable because of the data gathering restrictions and number of workers normally absent during any consistent three day period. The researcher did detect that SPO workers, as a whole, have a general distrust for "personnel" surveys that promise to result in improvements that are commonly called "Quality of Life" issues. One such survey was recently given and all employees were required to respond. It is suspected that this bias may have somewhat affected the return rate. Outliers were reviewed and tested but were not found to have a significant effect on the correlations. No specific reason could be identified to account for these.

The Department of Defense (DoD) has introduced Integrated Product Teams (IPT's) into all of its acquisition organizations and has a considerable stake in their success (Schneider, 1997). Schneider calls for increased "IPT Effectiveness Surveys" to further identify needs and processes that could be measured and improved. The SPO is also interested in improving IPT effectiveness and has supported the assumptions made by Kaminski (1999) in his policy memorandum directing improved reward programs for

acquisition workers by means of enhanced employee recognition. Such directed programs are designed to improve motivation among workers (Raggio, 1998). The correlations indicated by this study seem to indicate that improving worker expectancy may result in only modest performance gains.

The variability reduction from personal to collective expectancy seen in these measurements could be a reflection of an increased group effect. Individuals within the SPO have a variety of personal concerns, such as lack of training, that effect their personal expectancy levels. When viewing themselves as part of a collective group, some of these concerns may be lessened.

By demonstrating that outcome expectancy may have only a modest relationship to performance, SPO leadership may consider other motivation factors and processes and improve programs designed to enhance the expectancy-performance relationship. Expectancy Theory appears to be an incomplete construct for explaining worker and team motivations in this organization. A closer look at the various elements of outcome expectancy provides a more complete view of expectancy's role in the organization.

Research Question Three: Work Effort Beliefs

The majority of workers believe that they and their fellow team members are giving their best efforts. They and their collective teams persist at their tasks even though some efficacy concerns remain, especially at the personal level. These concerns were revealed in the narrative responses received. Using a basic form of content analysis, it can be seen that respondents to the questionnaires used positive to negative response phrases on a ratio of 19:1. Collective level responses were much less one-sided at 2.5:1. The

difference could potentially be attributed to the fact that collective responses contained more neutral words, such as "sometimes," possibly indicating the respondent could think of at least one individual on their team that may not, in their opinion, have given their best effort. It is clear from the collective responses that hindrances to performance fall primarily on the perceived failings of other individuals. The most common phrases used to describe hindrances are "burnout," "dysfunctional," and "non-productive," with some blame going to work overload. Workers viewed their own best efforts as hindered by a lack of integrity in others and by work overload. Interestingly, both personal and collective responses favored words such as "integrity," "pride," and "values" to describe their reasons for putting forth effort. These responses become more important as one considers instrumentality and valence issues. The narrative responses were consistent with other observed data.

Personal Effort was measured for significance and resulted in $X^2(2, \underline{N} = 71) = 67.29$, $\underline{p}<.05$ indicating workers do have a preference in their beliefs. When viewed along with other qualitative considerations, it appears that most employees' believe they are applying considerable effort to their tasks.

Likewise, Collective Effort was measured using workers' perceptions regarding the efforts of their fellow workers. The test resulted in $X^2(2, \underline{N} = 68) = 12.12$, $\underline{p}<.05$, also indicating a preference in worker's beliefs; however, the result was much weaker than that at the personal level.

The effort-performance relationship is based on the probability perceived by the individual that performing to a given level will result in an outcome desirable to that

individual. Ratzberg (1999) identified five factors that contribute to worker expectancy perceptions.

1. The worker's level of confidence in the skills required for the task.
2. The amount of support that may be expected from superiors and subordinates.
3. The quality of the materials and equipment.
4. The availability of pertinent information regarding the task.
5. The worker's previous success at the task or similar tasks.

In the SPO, a lack of adequate training and access to training is cited repeatedly as a major systemic failing. Individuals are neither receiving nor able to acquire on their own the necessary training or information they need to perform their work. Despite their belief that they do their best, they are often ill equipped to perform well due to a lack of training. A paucity of functional mentors in the IPT environment further compounds this issue.

Considering the high level of collective expectancy in the survey ($M = 5.12$, $SD = 1.03$), it can be surmised that most workers count on the support of their immediate superiors and subordinates (survey scale is 1-6 with 6 being the highest possible score). While the IPT environment may confuse and conflict the personal and professional goals of the individual, most seem to believe that the work they do collectively is of significant value. This motivates the workers to at least try to perform their tasks, even if personal expectancy is marginal. The end result is that workers give effort to their tasks, even if the expectation of a positive outcome is marginal.

The unavailability of information issue is closely related to training. Much of the basic information needed to perform their jobs is not readily available and must be gathered from a variety of sources by the workers. Collaboration and interdependence among and between team members and between teams is also important to the workers in the IPTs (Johnson & Johnson, 1989; Johnson, et al, 1981). Despite the complexities of the organization and the functional dislocation of some employees, a level of collaboration and information sharing is taking place to facilitate the employee's performance expectancy beliefs. In fact, many of the employees complain about the amount of email they receive, an important information source, and worry that they may be missing pertinent information in the emails or wasting time on emails not applicable to them. One manager mentioned that his email regularly went unread and that he only viewed email from certain people. The SPO computer system contains an average of eight drives per system (mostly networked), each containing multiple files of information. Information overload may be as much of a problem for the worker as information access.

Research Question Four: Performance-Reward Beliefs

Many workers believe their performance is primarily rewarded by recognition and praise. As a whole, SPO employee expectancy of reward is modest, even though most claimed to give their best efforts at work. Collective level expectancy and team success are both high, yet rewards appear to remain moderate.

Instrumentality is the extent to which the outcome of an individual's performance results in a desired outcome. This performance-reward relationship is key to understanding how workers perceive their efforts will be rewarded.

Workers believe their performance is primarily rewarded by recognition and praise. As a whole, SPO employee expectancy of reward is modest, even though most claimed to give their best efforts at work. Collective level expectancy and team success are both high, yet rewards appear to remain moderate.

In testing Personal Reward for significance, the responses were grouped into tangible, intangible, and no reward given categories. The results were X^2 (2, $\underline{N}$ = 72) = 73, $\underline{p}$<.05 indicating workers possess a statistically significant preference in their perceived observations of reward. The data supports that most SPO employees believe the rewards they receive are tangible, consisting of things such as money and time-off. This in no way indicates a preference for tangible over intangible rewards. It does seem to indicate that most workers believe they are receiving a reward of some kind for their performance.

Collective Reward, unlike Personal Reward, was divided by the researcher into yes (rewards received) and no (rewards not received) categories. Test results indicated X^2 (2, $\underline{N}$ = 71) = 2.39, $\underline{p}$>.05. It appears that the observed difference was not statistically significant at the .05 level. The respondents were generally divided in their beliefs concerning whether they were or were not receiving rewards at the collective level. This is perhaps due to the fact that team level awards are provided less frequently (formally, at most once per quarter) and often rotated among the teams by management to appear equitable.

Employee performance, using the Expectancy Theory model, is best supported by a reward inducement system that relies on the instrumental value of pay to motivate worker performance (Lawler, 1971; Leonard et al., 1995). Indeed, the focus group identified pay as their number one issue and workers identified "money" as the most

common reward recently received. In a reward inducement system, pay would serve as a prime source of social feedback that would in turn reinforce self-esteem and self-concept. The SPO employee's expectancy in relation to pay and general compensation is modest, but the workers still attempt to give their best. Worker perceptions of lower than average pay and poor potential for advancement could affect positive social feedback necessary for this to occur. Instead, SPO workers look for more intrinsic or non-formal types of reward to provide this feedback and resulting motivation.

Perhaps the organization is benefiting from a secondary task inducement system as a primary motivator. The high level of activity and task specialization requires workers to work as autonomous actors. The end product of their work, a high visibility and technologically specialized aircraft, provides task significance. Their role as government agents and a measure of military esprit de corps helps form a collective identity. All of these appear to be internalized by SPO workers and serve to motivate despite modest tangible awards.

Research Question Five: Reward-Goals (Value) Beliefs

> The standard employee package of fixed salary, annual raises, health benefits and a company pension is giving way to more flexible, innovative rewards such as four-day work weeks, child-care and elder-care assistance, merit bonuses and stock options. Larger employers have gone further, setting up fitness centers, on-site day care, on-site physicians and dry cleaners. At Delray Beach, Fla.-based Office Depot, you can pick up dinner or an apple pie at the corporate cafeteria before heading home (Tamen, 2000).

One employee related that while being praised for completing an especially difficult task, he asked if he could fly the aircraft simulator as a reward. His IPT team

lead arranged for this to happen and the employee was ecstatic. How valuable was this reward to the employee? It is difficult to determine in terms of future employee performance, but this worker was clearly getting something of great value to him. As Tamen wrote, employees are looking for more than the traditional rewards of pay, vacation, and health insurance. The most common responses to the survey regarding desired rewards were recognition or praise, advancement, money, time-off, and a fair appraisal. When asked if rewards received were meeting their personal goals, the responses were split. The rewards individuals received and valued, also met their personal goals. But individuals were just as likely to not receive rewards that they valued. Team related goals valued time-off over the next most valuable reward, recognition, 2:1. It is possible that this response is natural considering individuals indicated they value time-off, and time-off was the second most commonly received reward at the team level after recognition. Personal goals identified were spread across 19 different categories indicating a wide range of personal valence. If most employees are giving their best effort and are able to perform their jobs even moderately well, and if rewards are modest at both the individual and team level, then the relationship between rewards and personal goals could be expected to be modest as well. Since this appears not to be the case, the job rewards and resulting motivations may come from other intangible or intrinsic rewards.

Personal Value was a measure of whether the rewards received possessed personal value to the respondent. Test results indicated X^2 (2, $\underline{N}$ = 68) = 17.32, $\underline{p}$<.05 signaling a statistically significant preference existed in the responses. This result should be carefully examined. The neutral responses were surprisingly low with the majority of responses polarized at yes and no, and these were close to an even split. One could interpret from

this that the tangible rewards being received are meeting roughly half the personal goals valued by workers.

Collective Value measured whether the rewards teams received possess personally perceived collective value to the respondents. Test results indicated X^2 (2, $\underline{N}$ = 99) = 11.02, $\underline{p}$<.05, a modest but statistically significant relationship. Workers possess preferences for the kinds of team-level rewards they receive.

Additional Lessons

This case study was conducted in a way that both change and understanding could be pursued at one time. As data and information were gathered about the organization, new changes were taking place that would certainly affect the perceptions and beliefs of both the 125 individuals involved and the researcher. For example, within three days of collecting the surveys, three individuals received "reduction in force" notices that would potentially eliminate their jobs within six months. The negative reaction throughout the staff was palpable. Had the survey been given a week later, it is possible that a number of different concerns may have been reflected in the data. Presented here is a series of basic contextual findings that are necessary to better understand the role of expectancy in the organization.

The SPO supports providing a variety of awards for individuals and teams. Criteria include overall exceptional job performance; strong dedication to mission support; initiative, imagination, and innovation; significant contribution to organizational goals; increased customer satisfaction; and positive impact to the program. As mentioned in Chapter II, the SPO is physically split into two unequal halves, the smaller portion residing in another state where the "big boss" resides. There is a perception among the

organization studied that the headquarters staff receives the preponderance of awards and recognition. In reviewing the winners of various formal awards over the past three years, it was discovered that only two of the 41 individual awards presented in 1997 and 1998 by the higher headquarters went to the subject SPO workers. In the first half of 1999, five of 13 awards went to the subject SPO's workers, two of which went to a single person. Worker perceptions that an inequity may exist in reward distribution may be supported.

The collective perception appears to be that the SPO staff will continue to shrink while the workload increases. Some see this as a sign to "bail out". While figures were not available, an increase in the amount of turnover in the past two years is noticeable. These stresses are certain to have a significant impact on worker and team performance.

The SPO, like most military organizations, is highly task oriented and structured in such a manner to maximize operational requirements. Research did not reveal any organizational, structural, or managerial activities or functions that would make it radically different from other similar organizations (Coopers & Lybrand, 1997). Organizational leadership is tough and demanding and requests high performance from all members of the organization, but expects varying levels of capability. They appear to take advantage of most common formal reward systems and have developed internal reward systems as well. The SPO manager regularly posts thank you notes on the local bulletin board, and both he and the assistant manager are quick to offer thanks for a job well done. Employees who regularly come in contact with senior management recognize that they will receive immediate verbal feedback, positive or negative. This serves to motivate these employees to action.

Unfortunately, worker responses seem to indicate that this feedback is not reaching their level. Workers and team leads cited workload and time constraints that leave little time for instructive feedback that is required for employees to adjust their efforts to performance requirements. Goals set by the SPO and subsequently by the IPTs go regularly unmet and are perhaps too generic or high level to be of much use to workers. Employees' requests for more reward in terms of praise or thanks is in reality a call for increased feedback. This research appears to indicate that the organization could benefit from improved communication of specific and achievable goals, and improved performance feedback at all levels.

It is critical for organizational leadership to understand team issues and motivators as well as they understand individual issues and motivators (Watson et al., 1998). In the SPO's complex IPT environment, team members must pursue dynamic goals, be motivated toward high task performance, and focus on attaining organization based personal competencies in order to ensure the aircraft they support continues a safe and operationally effective life (Ford & Fottler, 1995; Gardner & Pierce, 1998; Lawler, 1992). The study seems to indicate that high levels of team success and collective expectancy are present. Workers appear confident in their ability to perform work together in teams despite their difficult environment. They also appear to have a fair level of confidence in their co-worker's abilities. Individuals appear to be less confident and more vulnerable to a system in which they often lose their functional identity. One employee's request to have their job series updated so they can receive credit for work done was one of the more unique rewards desired, but it was not unusual. Employees repeatedly spoke of the need for better or more training. Still others expressed concern regarding low pay, job

security, and workload. The research seems to indicate that workers are comfortable with their role as team member, both at the IPT and organizational level, but are less certain in regard to their personal expectancy.

Riggs and Knight (1994) identified a history of success and positive and valuable reward as the two primary sources of outcome expectancy. The SPO has had many successes as part of a larger aircraft production and support organization that includes a number of contract, support, and operational organizations. However, successful work directly attributable to the SPO, apart from the rest of this organization of organizations, is difficult to quantify. The aircraft they support has a history of success, but the SPO worker knows he or she can claim only a portion of the credit. The complex and specialized nature of the worker's tasks further serve to distance individuals from their results. As for positive and valuable reward, SPO workers recognize that their work will produce only modest extrinsic reward. While they would like more pay and time-off, they don't expect it. In reviewing the questionnaire responses, one notices the number of employees who only receive or request praise in some form. This supports Zander's (1971, 1977) assertion that performance results may not always be readily available to individuals and their teams, but feedback from some credible source may be just as effective.

As for outcome expectancy's effects, perhaps the most valuable is expectancy's relationship to task persistence. Expectancy has been shown to have an effect on the level of effort an individual or team of individuals places towards task completion, and can have a tremendous effect on performance results (Bandura, 1986; Riggs & Knight, 1994). SPO workers' personal and collective expectancy levels appear to be sufficient to generate a level of task persistence necessary to meet performance requirements.

SPO workers seem to accept the complex environment in which they work. The IPT and functional dichotomy is a source of irritation and frustration for many, but most workers appear to have adapted. Sotelo (1997) warned that restructuring without assessing worker skills to meet future needs could negatively impact success. The IPT environment has been in place at the SPO and other similar agencies for a number of years now, but in the rush to implement this change touted as highly effective in terms of operational and technological benefits, some of the workers' needs may have been overlooked. Employees' primary concerns in this area fell within two categories, training and receiving a fair and accurate job appraisal.

The impact of organizational complexity appears moderate and serves primarily to frustrate workers' expectancy levels without too significant an impact on performance. The IPT environment serves as a context variable with limited effect. Process variables such as affective self-evaluation, personal goal setting, and self-efficacy, are largely independent of their context (Bandura, 1989, Prussia & Kinicki, 196). Nevertheless, organizational management should be aware of the expectancy (training) and instrumentality (fair and accurate appraisal) issues resulting from the worker's context.

Beck, Brokaw, and Kelmar (1997) wrote a report for the 1996-1997 Defense System Management College Military Research Fellows that specifically addressed the impact of the IPT entitled A Model for Leading Change: Making Acquisition Reform Work. In this report they review the factors that make implementing complex changes to organizational structures and systems successful, and one of the key ingredients is training. Workforce training is recognized as critical for enhancing effectiveness, and

attitude training may be just as important as skills training (Kotter, 1996; Tichy & Devanna, 1986; Want, 1995).

The other worker concern directly related to SPO complexity was receiving a fair appraisal. Some employees were clearly unhappy with their previous ratings, and several related that the individuals rating them were not, in their opinion, in a good position to be aware of all the employee was accomplishing and how well they were accomplishing it.

These two issues, training and fair job rating, affect expectancy at two levels. Training provides the employees with the skills they need to accomplish a given task and supports their effort-performance expectancy. A fair appraisal supports performance-reward expectancy and may even impact valence issues. Understanding that one will receive a fair rating for one's efforts serves to motivate if receiving a good appraisal and its resulting rewards has value to the individual being rated. In these two cases, training and fair appraisals, organizational complexity appears to be one factor hindering employee motivation.

Popick and Sheard (1996) in identifying ten lessons learned, while implementing IPTs, identified three that are particularly helpful to understanding the SPO organization. First, time must be taken to clearly define the IPT purpose, end products, customers, process and product measures, resources, and incentives. While this may have occurred early in the IPT implementation process, it may help the SPO to review these with their workers on a regular basis. Second, provide IPTs training that defines a core of engineering, interpersonal, IPT methods, and project management skills. Third, IPT approaches require integration into the overall system of management with focus on

establishing IPT empowerment and how performance appraisals and rewards will be administered in the team environment.

Intrinsic motivation has been shown to be important to overcoming modest expectancy levels. Examples of intrinsic outcomes are positive feelings of accomplishment or negative feelings of diminished self-esteem. Such outcomes occur immediately upon task performance and are self administered by the individual (Pinder, 1984). This would seem to support Kossen's (1981) supposition that Maslow's (1962) hierarchy of needs may be more iterative than sequential. Workers sought rewards at various levels of the hierarchy spectrum simultaneously, based on their personal requirements. Some of their reward came from tangible and intangible rewards available for distribution by the organization; other rewards were self-induced.

Conclusions

The expectancy theory of motivation requires workers to be capable of clearly perceiving a relationship between performance and outcome. Thus the goal of an organization's distributing rewards is to create a link to performance using employees' expectations. Management is then able to somewhat control worker behavior using the various rewards at their disposal, thus ensuring desired behaviors. The value of expectancy theory is two-fold. It emphasizes individual differences and explains how individual goals influence behavior, and it views humans as thinking individuals who make conscious choices and decisions based upon their expectations of the future.

Although personal and collective levels of expectancy were shown to have only a modest relationship to team performance, a closer look at the key elements of Expectancy

Theory as they operate in this organization seem to indicate other factors are at work. Employees perceive they and their teams are putting forth task effort, are at least moderately well rewarded for these efforts, and generally value the rewards they receive. The role of intrinsic forms of motivation, not a part of this study, seems to possess motivational power at least on a par with expectancy motivation and requires further investigation. The findings regarding management provided rewards seem to support Herzberg's (1966, 1976) contention that such rewards serve as dissatifiers because of their absence, but not as motivators. The findings also support Kossen's (1981) reinterpretation of Maslow's (1954, 1962) hierarchy of needs by indicating that a worker may seek higher order needs over lower order needs depending on their personal goals and values.

This study revealed that the tenets of expectancy theory are clearly at work in the subject organization. SPO workers are motivated to perform, have moderate expectations of reward, possess regard for their co-workers and their abilities, and, somewhat value the rewards they receive. They are aware of the effect operating within a complex context has on them, and its impact to their expectations.

The study also indicated that there are significant motivating factors in existence that are not accounted for by expectancy theory. Perhaps the theory's failing in this regard is that it relies too much on the cognitive aspects of the individual in making performance decisions. Expectancy theory was shown to be a useful context in which to study and understand the motivations of individuals in this organization, but it was not a complete context.

Recommendations

In order to improve the motivations of employees in this setting, management should implement corrections at all three expectancy levels. Enhanced training should improve employee confidence and build self- and collective efficacy, and result in improved performance levels. Improving the development, use, and communication of lower level goals would also assist in aiding the effort-performance linkage. Providing a current organizational matrix that identifies who's responsible for what would serve to assist employees in finding the right expert, and serve as a visible means for identifying individuals roles in the organization.

Although the organization has limited ability to change reporting and evaluation practices, efforts should be made to improve these relationships. Greater emphasis should be placed on identifying outstanding performance and rewarding quickly using small but more frequent tokens of appreciation. Monthly, quarterly, and annual reward systems are useful and appreciated by the recipients, but with 125 workers it is impossible to adequately acknowledge performance in a timely manner. For those inclined to receive more formal awards, information on selection requirements and processes would be useful tools.

Managers at all levels should seek to understand better the personal goals and aspirations of their employees. If not already in existence, management's career counseling should include an effort to outline personal goals as part of the evaluation process. When possible, leadership should seek to align rewards with personal goals. For

instance, a worker whose goal it is to achieve a promotion might be better served by being sent to a training class instead of a receiving a one-time bonus.

Future Study

This case study is not readily generalized to the population of all organizations. It does demonstrate expectancy theory at work in a single organization and some of the value and shortfalls of using expectancy theory as a method for understanding and interpreting employee motivation. While the open-ended narrative question responses were useful to understanding a broad range of feedback across the organization, the results were extremely difficult to quantify. Greater use of summated rating scales and more refined data gathering techniques would have aided in synthesizing the large amount of information gathered in this case study. Future researchers would be well advised to use a greater number of tools when approaching similar studies. Additional research in the field of organizational motivation is clearly required, as each organization possesses its own set of contexts and unique operational environments.

Future study should be conducted on a far greater scale with an aim toward improving leadership understanding of the complex motivational issues involved in the USAF acquisition system of organizations. An investigation across all SPOs could reveal trends independent of local management systems and leaders. Due to the large amount of documentation involved in this case study, the researcher recommends using content analysis software to capture a broader range of data and information, and deploy a form of action research to implement and test new motivational programs, as well as a number of additional, more formal information and data capturing techniques.

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APPENDIXES

APPENDIX A

AIR FORCE PERSONNEL SURVEY PROGRAM

BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 36-2601
1 FEBRUARY 1996

Personnel

AIR FORCE PERSONNEL SURVEY PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

OPR: HQ AFPC/DPSAS (Charles Hamilton) Certified by: HQ AFPC/DPS (Col Kenneth E. Roth)
Supersedes AFI 36-2601, 10 June 1994. Pages: 7
Distribution: F

This instruction provides guidance on approving and conducting attitude and opinion surveys within the Air Force. It implements Air Force Policy Directive (AFPD) 36-26, *Military Force Management*, and DoDI 1100.13, *Surveys of Department of Defense Personnel, Nov 9, 1978.* The program's objective is to assess the attitudes, opinions, and intentions of Air Force military and civilian members, their families, and retired members, using questionnaires, polls, and interviews. The program is structured to ensure individual responses are kept confidential and no adverse actions will result from an individual's response to an official Air Force survey. Do not issue supplements withouf advance approval of HQ Air Force Personnel Center, Customer Assistance Directorate, Survey Branch (HQ AFPC/DPSAS), 550 C Street West, Ste 35, Randolph AFB TX 78150-4737, and in accordance with AFI 37-160, volume 1, table 3.2, *Air Force Publications and Forms Management Program--Developing and Processing Publications.*

SUMMARY OF REVISIONS

This AFI supersedes AFI 36-2601, dated 10 June 1994. It more clearly delineates the scope of the Air Force survey program, modifies policy for public release of survey results, and provides survey review guidelines for survey developers. A | indicates revision from the previous edition.

1. Scope of the Program. HQ AFPC/DPSAS controls and approves all surveys, attitude and opinion polls, question-naires, and telephone interviews, except:

1.1. Occupational surveys which are assigned an Air Force Personnel Test number and controlled according to AFI 36-2623, *Occupational Analysis.*

1.2. Internal reporting requirements, including statistical, summary, or status information which must be licensed and approved with a Reports Control Symbol (RCS) number in accordance with AFI 37-124, *Management and Control of Information Reports Requirements.*

1.3. Surveys of course graduates, administered on-site, if the sole purpose is to ask about the course. Surveys administered after completion of course, and mailed to graduates or their supervisors, are subject to requirements outlined in paragraph **2.**

1.4. Official audit surveys conducted by the Air Force Audit Agency.

1.5. Surveys requiring Office of Management and Budget (OMB) approval (see paragraph **3.7.4.**).

1.6. Single-base surveys initiated by the installation or unit commander only on issues under his or her control (see paragraph **3.8.**).

2. Survey Request Procedures. To request survey approval, send the following information to HQ AFPC/DPSAS, 550 C Street West, Ste 35, Randolph AFB TX 78150-4737:

2.1. State the purpose and justification for the proposed research. (Include name of Air Force "sponsor" and how agency will benefit from the survey findings.)

2.2. Indicate how you will use the survey results.

2.3. Provide a point of contact, with telephone number.

2.4. Identify which population is of interest (pilots, engineers, and so on), how large the proposed sample size is, and how the sample will be selected.

2.5. Tell how you expect to collect the data, such as computer-administered survey, mail-out survey, personal interview, telephone interview, and so forth.

2.6. Provide a copy of the proposed data collection instrument (survey, interview guide, questionnaire, and so on).

2.7. Specify when and how often people will be surveyed.

3. Responsibilities:

3.1. All Personnel. Maintain strict confidentiality con-cerning the identity of individual survey respondents. Do not communicate, either verbally or in writing, information which could reasonably allow identification of individual survey respondents to any individual or agency, either within or outside the Air Force. Do not take any adverse or administrative action against an individual as a result of his or her responses to an official Air Force survey.

3.2. Headquarters United States Air Force/Deputy Chief of Staff, Personnel; Directorate of Military Personnel Policy (HQ USAF/DPX). Develops plans and policies for all Air Force Survey Programs within the scope of this instruction.

3.3. HQ AFPC/DPSAS:

3.3.1. Develops and implements procedures for survey operations including Department of Defense (DoD) surveys conducted within the Air Force under DoDI 1100.13.

3.3.2. Approves, evaluates, coordinates, develops, con-ducts, and analyzes attitude and opinion surveys.

3.3.3. Obtains coordination from AFPC/DPKO before approving any survey that includes civilians.

3.3.4. Advises Air Force organizations on surveys.

3.3.5. Coordinates computer processing of survey data from Air Force-wide surveys as requested by HQ USAF or the DoD.

3.3.6. Represents the Air Force on the Inter-Service Survey Coordinating Committee.

3.3.7. Develops standardized instruments for use by Air Force organizations (e.g., Organizational Climate Survey).

3.3.8. Ensures survey requesters are aware that all survey data collected are releasable to the public under the Freedom of Information Act (FOIA) (see paragraph **5.1.1.**).

3.4. Mission Support Squadron Commander (MSSQ/ CC) ensures the Military Personnel Flight (MPF) and the Civilian Personnel Flight (CPF) comply with this instruction.

3.5. MPF Chief appoints a survey control officer (SCO) to conduct or monitor attitude and opinion surveys and advises HQ AFPC/DPSAS, 550 C Street West, Ste 35, Randolph AFB TX 78150-4737 of the name, mailing address, and DSN. The SCO can be either a commissioned officer, a noncommissioned officer, or a civilian employee, GS-4 or higher, assigned to the Career Enhancement Element of the Customer Support Section.

3.6. Survey Control Officers (SCO):

3.6.1. Conduct or monitor HQ USAF and DoD surveys.

3.6.2. Process requests to conduct AFPC/DPSAS ap-proved surveys as detailed in paragraph **2.**

3.6.3. Process unauthorized surveys as explained in paragraph **4.**

3.7. Requesting Agencies/Individuals:

3.7.1. Discuss survey plans with HQ AFPC/DPSAS by telephone before developing a survey.

3.7.2. Follow Survey Development Guidelines at **Attachment 1** when developing a survey.

3.7.3. Before releasing an approved survey to be administered to civilian employees notify, as appropriate, the Civilian Personnel Officer at each participating CPF for labor union notification.

3.7.4. In accordance with AFI 37-124, forward any proposed survey requiring OMB approval to the Office of the Administrative Assistant for the Secretary of the Air Force, Information Management Policy Division (SAF/ AAIA), 1610 Air Force Pentagon, Washington DC 20330-1610, before administering them. The OMB must approve:

3.7.4.1. Federal government surveys of retirees' dependents.

3.7.4.2. Federal government surveys of government con-tractors and members of the general public.

3.7.4.3. Federal government surveys of retirees, and spouses and dependents of active duty personnel, that do not evaluate the effectiveness of existing, or the need for new, federal programs for military families.

3.8. Installation and Unit Commanders. Commanders do not need approval from HQ AFPC/DPSAS to conduct or release local surveys conducted only on a single base and covering only aspects of base activities that the commander has the authority to change. If the surveyed group includes Air Force civilians, the commander must coordinate with the Civilian Personnel Officer. If the survey includes questions beyond the scope of the commander's authority, such as satisfaction with pay or benefits,

forward the survey to HQ AFPC/ DPSAS for approval. Commanders will not permit any private individual or organization to conduct a poll, survey, or interview within their commands without specific authorization from HQ AFPC/DPSAS. If there is any question concerning the appropriateness of a survey, commanders should consult with the installation public affairs officer or HQ AFPC/DPSAS.

3.9. Survey Respondents. Respondents should answer surveys accurately and honestly to provide the best possible data for analysis. However, no classified information may be included in any answer to a personnel survey. Survey participation is voluntary and personnel should be encouraged, but not directed, to complete surveys.

4. Unauthorized Surveys. An unauthorized survey is a non-local survey that has been sent to an official Air Force address without the appropriate approval detailed in this instruction. All approved, non-local surveys show a current USAF survey control number (SCN), a reports control symbol (RCS), or an OMB number.

4.1. Personnel receiving an unauthorized survey will notify their MPF SCO or civilian personnel officer. MPF SCOs or civilian personnel officers should "hold" unauthorized surveys and call HQ AFPC/DPSAS to request further instructions.

4.2. Personnel receiving a survey at an address other than their Air Force duty address are neither encouraged nor discouraged from participating in the survey.

5. Releasing Survey Findings:

5.1. Public Release. Commanders who conducted or requested the survey may release surveys and survey results to the public or media by forwarding them through the unit Public Affairs (PA) office. However, commanders are not required to release surveys or survey results unless requested under the Freedom of Information Act. (See AFI 35-206, *Air Force Media Relations*.)

5.1.1. Freedom of Information Act (FOIA) Requests. Follow AFI 37-131,*Freedom of Information Act Program,* when a FOIA request for personnel survey results is received. Surveys and survey results may *not* be withheld under any category of FOIA exemption. AFPC may release survey results to the public for any surveys they conduct without obtaining survey requester approval.

5.2. Air Force-Internal Release. To increase the value of survey findings to the Air Force, AFPC may release findings from all AFPC-conducted surveys without original survey requester approval. Commanders are encouraged to share findings from their surveys with other Air Force offices.

6. Forms Prescribed. AF Form 1200, **Air Force Sample Survey Answer Sheet** (green), and AF Form 1239, **Air Force Sample Survey Answer Sheet** (blue). Order these forms through the Publishing Distribution Office (PDO).

EUGENE E. HABIGER, Lt General, USAF
DCS/Personnel

Attachment 1

SURVEY DEVELOPMENT GUIDELINES

A1.1. Public Releasability of Survey Findings:

A1.1.1. Do not ask any survey question not intended for public release.

A1.2. Impact of Public Release of Surveys:

A1.2.1. When developing a survey, treat each survey question as though its results will be released to the public. Consider the potential impact of public release on the following groups:

- Active duty personnel and their families.
- Air National Guard and Air Force Reserve members.
- Civilian employees.
- Service academy members.
- Reserve Officer Training Corps (ROTC) cadets and auxiliary.
- Retired military personnel and their families.
- Community organizations (including civic, trade, industrial, veterans, youth, ethnic, women, religious, environ-mental, and educational groups).
- The Congress.
- Local, state, and Federal Government officials.
- Professional organizations.
- Civic leaders.

A1.3. Survey Utility:

A1.3.1. Surveys must contribute significantly to the study of relevant Air Force policy or program issues.

A1.3.2. Do not conduct a survey merely to gather information, serve as a springboard for future research, or meet require-ments for award of an academic degree, etc.

A1.3.3. Do not conduct a survey unless the expected benefits to the Air Force of conducting the survey clearly outweigh the potential costs (e.g., negative publicity, damage to morale or readiness, time burden on respondents) associated with conducting the survey.

A1.4. Inappropriate Survey Topics:

A1.4.1. The following surveys must not be conducted:

- Surveys that might prove harmful to mission accomplishment if the results are disclosed to the public.
- Surveys covering areas of possible intelligence value.

A1.5. Potentially Inappropriate Survey Topics:

A1.5.1. Surveys will not normally be conducted on the following topics:

- Political views.
- Personality assessments of Air Force personnel.
- Knowledge or skill assessments of Air Force personnel.
- Opinions about specific individuals or their job performance.
- Any topic with responses categorized by ethnic group and/or sex.

A1.6. Respondent Anonymity:

A1.6.1. Only use administrative procedures which guarantee respondent anonymity.

A1.7. Survey Sampling:

A1.7.1. Surveys which include all members of a target population should not normally be used since sampling techniques provide valid and reliable information at greatly reduced costs and time burdens on Air Force personnel.

A1.7.2. Select an appropriate sample to ensure survey results represent the attitudes and opinions of the target population.

A1.7.3. Sample the minimum number of respondents necessary to reasonably achieve a satisfactory confidence interval. AFPC/ DPSAS can provide assistance in this area.

A1.8. Questionnaire Package, Format, and Structure:

A1.8.1. The cover letter or instructions should contain a statement that the survey is anonymous and that individual responses will be kept confidential, but summarized responses may be released to the public.

A1.8.2. If copyrighted scales, subscales, or questions are used, the requester must have permission from the authors (if required) to use the scales and cite the authors in any subsequent report or summary.

A1.8.3. Each topic area should be covered adequately.

A1.8.4. Questions should be in a logical sequence.

A1.8.5. If an optical scan answer sheet is to be used, the responses to the questionnaire must be able to fit on such a sheet. (The survey developer should obtain scanning support before the survey request is submitted.)

A1.8.6. The questionnaire should present a neat, professional appearance.

A1.9. Survey Questions:

A1.9.1. Questions must not be of a sensitive nature, objectionable, or in bad taste. Other types of questions that must not be asked are:

- Misleading questions
- "Loaded" or "entrapping" questions
- Questions which require an unreasonable amount of effort on the part of the respondent.

A1.9.2. Questions should be grammatically correct and easily understood by the respondents.

A1.10. Response Scales:

A1.10.1. Response scales should be balanced; (i.e., when positive and negative responses are called for, there should be equal numbers of responses on both sides of the neutral point, whether the neutral point is explicit or implied).

A1.10.2. Response scales should be complete, covering the full range of possible answers. An "I don't know," "None of the above," "N/A," or "Neither/Nor" response may be necessary.

A1.10.3. Responses should be mutually exclusive and, when covering a continuous variable such as time, weight, etc., should be exhaustive as well.

A1.10.4. If responses are scaled, anchor words should be used and imply a gradual increase or decrease in the factor of interest.

A1.10.5. Response options should be sensitive enough to provide usable data.

APPENDIX B

RESEARCH QUESTIONNAIRE

AND CONSENT FORM

RESEARCH QUESTIONNAIRE

What's This About?: The research being conducted is titled "An Empirical Investigation of Expectancy Theory in the Workplace: The Relationship Between Outcome Expectancy and Performance in a Complex Organization". This research is being conducted as part of the researcher's doctoral dissertation under the auspices of Oklahoma State University and has met the criteria of OSU's Institutional Review Board. In addition, this research has been approved by Col Gothard IAW AFI 36-2601, "Air Force Personnel Survey Program", the base Civilian Personnel Office, and the Government Employee's Union. The goal is to better understand the role and effect employee motivation has on performance in your workplace, and provide insight to management. If you have received one of these questionnaires, you have been identified as possessing a functional LAL designation, and are assigned to an Integrated Product Team. **For every questionnaire completed and returned, one dollar will be donated by the researcher to "Cloth-a-Kid".** Collection boxes have been placed beside the second floor exit and on the security desk in the first floor lobby. Your responses will be greatly appreciated.

Consent: Your response to these questions is strictly voluntary will be completely confidential. The color mark on the paper you use will identify the Integrated Product Team to which you belong. This is so that the researcher will be able to draw conclusions in regard to team related issues. No one but the researcher will be allowed access to your specific responses. Please fold the completed form in half and place in the box by the entry/exit door. Completion of this questionnaire constitutes consent to use this information on the part of the subject.

PART I

Respond to all questions with "SA" for "strongly agree", "A" for "agree", "AS" for "agree somewhat", "DS" for "disagree somewhat", "D" for "disagree", and "SD" for "strongly disagree".

Team Success-Failure Scale
Think about the team in which you work. Think about your team's recent ability to do its work and to accomplish its goals. When responding to the following items, answer in reference to your recent experiences within your work team.

1. The recent work of my work team deserves an A+. ____
2. My work team has been doing poor work. ____
3. My team has recently benefited because its performance was good. ____
4. As a team, it has been meeting its goals. ____
5. As a team, this group has had some costly failures. ____
6. The past performance of my team has had little impact on the success of the larger organization as a whole. ____
7. Good things have happened because of the work done by my team. ____
8. The organization has recently suffered because of mistakes made by my team. ____
9. My team has recently accomplished some goals. ____

Personal Outcome Expectancy Scale
Think about the results of doing your job well OR doing your job poorly. Do important outcomes depend on how well you perform, or do most job-related outcomes occur whether or not you do a good job? When answering the following questions, answer in reference to your current job.

1. I am well rewarded for my good work. ____
2. Doing good work here is not worth the effort. ____
3. Performing your job well is a sure way to get ahead here. ____
4. Most of my good work goes unnoticed. ____

5. Around here, such things as salary and promotions are determined by how well a person does his or her job. ____
6. My work evaluations are accurate. ____
7. Good work gets the same results as poor work in this job. ____
8. I must do a good job in order to get what I want. ____

Collective Outcome Expectancy Scale
Think about the team in which you work. Think about the results of your team doing its job well OR doing its job poorly. Do important outcomes depend upon the team's performance, or do most job-related outcomes occur whether or not the department does a good job? When answering the following questions, answer in reference to your beliefs about your current work team.

1. It is important for our team to do good work. ____
2. Many people benefit when our team does good work. ____
3. No one would notice if our team did its work poorly. ____
4. This organization depends heavily upon the work my team does. ____
5. This organization does not need the work done by my team. ____
6. My team expects good outcomes when we do good work. ____

PART II

Questionnaire: (Please use another sheet to answer if necessary and staple to this form)

1. Do you give your best efforts at work, and if not, why? _____

_____

2. Of all the rewards you could receive in your current job, what would you define as the best reward you could receive? _____

_____

3. When you do your best work and achieve your assigned goals, how are you rewarded?

_____

_____

4. Is your current job position and the rewards received adequately meeting your personal goals? If not, what would you do different?

_____

_____

5. When your team does its best work and achieves its assigned goals, how is the team rewarded?

_____

_____

6. If management were able to reward your team for outstanding performance in any way, what kind of reward would it be? _____

_____

7. Are the others in your work team (as a whole) giving their best efforts at work? Why do you think this? _____

_____

8. What did the last reward you receive for your work performance look like?

_____

9. Think of the last time your team completed a project successfully. How were they rewarded?

_____

_____

CONSENT FORM

A. AUTHORIZATION

I,_____, hereby agree to allow Donald V. Drew to use the results of my participation in the research and focus group described below.

B. DESCRIPTION

The title of the research being conducted is "An Empirical Investigation of Expectancy Theory in the Workplace: The Relationship Between Outcome Expectancy and Performance in a Complex Organization". This research is being conducted as part of the researcher's doctoral dissertation under the auspices of Oklahoma State University and has met the criteria of OSU's Institutional Review Board. Participants in this focus group will discuss their views regarding organizational motivation and performance issues which will be used to enhance the researchers understanding of important related issues. The focus group will be facilitated by Mr. Drew and the format, other than to get discussion moving, will be left open. The entire process will take less than one hour.

Discussions will be free and open and participants will be encouraged to express personal as well as professional views regarding the subject. Participants will benefit from being able to express their views on issues related to their personal performance motivations. A copy of the final research will be provided to management to assist them in understanding motivation and performance related issues.

Confidentiality of participants and non-attribution of discussions will be maintained as much as possible, but participants should realize that their participation in the focus group will probably be known due to the size of the subject organization and familiarity between participants and other organizational members.

C. VOLUNTARY PARTICIPATION

I understand that participation is voluntary and that I will not be penalized if I choose not to participate. I also understand that I am free to withdraw my consent and end my participation in this project at any time without penalty after I notify the project director (Mr. Drew).

D. CONSENT

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: _____ Time: _____
(a.m./p.m.)

Signed: _____

_____
Signature of person authorized to sign for subject, if required

I certify that I have personally explained all elements of this form to the subject or his/her representative before requesting the subject or his/her representative to sign it.

Signed: _____
Donald V. Drew

APPENDIX C

INSTITUTIONAL REVIEW BOARD

APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

Date: March 7, 2000 IRB #: ED-00-213

Proposal Title: "AN EMPIRICAL INVESTIGATION OF EXPECTANCY THEORY IN THE WORKPLACE: THE RELATIONSHIP BETWEEN OUTCOME EXPECTANCY AND PERFORMANCE IN A COMPLEX ORGANIZATION"

Principal Investigator(s): H.C. McClure
Don Drew

Reviewed and Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved

Signature: Carol Olson

Carol Olson, Director of University Research Compliance

March 7, 2000
Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modification to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

2

VITA

Donald V. Drew

Candidate for the Degree of

Doctor of Education

Thesis: OUTCOME EXPECTANCY IN A UNITED STATES AIR FORCE (USAF) SYSTEM PROGRAM OFFICE (SPO): A CASE STUDY

Major Field: Applied Educational Studies

Biographical:

Education: Received Bachelor of Arts with a major in Biblical Literature and History from Oklahoma Christian University, Oklahoma City, Oklahoma in May 1979; received Master of Human Relations from University of Oklahoma in Norman, Oklahoma in May 1985. Completed the requirements for the Doctor of Education degree at Oklahoma State University, Stillwater, Oklahoma in May 2000.

Experience: Logistics Planner, Twelfth Air Force, November 1979-May 1982; Chief, Aircraft Services Branch, 605th Military Airlift Support Squadron, May 1982-May 1984; Director of Resource Planning, 1st Space Wing, May 1984-June 1987; Chief, Logistics Readiness Branch/Director for Logistics Readiness Center U.S. Air Forces Europe, June 1987-June 1990; Senior Logistics Engineer/Planner for US Atlantic Command, June 1990-June 1993; Logistics Analyst and Secretariat to the Joint Logistics Commanders for Joint Staff, Pentagon, June 1993-August 1994; Director of Training and Development for Oklahoma Department of Disability Determination, August 1994-December 1994; Senior Program Manager for Altech Services, December 1994-March 1997; Team Lead & Senior Management Systems Analyst for Engineering Management Concepts, March 1997 to present.