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Factors Influencing Effectiveness of the Acquisition Career Field Initial Education Course

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FACTORS INFLUENCING EFFECTIVENESS OF THE ACQUISITION CAREER FIELD INITIAL EDUCATION COURSE

THESIS

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Abstract

This study analyzed the affect of the acquisition career field's initial education course on the individual level variables of commitment, motivation, self-efficacy, and knowledge, and developed a measure for future use of organizational factors that may impact that effectiveness. Course effectiveness was assessed using a recurrent institutional cycle design, using two classes of students in the Air Force Fundamentals of Acquisition Management course. A total of 89 students responded to the surveys. Even with a small amount of data, the results showed that fulfilling the course expectations of the students increased the affective commitment to their career field. More data is required before recommendations for change in course design can be made.

To my wife and children

Acknowledgments

First and foremost, I want to thank my wife for her continuous support during our time at AFIT. The past eighteen months have been very challenging, and I appreciate her patience, support, and love during this long endeavor! Together we both toiled; I in researching and writing my thesis, and she in taking care of our children and the rest of our daily lives. I know we are stronger for it. In addition, I would like to thank my children for understanding the importance of this undertaking. My parents, sisters, and brothers also deserve a note of thanks for their continued support and encouragement throughout my Air Force career.

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Christopher Ward

Table of Contents

Page

Abstract iv

Acknowledgments vi

Table of Contents vii

List of Figures x

List of Figures x

List of Tables xi

I. Introduction 1

- Overview 1
- Problem Statement 2
- Purpose and Research Question 3
- Significance 4
- Assumptions 4
- Summary 5

II. Literature Review 6

- Overview 6
- Background 6
- Training Effectiveness 9
- Kirkpatrick Model of Training 9
- The Model of Training Effectiveness 11
- Characteristics that Influence Training Effectiveness 13
- Individual Characteristics 13
  - Organizational Commitment. 14
    - Career Affective Commitment. 14
    - Career Normative Commitment. 15
  - Self-Efficacy. 16
  - Training Motivation. 17
  - Intrinsic Motivation. 17
  - Training Expectations and Fulfillment. 18
  - Background. 18
  - Acquisition Knowledge. 19
- Organizational Characteristics 19
  - Perceived Transfer. 19
  - Organizational support. 20
  - Supervisor Attitudes. 20
  - Workflow. 21
  - Task Constraints. 21
  - Organizations Reaction to Training. 21
  - Opportunity to Perform. 22
    - Breadth. 22
    - Activity Level. 22
    - Type of Tasks. 22
  - Acquisition Category Level. 22
  - Trainee Performance Evaluation. 23
- Summary 23

Page

III. Methodology 24

Overview 24
Participants 24
Data Collection Procedures 25
Instrument Review 28
Paper survey 28
Blackboard survey 28
Measures 29
Attitudes 31
Affective Commitment. 31
Normative Commitment. 32
Self-Efficacy. 33
Training Motivation. 33
Intrinsic Motivation. 34
Training Expectations. 35
Training Fulfillment. 35
Acquisition Background. 36
Field Surveys 36
Opportunity to Perform. 37
Breadth. 37
Activity Level. 37
Type of Tasks. 38
Organizational Support. 38
Supervisor Attitudes. 38
Task Constraints. 39
Workflow. 40
Organization Reaction to Training. 41
Perceived Transfer. 41
Acquisition Category. 41
Trainee Performance. 42
Data Analysis 42
Summary 45

IV. Data Analysis and Results 47

Analysis 47
Data input 47
Results 47
Hypothesis 1 Analysis 51
Hypothesis 2 Analysis 51
Hypothesis 3 Analysis 51
Hypothesis 4 Analysis 52
Hypothesis 5 Analysis 52
Hypothesis 6 Analysis 52
Hypothesis 7 Analysis 53
Hypothesis 8 Analysis 53
Hypothesis 9 Analysis 53
Hypothesis 10 Analysis 53
Hypothesis 11 Analysis 54
Summary 54

Page

V. Discussion 55

Overview 55
Conclusions 55
Recommendations 57
Limitations 58
Summary 58
Questions/Concerns 96
Feedback 96

Vita 105

References 106

Appendix A Alpha Class Post Survey on Blackboard 60

Appendix B Bravo Class Pre-Education Survey (Hard Copy) 70

Appendix C Bravo Class Post Survey on Blackboard 75

Appendix D AFFAM Knowledge Test Pre and Post Education 87

Appendix E Change of Wording to Air Force 99

List of Figures

Page

Figure 1 Training Effectiveness Model 12

Figure 2 Scale Change 25

Figure 3 Institutional Cycle Experimental Design Phase I (Campbell and Stanley) 45

Figure 4 Institutional Cycle Experimental Design Phase I & II (Campbell and Stanley) 45

Figure 5 Institutional Cycle Experimental Design Phase I (Campbell and Stanley) 50

List of Tables

Page

Table 1 Research Design: Variables and Time of Measurement 27

Table 2 Contents of Survey Packages 30

Table 3 Instrument for Affective Commitment Measurement 32

Table 4 Instrument for Normative Commitment Measurement 33

Table 5 Instrument for Self-Efficacy Measurement 33

Table 6 Instrument for Pre-Training Motivation Measurement 34

Table 7 Instrument for Intrinsic Motivation Measurement 34

Table 8 Instrument for Training Expectations Measurement 35

Table 9 Instrument for Training Fulfillment Alpha Class Measurement 35

Table 10 Instrument for Training Fulfillment Bravo Class Measurement 36

Table 11 Instrument for Acquisition Background (Prior Knowledge) Measurement 36

Table 12 Instrument for Breadth Measurement 37

Table 13 Instrument for Activity Level Measurement 37

Table 14 Instrument for Type of Tasks Measurement 38

Table 15 Instrument for Supervisor Attitudes Measurement 39

Table 16 Instrument for Task Constraints Measurement 40

Table 17 Instrument for Workflow Measurement 40

Table 18 Instrument for Organization Reaction to Training 41

Table 19 Instrument for ACAT Determination 41

Table 20 Instrument for Training Performance 42

Table 21 Independent T-Test for Affective Commitment, Normative Commitment, and Self-Efficacy, and AFFAM Test Averages Between O_1 and O_3 44

Table 22 Independent T-Test for Affective Commitment, Normative Commitment, and Self-Efficacy Between O_2 and O_3 44

Table 23 Correlation Table of Variables for Observations 1 (Time 2) Alpha Class 48

Table 24 Correlation Table of Variables for Observations 2 (Time 1) and 3 (Time 2) Bravo Class 49

Table 25 Paired T-Test for Affective Commitment, Normative Commitment, Self-Efficacy, Knowledge Test, and AFFAM Averages for bravo class observations 2 (Time 1) and 3 (Time 2) 50

FACTORS INFLUENCING EFFECTIVENESS OF THE ACQUISITION CAREER FIELD INITIAL EDUCATION COURSE

I. Introduction

Overview

Employee development is a hot topic these days, with training and education of employees at the top of the list. Classes designed to improve management skills are offered by a plethora of consultants, of varying intensity and quality. Given the difficulty of measuring the impact of these courses on an employee's future performance, many organizations encourage the development efforts with no real knowledge of the benefits or paybacks obtained for the organization. Despite the difficulty of measuring its benefits (Kirkpatrick 1976), training is still touted as an important means of improving management skills (Feldman, 2005).

The USAF embraces the use of education and training for its members. Much of the training falls in the technical realm, or short courses for managers in topics such as contract management, reliability, technical order management, and many others. On a broader scale, some officers are brought into the USAF from the civilian sector after attending a 3-month Officer Training School. This kind of course indoctrinates new officer recruits in the philosophy and background of the USAF, preparing them for general managerial duties in the service. Most career fields further train and educate their recruits in some kind of technical school more focused on the jobs they will be engaging in at the outset of their careers. In the acquisition program manager career field (officers

with an Air Force Specialty Code (AFSC) of 63) there was no timeline for the overview training taught to new accessions until June 2005. At that time, a new Career Field Education and Training Plan was fielded, outlining the educational requirements for the career field more specifically than had been done in the past. As part of that plan, a new course was established with mandatory attendance for new accessions – either officers just entering active duty or officers crossing over into the 63 career field – to educate them on acquisition policies and procedures.

Why did the Air Force institute a new course for acquisition officers? One purpose behind training is to increase the productivity of trainees. In order to understand training effectiveness we need to understand all the influences that impact training effectiveness. This thesis provides the background on issues pertaining to acquisition training effectiveness for the Air Force Fundamentals of Acquisition Management (AFFAM) course. The United States Air Force (USAF) has recently revised the training regime required for all personnel in their first assignment to an acquisition billet. All new acquisition personnel attend the new AFFAM course regardless of the Acquisition Category (ACAT) level to which they are to be assigned. The crux of this investigation is to determine what factors influence the training effectiveness of the AFFAM course.

Problem Statement

The Acquisition cycle has been in a constant state of change. In an attempt to flatten its organizational structure the Air Force turned to total system performance responsibility (Muradian and Fabey, 2005). That effort passed the program management control to prime contractors. Costs of defense systems have spiraled out of control since that reorganization. Compounding the problem, the remaining acquisition professionals

who manage the large systems, seem to be unaware of what the requirements for the systems really are (Muradian and Fabey, 2005).

Pressure from Congress prompted the Deputy Defense Secretary to call for an assessment of the Pentagon acquisitions. Training was cited as one of the major shortfalls of the acquisition troubles (Muradian and Fabey, 2005). Secretary of the Air Force for Acquisition set forth new training requirements for the Acquisition career field, one of which is attendance in the AFFAM course. The AFFAM is the first course in an acquisition professional's career. It serves not only to educate new acquisition officers and civilians, but for many is their initial exposure to the Air Force organization. Therefore, it is paramount we gain an understanding into the effectiveness of the AFFAM course and its impact on new accessions to maximize future acquisition professionals productivity.

Purpose and Research Question

The purpose of this study is to analyze the effectiveness of the acquisition AFFAM class prior to an officer's first assignment to an acquisition billet. Research in this study was accomplished in several stages. However, due to time constraints, only the first part of the study was accomplished in this paper, in which the effect of the course on students' attitudes and knowledge was assessed. Training effectiveness was assessed using a "recurrent institutional cycle design," which is a combination of a "cross-sectional" and a "longitudinal" design (Campbell and Stanley, 1963). Variables such as self-efficacy, affective and normative commitment, training expectations and training fulfillment, and knowledge of the students were observed for correlations, with some t-tests performed to test significance of changes in variable means. By developing a model

and testing it, this research hopes to help in the understanding of training effectiveness for the acquisition career field.

Significance

Developing human resources is an expensive and time consuming endeavor. It is important to focus the training dollars on that which is effective. The Air Force can benefit by eliminating or adding education and training, in the right areas, at the proper levels, to provide new employees the right tools they need to be productive. Gone are the days of one size fits all training, and the support structure that could pick up what wasn't taught, with On the Job Training (OJT). The acquisition career field is 64% manned in the Captain Grades and above (Acquisition 2003). The Force Development survey (2003) briefing quoted a 63A career field study participant as saying, "Make us feel important, give us responsibility and respect, allow us to tackle our jobs by giving us meaningful training and supervisors who truly care and look out for us." It is possible the lack of structure and focused training is one reason the manning level is so low despite the 330% over manning of the Lieutenant Grades (Force Development survey, 2003). Understanding the AFFAM course effectiveness has tremendous implications for the acquisition career field and the Air Force.

Assumptions

In development of this study a few assumptions have been made. An analysis of the training content, training needs analysis, was previously accomplished by the Air Force, so it is assumed the content for the course provided in AFFAM is valid. Training for the supervisory level will start in the near future to implement the vision of the new training structure. Students are being assigned to all ACAT levels ensuring representation

of all ACAT billets in the study. One of the drawbacks to this research is the inability to have a control group that does not receive the training. I assume the treatment (training) will have an impact on the effectiveness; however, the correlation is between all the data and the trainee perceived effectiveness.

Summary

The Air Force system acquisition cycles are continually being extended and costs have spiraled out of control. Under the "Total System Performance Responsibility" acquisition restructure in the 90's many AF acquisition positions were eliminated, giving most of the program responsibilities to prime contractors (Muradian and Fabey, 2005). The reduced structure and lack of a stringent formal training program contribute to this issue. Air Force management has mandated a new training regime for all new acquisition professionals. The training is an overview of the acquisition environment. Through the use of survey based research, key constructs will be measured before and after the course, and 3 – 4 months after personnel have been assigned to their jobs. The supervisor's survey, among other data, will inquire about their subordinate's effectiveness on the job.

II. Literature Review

Overview

This chapter provides a review of the literature investigating the effectiveness of training as well as the individual and organizational characteristics identified by previous research as predictors or outcomes of training. The constructs include individual-level attitudes (commitment, motivation, and self-efficacy), demographics, organizational-level support, opportunity to perform, transfer of training, and readiness to perform.

Background

In April 2005, the Secretary of the Air Force for Acquisition (SAF/AQX) distributed two memorandums three days apart changing acquisition training philosophy. These memos stated all officers in the 61S, 62E, and 63A specialties; Scientist, Developmental Engineer, and Acquisition Manager, respectively will complete the new Air Force Fundamentals of Acquisition Management (AFFAM) course within 3-4 weeks of entering active duty or en route to their first acquisition assignment (Durante, 2005). The memo stated training required for a level II Acquisition Professional Development Program (APDP) would now be complete within the first 24 months of assignment to an acquisition billet. APDP level II training consists of the new AFFAM or ACQ-101 Fundamentals of Systems Acquisition Management, ACQ-201 Intermediate Systems Acquisition Course, PMT-250 Program management Tools Course, and application for APDP level II after 24 months in an acquisition billet. Previously the training schedule for acquisition officers was not enforced and some officers hadn't completed the ACQ-101 course by the two year mark.

All first assignment Air Force program managers receive overview training of the acquisition-cycle of a typical Acquisition Category (ACAT) I program, the largest of all ACAT's. Below is a breakdown of the differences in ACAT levels (DoD, 2003):

> ACAT I
>
> Dollar value: estimated by the USD(AT&L) to require an eventual total expenditure for research, development, test and evaluation (RDT&E) of more than $365 million in fiscal year (FY) 2000 constant dollars or, for procurement, of more than $2.190 billion in FY 2000 constant dollars. Or the Milestone Decision Authority (MDA) designation as special interest
>
> ACAT II
>
> Does not meet criteria for ACAT I. Dollar value: estimated by the DoD Component Head to require an eventual total expenditure for RDT&E of more than $140 million in FY 2000 constant dollars, or for procurement of more than $660 million in FY 2000 constant dollars (10 USC 2302d, reference (o)). Or MDA designation as special interest
>
> ACAT III
>
> Does not meet criteria for ACAT II.

The acquisition-cycle can range from 20 – 30 years for an ACAT I program to less than a year for an ACAT III program. Acquisition programs currently underway are at all different ACAT levels and at different points on the acquisition-cycle time-line. Support structures i.e. staff, equipment, budget, etc., for the new program manager is dependent on the ACAT level of the program they are assigned. ACAT I programs support structure is large and they have a higher level of oversight, in other words more people and equipment are available to bring the new PM up to speed in their duties; oversight means the Office of the Secretary of Defense (OSD) and or Congress are watching the programs progress. There is currently no Air Force approved manpower model to determine the number of personnel required to support an acquisition program. All acquisition

programs tend to be undermanned due to the acquisition draw-down of the early 90's and the implementation of the Acquisition-reform initiative (Muradian and Fabey, 2005). The Sustainment/Acquisition Composite Model (SACOM) was developed to aid AFMC with the requirement determination of such a limited resource. The SACOM model uses many factors to help determine the staffing level of each program, ACAT level is the predominate theme in the model descriptors (SACOM, 2005). Aeronautical Systems Center (ASC) developed a prioritization model to assist in the allocation of manpower. The prioritization model determines a score based on three categories: ACAT level, Milestone, and Other (May, 2005). SACOM score is a small portion of the input for the prioritization model which falls in the other category. The SACOM scores are linear with ACAT I programs receiving the highest scores. The Wings authorizations are then distributed to all the underlying programs. ASC is at 91% of manning requirements overall (Asher, 2006; Moretz, 2005). The higher the priority and visibility of the program the higher the manning level i.e. F-22A is 119% manned (Asher, 2006). The lower ACAT level programs all are manned at a level under 100%, some at a point under 80% (Moretz, 2005). With the knowledge of how the different ACAT levels influence the total manning, the following assumptions could be made. First, the new acquisition employee assigned to an ACAT I program would have a great deal of support and mentoring to learn the day-to-day tasks of the job. The same employees would be less likely to get much breadth of experience or have a direct impact on the overall program due to that same support. Second, the lower ACAT level programs have fewer personnel and therefore the new acquisition employee would not have the same support in learning the day-to-day tasks. They would also be given greater responsibility and be required to

make decisions that would directly impact the program they are assigned to and may also be required to learn multiple areas of the program due to the decreased manning. The combination of these factors may leave officers with different levels of confidence in their ability to perform their jobs depending on the ACAT level they are assigned.

Training Effectiveness

Significant amounts of time and money are spent on training with the intention of improving performance in the workplace (Facteau et al., 1995; Tannenbaum and Woods, 1992; Tannenbaum et al., 1993; Tracey and Tews, 1995). In order to accurately measure training all variables need to be considered. Typically, only the variables related to development and delivery have been measured (Tannenbaum et al., 1993). Although training development variables are very important, many variables outside the training development context contribute greatly to training effectiveness (Noe, 1986; Tracey et al., 2001; Tracy et al., 1995). Training effectiveness can be defined in many ways. It might be dubbed effective if the knowledge gained during training is transferred to the work environment (Facteau et al., 1995; Hobbs, 2005; Holladay and Quiñones, 2003; Thayer and Teachout, 1995). Perhaps a change in the behaviors of the student back on the job would be the mark of effectiveness (Facteau et al., 1995; Tracy et al., 1995). Some consider training to be effective when it fulfills individual, organizational, and task needs identified by the needs analysis accomplished during training development (Alvarez et al., 2004; Tannenbaum and Woods, 1992). Finally, Noe and Schmitt (1986) state effectiveness can be determined by an analysis of a combination of the criteria presented by the Kirkpatrick model (1976).

Kirkpatrick Model of Training

The Kirkpatrick (1976) model is a highly referenced work, considered the beginning point for training evaluation (Alvarez et al., 2004; Mathieu et al., 1992; Tracey et al., 2001). However, some researchers believe the model has limitations and possible false overarching assumptions. These researchers have expanded and further defined the principles with more complex models (Alliger et al., 1997; Bates, 2004; Tannenbaum et al., 1993). Although the terms have changed and have been somewhat expanded the definitions of the new terms remained essentially the same as in Kirkpatrick's model. The Kirkpatrick model has four steps: reaction, learning, behavior, and results. Step one, reaction, is how well the trainee's liked the training. This step doesn't measure learning but focuses on the affective measures of training. The learning step measures the principles or facts that were taught through the use of testing. Step three measures the transfer of knowledge and the change of behavior in the workplace. The results step measures tangible improvements i.e. the impact of training on organizational goals, productivity increase or reduced turnover. Kirkpatrick (1976) suggests the results analysis is too complex and near impossible to eliminate other possible factors causing change other than training for most courses. Kirkpatrick (1976) implies that the more of the steps research can implement in the evaluation of a training course, the higher the accuracy and value of the analysis of training effectiveness increases. Therefore, if your course is liked, teaches fundamentals and concepts required by the organization, and changes the way a trainee performs once they are back on the job then the course will have achieved a high degree of training effectiveness. Using these steps suggests a longitudinal study is the best approach to evaluating training effectiveness (Facteau et al., 1995; Ford et al., 1992; Kirkpatrick, 1976; Noe, 1986; Noe and Schmitt, 1986;

Tannenbaum et al., 1993). Some key areas identified by the literature review requiring further research are individual and organizational characteristics (Alvarez et al., 2004; Facteau et al., 1995; Gist, 1987; Guthrie and Schwoerer, 1994; Tracy et al., 1995). Fundamental constructs were identified for construction of a model to further research in these areas.

The Model of Training Effectiveness

The research model was designed to analyze constructs considered by the literature to be fundamental in determining training effectiveness. The two areas which seem to be identified for further research time and again are individual and organizational characteristics that impact effectiveness (Alvarez et al., 2004; Noe and Schmitt, 1986). Constructs of particular interest for this research are: organizational commitment, self-efficacy, motivation, knowledge, organizational support and opportunity to perform. The measures of reaction and end of course tests measuring learning are the most commonly used form of evaluation for training effectiveness (Kirkpatrick, 1976; Tannenbaum et al., 1993). The longitudinal method is not typically chosen for the evaluation of training effectiveness.

The model has two distinctive features. First, this research model employs a longitudinal approach - a method which captures data before a training event, after a training event, and upon completion of training at a period three to four months after the trainee has performed in the job. The data collected at these different points is examined for their effect on training effectiveness (Ford et al., 1992; Kirkpatrick, 1976). Next, it focuses on the measures of self-efficacy, motivation, commitment, perceived transfer and knowledge as predictors of effectiveness. Additionally, it is of specific interest to this

research how job assignment of the trainee affects the aforementioned constructs. Job assignment for this research is defined as Acquisition Category (ACAT). There are three ACAT levels; I, II, and III as previously defined. Therefore, we suggest the following over all theories:

Theory 1: Training will improve/increase the level of confidence a newly assigned employee brings to their first acquisition job.

Theory 2: ACAT level will positively influence individual characteristics.

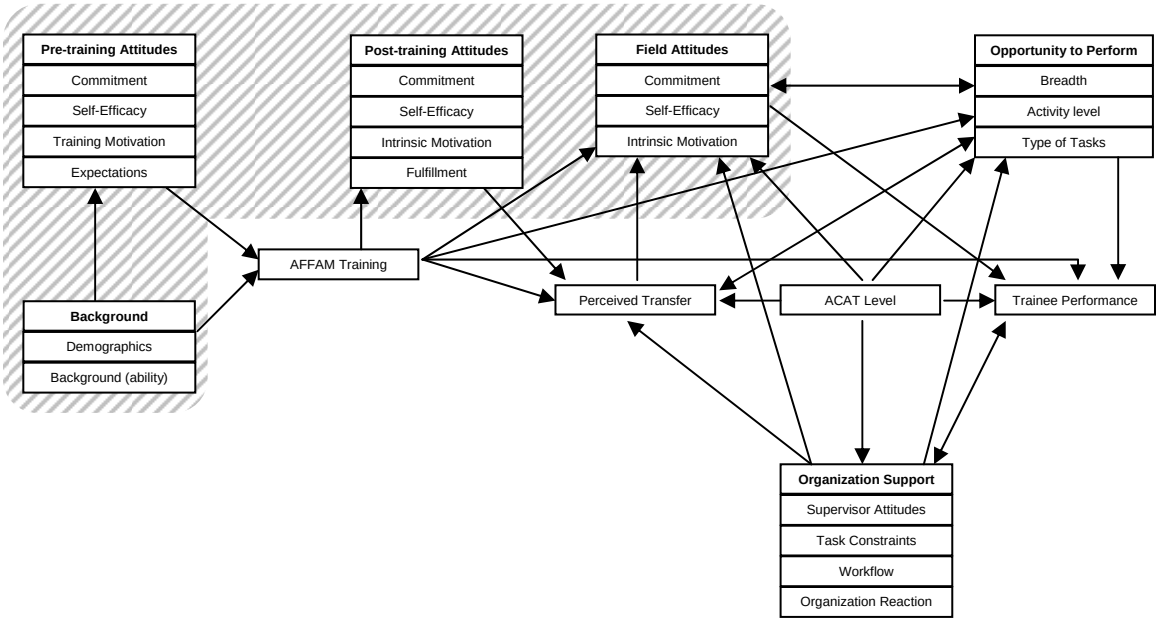

Figure 1 Training Effectiveness Model

Examination of the model in Figure 1 uncovers two main areas. First, the shaded area is the individual characteristics that are of relevance to this research. Further study of the model denotes the data for attitude variables are gathered at multiple points to correlate the changes in the key constructs as the study goes on. The remainder of the model shows the organizational characteristics related to training transfer. The AFFAM training block shows where the point of change or education was conducted. Starting on

the left and moving right the model shows the influence of the education event and organizational characteristics on the attitudes of students. This longitudinal method of evaluating training in terms of behavioral changes follows the guideposts that are suggested by the Kirkpatrick (1976) model. Along with the change in behavioral variables, Alvarez et al. (2004) support supervisor evaluations along with post- training retests as a method for measuring transfer. Given that a proper training needs analysis has been executed, then transfer is analogous with training effectiveness (Facteau et al., 1995; Hobbs, 2005).

Characteristics that Influence Training Effectiveness

This research focuses on individual and organizational characteristics and how they influence training effectiveness. Each characteristic and their supporting constructs will be discussed based on the literature and how they impact training effectiveness. Data is collected for several of the constructs using the same measure but at different points in the longitudinal study.

Individual Characteristics

Individual characteristics are believed to influence other variables which ultimately influence training effectiveness i.e., motivation and self-efficacy affects transfer and performance. Self-efficacy, a dominant dependent variable in this study, is thought to influence training, learning, and performance through-out this study. Next, self-efficacy is suspected to be affected by background, training, learning, opportunity to perform, acquisition level, organizational support and organization reaction to training. The following section will explain the variables for individual characteristics in greater detail.

Organizational Commitment.

Organizational commitment is loosely defined as a psychological connection between the employee and their organization which determines the likelihood the employee will voluntarily leave the organization (Allen and Meyer, 1996). Past research shows employees with high commitment and self-efficacy measures are positively related to their performance measure (Tannenbaum et al., 1993). High performance as perceived by the supervisor indicates course needs analysis was properly developed and the training is effective from the organizations view point (Alvarez et al., 2004). Commitment has been conceptualized and measured in a multitude of ways but most early work uses a one-dimensional view of the construct (Allen and Meyer, 1996). Commitment is now widely recognized as a multidimensional construct in part by the three approach model developed and supported by Meyer and Allen (1987 *a*). The three components of commitment are labeled affective, continuance, and normative. This research focuses on the affective and normative measures. Continuance commitment measures the employees need to stay in the organization i.e. financial needs, lack of job opportunity, etc. (Allen and Meyer, 1990). It is not addressed in this study, as it is mostly influenced by external factors, which are largely unaffected by education and training. Affective and normative commitment will now be further defined.

Career Affective Commitment.

Affective commitment is the idea that employees stay in an organization because they want to (Allen and Meyer, 1990). Affective commitment's strongest and most consistent relationship has been observed with job experiences (Meyer and Allen, 1991). Affective commitment develops through job experiences that fulfill employee

expectations and satisfy their basic needs (Meyer et al., 1993). It influences and is influenced by different variables depending on where it is observed in the model. Later in the model i.e. at the field data collection point, affective commitment will be influenced by the actual experiences the employee has on the job, whether they feel they are doing the job they expected to and if it is at the difficulty level that is a challenge but not overwhelming for them. An example of how affective commitment would be negatively influenced would be to have an educated employee coordinating office potlucks as their only duty. In the AFFAM course, the employee gains knowledge about what their future career will be like, as they study the duties of being an acquisition program manager. Employees who like their career field would be expected to perform better in a course than employees who do not like their career field. Therefore, we propose the following hypotheses:

Hypothesis 1: Career affective commitment prior to the class will positively influence performance as measured by test scores.

Hypothesis 2: Career affective commitment will be positively influenced by training.

Career Normative Commitment.

Normative commitment is that which employees stay with an organization or career because they feel they ought to (Allen and Meyer, 1990). Normative commitment is present and/or strengthened when an employee feels a sense of obligation to the career or organization because one or both of two situations exist. First, they have experiences that fortify the feeling of loyalty to an employer. Secondly, because of training or benefit provided by the employer, the employee has a feeling of indebtedness (Meyer et al., 1993). Therefore, we propose the following hypotheses:

Hypothesis 3: Normative commitment will be positively influenced by training.

Self-Efficacy.

Bandura (1986, p 391) defines self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses." Many studies have incorporated and validated self-efficacy as an important variable when determining training effectiveness (e.g. Alvarez et al., 2004; Bandura, 1986; Chen et al., 2001; Compeau and Higgins, 1995; Davis et al., 2003; Ford et al., 1992; Gist, 1987; Guthrie and Schwoerer, 1994; Holladay and Quiñones, 2003; Machin and Fogarty, 2003; Mathieu et al., 1993; Noe, 1986; Noe and Schmitt, 1986; Rajnandini and Willaims, 2004; Saks, 1995; Schwoerer et al., 2005; Tannenbaum et al., 1993; Tannenbaum et al., 1991; Tracey et al., 1997). Self-efficacy is a fundamental construct in the understanding of training effectiveness (Tannenbaum et al., 1993). The level of self-efficacy an employee has is a predictor of transfer (Bandura, 1986; Tannenbaum et al., 1993). Noe and Schmitt (1986) hypothesized self image is an important predictor in motivation. Self image is the extent to which the trainee identifies psychologically with work or the importance of work. Self image is analogous to self-efficacy. Tannenbaum et al. (1993) determined self efficacy is such an important variable in the learning process that all trainees self-efficacy should be measured prior to training and if it didn't meet pre-determined level, actions should be taken to increase the trainee's self-efficacy prior to training. The higher levels of self-efficacy lead to an increase in motivation, learning, performance and effectiveness (Tannenbaum et al., 1993). Therefore, we propose the following hypotheses:

Hypothesis 4: Self-efficacy at T1 will positively influence training scores.

Hypothesis 5: Self-efficacy at T2 will be positively influenced by training.

Training Motivation.

Noe and Schmitt (1986) found motivation significantly related to learning, transfer and performance in a longitudinal study. Training motivation is impacted by training reputation; the reputation is developed with perceived utility, organizational support, and expectations (Facteau et al., 1995; Tannenbaum et al., 1993; Tracey and Tews, 1995). Motivated trainees are more likely to apply skills once training is complete (Noe, 1986; Tracey and Tews, 1995). Using this definition it supports Kirkpatrick's (1976) third step "behavior" which as defined by Kirkpatrick is the transfer and change in job behavior/performance step. Therefore, we propose the following hypotheses:

Hypothesis 6: Pre-training motivation at T1 will positively influence training scores.

Intrinsic Motivation.

Intrinsic motivation is motivation to do well on the job, a feeling of worth. Employees that feel they have responsibility for tasks, and the tasks are worthwhile and important, will have positive intrinsic motivation (Hackman and Lawler, 1971). Opportunity to perform, organizational support, and program characteristics, such as dollar amount of the program, impact intrinsic motivation which has a substantial relation to employees' job satisfaction and training effectiveness (Hackman and Lawler, 1971). Therefore, we propose the following hypothesis:

Hypothesis 7: Intrinsic motivation will be positively influenced by opportunity to perform and ACAT level of the program.

Training Expectations and Fulfillment.

Training expectations and fulfillment are reactions to training. They are the most commonly used variables in training evaluation as they are the easiest to assess (Kirkpatrick, 1976; Tannenbaum et al., 1993). Reactions are the affective part, or liking, of a course. For maximum learning a course must be designed to be interesting and relevant (Kirkpatrick, 1976). Expectations are what the trainee expects to learn from the training and fulfillment is the meeting of those needs. These reactions influence future training as organizational support for training is often based on the comments of the returning attendees (Kirkpatrick, 1976). Reactions have a direct relation to motivation which leads to training effectiveness (Noe and Schmitt, 1986). Therefore, we propose the following hypotheses:

Hypothesis 8: Training expectations at T1 will be positively related to test scores.

Hypothesis 9: Training fulfillment at T2 will be positively influenced by test scores.

Background.

Background is the knowledge the trainee has about the area of study prior to any training taking place and may be interpreted as abilities. Personal experiences prior to training affect the outcomes through their influence on motivation (Smith-Jentsch et al., 1996). Therefore, we propose the following hypotheses:

Hypothesis 10: Employees with background / experience in acquisition at T1 will positively influence training.

Acquisition Knowledge.

For the adequate evaluation of training, a before and after measure of knowledge should be taken in order to determine if any change in knowledge occurs due to the introduction of the training course (Kirkpatrick, 1976). Post-training retests using the same or similar tests as the performance test administered several months after the initial course shows to have a positive correlation to knowledge transfer (Alvarez et al., 2004). Tannenbaum et al. (1993) found in some situations knowledge measures are the closest some environments can get to evaluate training effectiveness due to cost and/or risk, i.e. for military training a war is not started to see if what was taught in training and exercises was transferred and effective. Therefore, we propose the following hypothesis:

Hypothesis 11: Knowledge measures at T2 will be positively influenced by training.

Organizational Characteristics

Organizational characteristics are hypothesized to influence the individual characteristic dependent variables. As stated earlier, opportunity to perform and supervisor support influence individual characteristics such as self-efficacy and motivation (Ford et al., 1992; Gist, 1987; Tesluk et al., 1995). While these constructs are part of the model of training effectiveness, and the measures to test the relationships were developed, no data was collected, thus this part of the model was not evaluated.

Perceived Transfer.

Transfer of knowledge to the job is often thought to be analogous to training effectiveness (Facteau et al., 1995; Hobbs, 2005). This is only a valid statement if proper course design and development have been implemented i.e. it should meet the task requirement and organizational needs (Kirkpatrick, 1976; Tannenbaum and Woods,

1992; Tesluk et al., 1995). Alvarez et al., (2004) found the measurement of knowledge directly correlates with transfer. Ford et al. (1992: 512) define opportunity to perform as "the extent to which a trainee is provided with or actively obtains work experiences relevant to the tasks for which he of she was trained." Opportunity to perform influences what is transferred and correlates with motivation (Ford et al., 1992; Noe, 1986; Tannenbaum et al., 1993). Constraints in the transfer environment may diminish the ability of the trainee to change their behavior (Tannenbaum et al., 1993).

Organizational support.

Organizational support affects employees' motivation, self-efficacy and ultimately performance (Ford et al., 1992; Tannenbaum et al., 1993). Organizational support also determines an employees' pre-training self-efficacy (Tracey et al., 2001). Facteau et al. (1995) and Hobbs (2005) found a positive relation between organizational commitment also known as support, and pre-training motivation they had mixed results between organizational commitment and training transfer. Organizational support is a multifaceted construct; it is a determinate of transfer and has influence over individual characteristics (Ford et al., 1992; Mathieu et al., 1992). Four organizational constructs are of particular interest; supervisor attitudes, workflow, task constraints, and organizations reaction to training will be examined closer.

Supervisor Attitudes.

Supervisors support for training has a direct influence on pre-training motivation (Facteau et al., 1995; Hobbs, 2005; Mathieu et al., 1992; Tannenbaum et al., 1993). Supportive supervisors increase training motivation and employee's perceived utility of the training (Cohen, 1990). When an employee is given the choice whether or not to

attend training and they choose to attend training, motivation and learning for the training increases (Baldwin et al., 1991). Ford et al. (1992) confirmed that supervisors with positive perceptions of an employee and who support training show a significant increase in self-efficacy and performance. These positive supervisor attitudes are predictors of the type of tasks the employee had the opportunity to perform (Ford et al., 1992).

Workflow.

Workflow is the pace of work in an organization (Ford et al., 1992). Where an employee is assigned after training impacts the opportunity to perform i.e. an organization that has a lot of work allows the employee to apply what was learned (Ford et al., 1992). Self-efficacy and motivation can increase given this opportunity provided by a high workflow environment (Ford et al., 1992; Noe and Schmitt, 1986).

Task Constraints.

Task constraints are those things that employees feel are required to do the job i.e. information about the task, equipment and supplies, authority, and time to successfully complete the job (Mathieu et al., 1992). Employees who are task constrained may become frustrated reducing their motivation to perform (Eisenberger et al., 1997; Mathieu et al., 1992).

Organizations Reaction to Training.

Organizations reaction to training is value the organization as a whole perceives training. Training must meet organizational requirements or they not find value in it (Alvarez et al., 2004). This variable helps identify if the training needs analysis was adequately developed for the training course (Tannenbaum et al., 1993).

Opportunity to Perform.

Ford et al. (1992: 512) define opportunity to perform as "the extent to which a trainee is provided with or actively obtains work experiences relevant to the tasks for which he of she was trained." Opportunity to perform has three dimensions of particular importance: breadth, type of task, and activity level (Ford et al., 1992). The dimensions are measured three to six months after training and are further defined below. This important construct influences other crucial variables such as commitment, motivation, self-efficacy, and transfer. These variables have been determined to be important measures of training effectiveness by multiple articles (e.g. Bandura, 1986; Ford et al., 1992; Noe, 1986; Noe and Schmitt, 1986; Tannenbaum et al., 1993).

Breadth.

Breadth measures how <u>many</u> of the areas of material taught they use in the execution of their job.

Activity Level.

Activity level measures how <u>often</u> the trainee performed tasks that were taught since they had completed training.

Type of Tasks.

Type of task measures the areas trainees have had the opportunity to perform in since training. Specifically, focusing on their impression of how critical, complex or difficult the tasks were that they had the opportunity to perform (Ford et al., 1992).

Acquisition Category Level.

Acquisition Category (ACAT) level is a variable unique to this research. ACAT level is defined by the dollar value and oversight of a Department of Defense (DoD)

program (DoD instruction, 2003). It is hypothesized the ACAT level is the independent variable that will influence transfer, opportunity to perform, organizational support, training performance, all field attitudes, future pre-training attitudes, and ultimately training effectiveness.

Trainee Performance Evaluation.

Trainee performance evaluation is the appraisal a supervisor gives about the performance of an employee (Kirkpatrick, 1976). Lynch et al. (1999) research demonstrated a correlation between perceived organizational support and supervisor evaluations. Transfer can be assessed by supervisor evaluations (Alvarez et al., 2004). High performance as perceived by the supervisor indicates course needs analysis was properly developed (Alvarez et al., 2004). With these definitions then, transfer is analogous with training effectiveness (Facteau et al., 1995; Hobbs, 2005).

Summary

The model developed by Kirkpatrick (1976) is the basis by which training effectiveness is evaluated. Some have further defined Kirkpatrick's model but the basic structure is the same. Training effectiveness is measured by satisfying the organizational requirements. Most training programs only evaluate the likeability of their program (Kirkpatrick, 1976). The phased longitudinal approach of this research will attempt to truly evaluate training effectiveness. The methodology for the research will be discussed in the next chapter.

III. Methodology

Overview

This chapter describes the method and analysis used in this research effort. The method was survey-based and used quantitative data analysis. Participant selection, data collection procedures, instrument review and discussion of such, measures used in this research, and the use of Statistical Package for the Social Sciences (SPSS) for data analysis will be discussed.

Participants

The students of the Air Force Fundamentals of Acquisition Management (AFAM) course are the participants selected for this research. The initial class for the AFFAM course was conducted in June of 2005. Every person that attends the AFFAM course is a potential participant in this study. This target group is selected to fulfill the goal of this research -- to determine the effectiveness of the AFFAM course. The study participants contact information is provided by the AFIT School of Systems and Logistics. Data was gathered from two classes at different times. The first class took place in October 2005, and the second class took place in November 2005. They will be referred to as class's Alpha and Bravo from here forward. The Alpha class was only administered the post course survey, which was done on the last day of class via the Blackboard software. The Bravo class was administered the pre and post-course surveys. The participants for the Bravo class were initially contacted upon check-in for class at the billeting office, with a package containing a request letter and a paper survey. The Bravo class was invited by the class instructor to voluntarily take the post-training survey via Blackboard, in the same manner as the Alpha class. Participants in both classes consisted of 6 Captains, 8

First Lieutenants, 64 Second Lieutenants, 7 GS-07s and 1 contractor. They were assigned to one of 17 conus bases. Future research will include a field survey for the AFFAM graduates and their immediate supervisor.

Data Collection Procedures

Data collection for Alpha class was a one time survey via Blackboard. The participants were provided instructions when they signed in to the survey. The survey scale for Alpha class was incorrectly input to the data base. The Likert scale was transposed for some of the possible selections see Figure 2 for the actual scale used compared to the one that should have been used. The data was coded in a manner consistent with what the participants used. It is possible the respondents' perceived value of the answer coincided with the position on the scale.

Scale used for the Alpha Class

①	②	③	④	⑤	⑥	⑦
Strongly Disagree	Moderately Disagree	Disagree	Neutral	Agree	Moderately Agree	Strongly Agree

Corrected Scale

①	②	③	④	⑤	⑥	⑦
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

Figure 2 Scale Change

The training fulfillment scale for Alpha class was refined before administration to the bravo class. The wording for the affective and normative commitment scales was changed after the Alpha class administration of the survey to reflect Air Force terminology. Cronbach α for affective commitment, normative commitment, and intrinsic motivation was computed with both scale variations and no appreciable difference is noted. The Cronbach α offered for these instruments is computed with the

scale the way it was presented to the respondents. The Cronbach α is nearly identical for the reworded instruments of affective and normative commitment. The refined training fulfillment scale showed an increased Cronbach α of .08.

Data collection for Bravo class started by giving all trainees a survey and knowledge test packet when they checked into billeting at WPAFB, OH. The survey packet contained the invitation to participate as well as informing them the participation in the survey was voluntary.

The participants where asked to provide their name in order to correlate the surveys with the future abilities, and performance measures. Participants were informed that all answers would be confidential, no one other than the research team would see the completed questionnaire, and individual responses would not be disclosed. Demographic data such as gender, age, and rank as well as prior acquisition knowledge was also collected.

AFFAM trainees were involved in a three-week class covering the basics of the DoD Acquisition career field. They were administered three block tests during the class. After the completion of the class, the participants were asked to complete a second survey via Blackboard which assessed their post-training attitudes and knowledge (Alpha class did not take the knowledge test). Table 1 demonstrates the research design and indicates when each of the variables was measured.

Table 1 Research Design: Variables and Time of Measurement

Time of Measurement		
Pre-Training	**Post-Training**	**3-6 Months Post-Training**
Affective Commitment	Affective Commitment	Affective Commitment
Normative Commitment	Normative Commitment	Normative Commitment
Self-Efficacy	Self-Efficacy	Self-Efficacy
Training Motivation	Intrinsic Motivation	Intrinsic Motivation
Training Expectations	Training Fulfillment	Perceived Transfer
Demographics	Acquisition Knowledge	Acquisition Knowledge
Acquisition Background		Supervisor Attitudes
Acquisition Knowledge		Workflow
		Task Constraints
		Job Breadth
		Type of Tasks
		Activity level
		Org Reaction to Training
		ACAT level
		Trainee Performance Evaluation

Pre-training surveys were completed by 36 of 56 participants in the bravo class, for a response rate of 64%. Post-training surveys were completed by 64 participants, 28 of 35 in the Alpha class (an 80% response rate), and 36 of 56 in the bravo class (a 64% response rate). A total of 33 participants, or 59%, all in the bravo class, completed both the pre and post surveys and pre and post knowledge tests.

Instrument Review

Two types of survey media were selected for use in this research for convenience. First, a paper survey was administered to the participants when they checked into billeting at Wright Patterson AFB, Ohio to capture pre-training data. Second, the AFFAM course used Blackboard, a software learning system used by academic institutions for instruction, communication and assessment. The assessment section of the Blackboard software was used for the post-training survey.

Paper survey

The advantage of the paper survey is it gives the participant the ability to respond at their leisure (Creative Research, 2005). The Creative Research web site suggests several disadvantages of a paper survey. The paper survey or "hardcopy" generally have a lower socio-economic response rate. This is not a concern for this research due to the fact the participants are primarily United States Air Force officers, required to have an under graduate degree at a minimum. (USAF commissioning requirement). Another disadvantage comes from manual entry of surveys into a database, possible error in entry and considerable time is required to accomplish the data entry. Time is a important consideration, time to administer the paper survey may take longer due to the mailing aspect. Additionally, mailed surveys tend to have a low response rate.

Blackboard survey

The Blackboard survey has the same advantages and disadvantages as described in the paper survey section. Four additional disadvantages when using Blackboard exist. First, it requires access to a computer and an account, these are assigned at the end of the first day of AFFAM course. If Blackboard was used for the initial data gathering it

would take place after the first day of training which could influence the responses. Another drawback to using Blackboard is that it cannot be used to administer any subsequent surveys. Next, data imported from Blackboard requires a considerable amount of time to prepare it for import to SPSS. Finally, as a note, the appearance of Blackboard survey is slightly different in appearance than the paper survey.

The surveys have a fixed format so it would appear in the same way to all respondents. The measures with variables that were measured with the same Likert scale i.e. 1strongly disagree to 5 strongly agree, were randomized amongst each other in the survey. The paper survey had the respondents name on the return envelope as well as requesting the respondents name in the survey for the purpose of correlation of data in this longitudinal study. The Blackboard survey is included in the course content which automatically attaches the name to the survey.

Participants responded to the paper surveys and the Blackboard survey, responses are ID' for later data analysis. This study is a "recurrent institutional cycle design," that is it is a combination of a "cross-sectional" and a "longitudinal" design (Campbell and Stanley, 1963). Actual samples of pre-test survey and post-test surveys used by Alpha and bravo classes may be viewed in appendix A through C respectively. A sample of the knowledge test can be found in appendix D of this text.

Measures

For research to be of any value the instruments chosen need to be of value, that is they need to measure what you are intending to measure (Leedy and Ormrod, 2005). Likewise the instrument needs to be reliable, it needs to yield consistent results when applied to different groups (Leedy and Ormrod, 2005). A coefficient of reliability or

consistency is Cronbach's α it is a test to measure a model or surveys internal consistency. Cronbach's α measures how well a set of variable measures a single "unidirectional" latent construct, in other words, the reliability of scales (UCLA, 2006). Nunnally (1978) is credited for determining the Cronbach alpha should be 0.70 or higher for a set of items to be considered an acceptable scale, the research standard. In order to reduce errors, existing instruments with alphas of 0.70 or higher were used in this research. The measurement responses were given using a 5-point or 7-point Likert-type scales. Scale ranges will be noted for each construct along with the instruments original alpha. Original instruments along with any changes can be found in appendix F.

Table 2 illustrates the final survey packages content. The next section contains descriptions and a discussion of the constructs and how they were measured. This research was unable to gather data from the field due to time. However, all the constructs for the study are included for the reader to have an overall feeling of the longitudinal study. The item number does not correspond with the question number on the survey but simply denotes the number of question for the given construct, the number order for the survey can be observed in appendices A-F. Reverse coded items are denoted by the bold "R" after the question.

Table 2 Contents of Survey Packages

Survey	Total Questions	Survey Questions	Demographic Questions Fill-in Blanks	Knowledge Questions	Open Ended Question
Pre-Training	84	39	7	37*	0
Post-Training	67	29	0	37**	0
3-6 Month Post-Training	97	59	0	37	1
Supervisor Post-Training Evaluation	42	34	7	0	1

* Not administered to Alpha class. ** Knowledge test was not administered to Alpha class.

Attitudes

Seven constructs were selected as variables to observe for an influence on training effectiveness based on the literature discussed in chapter two.

Affective Commitment.

Affective commitment was assessed with eight items developed by Allen and Meyer, (1990). Allen and Meyer found the items to have a Cronbach's α of 0.86. A modification for the AFFAM training environment was required for these items. The new instrument was used in three different observations and returned a Cronbach's α of .0.79, 0.85, and 0.84 respectively. A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint. Table 3 includes all the items used in this study for affective commitment.

Table 3 Instrument for Affective Commitment Measurement

Item
1. I would be very happy to spend the rest of my career with this specialty.
2. I enjoy discussing my career field with people outside it.
3. I really feel as if the career field problems are my own.
4. I think that I could easily become as attached to another career field as I am to this one. **R**
5. I do not feel like part of the family in my career field. **R**
6. I do not feel emotionally attached to this career field. **R**
7. This career field has a great deal of personal meaning for me.
8. I do not feel a strong sense of belonging to my career field. **R**

R = Reverse coded

Normative Commitment.

Normative commitment was assessed with six items developed by Meyer et al., (1993). Meyer et al. found these items in a before and after training application to have a Cronbach's α of 0.79 and 0.83 respectively. A modification for the AFFAM training environment was required for these items. The new instrument was used in three different observations and returned a Cronbach's α of .0.93, 0.88, and 0.89 respectively. Convergent validity was demonstrated by the significant positive correlation between the three measures ($O_1 – O_2$: r =.76, p<.001; $O_1 – O_3$: r =.76; $O_2 – O_3$: r =.76, p< .001). A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint was used. Table 4 includes all the items used in this study for normative commitment.

Table 4 Instrument for Normative Commitment Measurement

Item
1. I believe people who have been trained in a career field have a responsibility to stay in that career field for a reasonable period of time.
2. I do not feel any obligation to remain in this career field. **R**
3. I feel a responsibility to this career field to continue in it.
4. Even if it were to my advantage, I do not feel that it would be right to leave this career field now.
5. I would feel guilty if I left this career field.
6. I am in this career field because of a sense of loyalty to it.

R = Reverse coded

Self-Efficacy.

Self-Efficacy was assessed with eight items developed by Chen et al., (2001). Chen et al. found these items in a before and after training application to have a Cronbach's α of 0.86 and 0.90 respectively. The instrument was used in three different observations and returned a Cronbach's α of .0.86, 0.93, and 0.85 respectively. A 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5) with *neutral* (3) as the midpoint. Table 5 includes all the items used in this study for self-efficacy.

Table 5 Instrument for Self-Efficacy Measurement

Item
1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

Training Motivation.

Pre-Training motivation was assessed with nine items developed by Facteau et al., (1995). Facteau et al. found these items to have a Cronbach's α of 0.87. A modification for the AFFAM training environment was required for these items. The new instrument

returned a Cronbach's α of .0.91 A 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5) with *neutral* (3) as the midpoint. Table 6 includes all the items used in this study for training motivation.

Table 6 Instrument for Pre-Training Motivation Measurement

Item
1. If I have trouble understanding the material presented in a education program, I try harder.
2. I get more out of educational programs than most of my peers.
3. I look forward to actively participating in educational programs.
4. The opportunity to acquire new skills appeals to me.
5. I try to learn as much as I can from educational programs.
6. I make a special effort to complete all course assignments during education courses
7. I get really involved in learning the material presented in education courses.
8. I use my own time to prepare for education courses by reading, practicing skills, completing assignments, etc.
9. Doing well in educational programs is important to me.

Intrinsic Motivation.

Intrinsic was assessed with four items developed by Lawler and Hall, (1970). Lawler and Hall found these items to have a Cronbach's α of 0.72. The new instrument was used in two different observations and returned a Cronbach's α of .0.97 and 0.80 respectively. A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint. Table 7 includes all the items used in this study for intrinsic motivation.

Table 7 Instrument for Intrinsic Motivation Measurement

Item
1. When I do my work well, it gives me a feeling of accomplishment.
2. When I perform my job well, it contributes to my personal growth and development.
3. I feel a great sense of personal satisfaction when I do my job well.
4. Doing my job well increases my feeling of self-esteem.

Training Expectations.

Training expectations were assessed with eight items developed by this research team. The new instrument returned a Cronbach's α of 0.73. A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint. Table 8 includes all the items used in this study for training expectations.

Table 8 Instrument for Training Expectations Measurement

Item
1. Taking this class will help me to perform my job.
2. I think this class will be difficult.
3. The concepts in this class will be easy to understand. **R**
4. I am looking forward to learning the material in this class.
5. I think I know enough about acquisition that I shouldn't have to attend this class. **R**
6. I think this class will be below my current level of acquisition knowledge. **R**
7. I am not really interested in taking this class. **R**
8. As a result of taking this class, I will be a better program manager.

R = Reverse coded

Training Fulfillment.

Training expectations were assessed with scales developed for each class. Alpha class used five item instrument and the Bravo` class used nine item instrument. Both instruments were developed by this research team. The new instruments returned a Cronbach's α of 0.83 and 0.83 respectively. A 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5) with *neutral* (3) as the midpoint. Tables 9 and 10 include all the items used in this study for training fulfillment.

Table 9 Instrument for Training Fulfillment Alpha Class Measurement

Item
1. The instructors where very knowledgeable about the subject matter in the AFFAM course.
2. The training was what I expected.
3. It was hard to understand all the concepts presented in the AFFAM course. **R**
4. I feel this training will help me in my job.
5. I enjoyed the AFFAM course.

R = Reverse coded

Table 10 Instrument for Training Fulfillment Bravo Class Measurement

Item
1. This class helped me gain useful knowledge and/or skills.
2. The class was what I expected.
3. The concepts in this class were difficult to understand. **R**
4. I feel this class will help me do my job.
5. I enjoyed the AFFAM course.
6. I feel I learned a lot in this class.
7. This class has increased my interest in the Acquisition program manager career field.
8. I am really glad that I took this class.
9. Overall, I think this class will be valuable to my career.

R = Reverse coded

Acquisition Background.

Acquisition background was assessed with three fill-in the blank questions developed by this research team. Table 11 includes all the items used in this study for acquisition background.

Table 11 Instrument for Acquisition Background (Prior Knowledge) Measurement

Item
1. Have you ever held a position in which you performed acquisition tasks? Yes_____ No_____
2. How long did you perform duties in which acquisition knowledge was required? Months_____
3. Have you ever taken any formal acquisition training? How much / list Yes_____ No_____ List_____

Field Surveys

As previously stated this research was unable to gather data on any of the following constraints due to time. These constructs are included as the path for future research.

Opportunity to Perform.

As discussed previously opportunity to perform is when a trainee is provided with or actively obtains work experiences relevant to the tasks for which he of she was trained (Ford et al., 1992). Three measures were chosen for this measurement.

Breadth.

Breadth was assessed with two questions developed by this research team. A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint. Table 12 includes all the items used in this study for acquisition background.

Table 12 Instrument for Breadth Measurement

Item
1. I work on all areas of the acquisition process in my program.
2. I am focused on one area of the program (i.e. scheduling, budget, other). **R**

R = Reverse coded

Activity Level.

Activity level was assessed with three questions developed by this research team. A 5-point Likert scale ranging from *never* (1) to *always* (5) with *sometimes* (3) as the midpoint. Table 13 includes all the items used in this study for activity level.

Table 13 Instrument for Activity Level Measurement

Item
1. Most of what I do is in support of the office and does not support the program directly.
2. I spend a lot of time working on tasks that are neither related to the program or the office.
3. I work on program related tasks

Type of Tasks.

Type of tasks was assessed with five items developed by Ford et al., (1992). Ford et al. found these items to have a Cronbach's α of 0.74. A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint. Table 14 includes all the items used in this study for type of tasks.

Table 14 Instrument for Type of Tasks Measurement

Item
1. I am allowed to work on critical areas of the program.
2. I am allowed to work on difficult problems with others.
3. I spend more time watching others demonstrate tasks than actually working on the tasks myself.
4. I am only allowed to work on the easiest problems
5. I am given chances to learn new tasks.

Organizational Support.

Organizational support consist of those things that an organization has or does which impact the way a person is allowed to perform their job.

Supervisor Attitudes.

Supervisor attitudes were assessed with 12 items developed by Ford et al., (1992). Ford et al. found these items to have a Cronbach's α of 0.90. A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint. Table 15 includes all the items used in this study for supervisor attitudes.

Table 15 Instrument for Supervisor Attitudes Measurement

Item
1. This airman is a nice person
2. I would not like to see this airman remain in the Air Force
3. This airman gets along well with others.
4. This airman's abilities are adequate to perform assigned tasks
5. This airman could be promoted below the zone.
6. It is difficult to get along with this airman.
7. I am confident that this airman's skills can improve with experience.
8. If I need something done, I know this airman can do it.
9. This airman demonstrates high military bearing.
10. I trust this airman to work on difficult tasks.
11. This airman has high potential in the Acquisition career field.
12. This airman's values are similar to my own.

Task Constraints.

Task constraints were assessed with 16 items developed by Mathieu et al., (1992). Mathieu et al. found these items to have a Cronbach's α of 0.85 after dropping items 10 and 15 for a total of 14 items. We reinserted these items because we feel they are pertinent to the target population. A 7-point Likert scale ranging from *not at all* (1) to *a very great extent* (7) with *to some extent* (4) as the midpoint. Table 16 includes all the items used in this study for task constraints.

Table 16 Instrument for Task Constraints Measurement

Item
1. Do you receive adequate information from other sources (e.g., co-workers, departments, outside companies or agencies, etc.) needed to perform your job well? **R**
2. Do you have adequate equipment (e.g., computers, software, printers, media) for performing your job? **R**
3. Do you have adequate supplies (e.g., paper, mailing envelopes) for performing your job? **R**
4. Is there a shortage of help in your office?
5. Have you had the opportunity to receive adequate educational and/or training experiences necessary to perform your job well? **R**
6. Is there enough time available to complete your job duties as assigned? **R**
7. Are the physical aspects of your office (e.g., space, lighting, etc.) adequate? **R**
8. Are your job duties and tasks scheduled in an efficient manner? **R**
9. Do you have sufficient authority to complete the tasks that are assigned to you? **R**
10. Is the operating budget in your program sufficient to fulfill the requirements as expected by the customer? **R**
11. Do administrative rules or policies hinder your effectiveness on the job? **R**
12. Do you receive sufficient forewarning to plan your work activities? **R**
13. Does your supervisor encourage you to learn new skills or to try out new ideas? **R**
14. Do your co-workers resist new ideas or the use of new work procedures?
15. Does your office have prescribed ways of doing things that must be followed?
16. Is time made available to you in order to practice new skills or to experiment with different work procedures? **R**

R = Reverse coded

Workflow.

Workflow was assessed with six items developed by Ford et al., (1992). Ford et al. found these items to have a Cronbach's α of 0.75. A 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) with *neutral* (4) as the midpoint. Table 17 includes all the items used in this study for workflow.

Table 17 Instrument for Workflow Measurement

Item
1. There are not enough people to get the work done.
2. We are constantly under time pressure to get the work done.
3. There are long periods of time when there is not much to do. **R**
4. We are constantly getting program tasking and re-tasking.
5. There are many days when airmen have little to do. **R**
6. The work pace is slow. **R**

R = Reverse coded

Organization Reaction to Training.

Organization reaction to training was assessed with four questions developed by this research team. A 5-point Likert scale ranging from *never* (1) to *always* (5) with *sometimes* (3) as the midpoint. Table 18 includes all the items used in this study for organization reaction to training.

Table 18 Instrument for Organization Reaction to Training

Item
1. My organization values training
2. All members of my organization attend training to increase their career field skills.
3. My supervisor believes the formal training courses are a waste of time. **R**
4. Formal training provides most of the skills required for me to be successful in my organization.

R = Reverse coded

Perceived Transfer.

Perceived transfer can be measured with a knowledge test some 3-6 months after training (Alvarez, 2004; Kirkpatrick, 1976). The multiple choice items were provided by the AFIT School of Systems and Logistics which conduct the AFFAM course. The questions can be reviewed in appendix E.

Acquisition Category.

Acquisition category was assessed with three fill-in the blank questions developed by this research team. Table 19 includes all the items used in this study for acquisition background.

Table 19 Instrument for ACAT Determination

Item
1. What is the ACAT level of the program you are employed by? ACAT I____ ACAT II____ ACAT III____
2. Can your current program ACAT level be easily identified? Yes_____ No_____
3. Other i.e. not currently in a program List_____

Trainee Performance.

Trainee performance was assessed with 16 items developed by Lynch et al., (1999). Facteau et al. found these items to have a Cronbach's α of 0.91. A modification for the AFFAM training environment was required for these items. A modification for the AFFAM training environment was required for these items. A 5-point Likert scale ranging from *disagree* (1) to *very strongly agree* (5) with *slightly agree* (3) as the midpoint. Table 20 includes all the items used in this study for training performance.

Table 20 Instrument for Training Performance

Item
1. This employee performs tasks that are expected of him/her.
2. This employee exhibits punctuality in arriving to work on time.
3. This employee spends time in idle conversation. **R**
4. This employee adequately completes assigned duties.
5. This employee fulfills responsibilities specified in his/her job description.
6. This employee's attendance at work is above the norm.
7. This employee works cooperatively with his or her supervisor.
8. This employee meets formal performance requirements of the job.
9. This employee gives advanced notice when unable to come to work.
10. This employee makes constructive suggestions to improve the overall functioning of his/her work group.
11. This employee encourages others to try new and more effective ways of doing their job.
12. This employee keeps well-informed where opinion might benefit the organization.
13. This employee continues to look for new ways to improve the effectiveness of his or her work.
14. This employee takes action to protect the organization from potential problems.
15. This employee goes out of his/her way to help new employees.
16. This employee volunteers for things that are not required.

R = Reverse coded

Data Analysis

Statistical Package for the Social Sciences (SPSS) software is used for the data analysis. SPSS uses predictive analytics analysis techniques. This study utilizes a "recurrent institutional cycle design," that is it is a combination of a "cross-sectional" and a "longitudinal" design (Campbell and Stanley, 1963). This design was chosen because

all Air Force acquisition, engineer, and scientist career field officers are required to attend the AFFAM training. Therefore, it is impossible to ever have a control group that does not receive the treatment.

This patched up design can control for many factors over time and provides a valuable approach to analyze this type of group (Campbell and Stanley, 1963). The effect of the treatment can cause different results depending on the observations compared. As this study goes on the research team could implement a type of randomization by randomly picking classes to observe. In a repetitive training environment where classes start every few weeks in a cyclical manner the research team would randomly pick classes through-out the year (Campbell and Stanley, 1963). The researchers need to be cognizant of the fact that times of the year can affect the outcome of the observation (Campbell and Stanley, 1963). Nearly all the sources of invalidity can be controlled for with this study design over time.

This research covers the first part of "recurrent institutional cycle design" see Figure 3. The Alpha class is a One-Shot experimental study, in that the pre-training survey is absent. However, this data is still valuable as part of the "cross-sectional" study in that it controls for the effects of history, testing, and instrumentation. An Independent t-test analyzed the block scores of O_1 and O_3. A Levene's test is part of the t-test it assumes equality of variance if significance is >.10. All significance values for affective commitment, normative commitment, and self-efficacy are greater then .10, Table 21 reflects data evaluated in the independent t-test between O_1 and O_3.

There is no significance with the results between class A and class B therefore testing has been controlled for and the pre-training surveys have no influence on the AFFAM block averages.

Table 21 Independent t-test for Affective Commitment, Normative Commitment, and Self-Efficacy, and AFFAM Test Averages Between O_1 and O_3

Independent Variables	Mean O_1 (Std Dev)	Mean O_3 (Std Dev)	Mean Difference	Std. Error Difference	t-value	Significance (2-tailed)
Affective Commitment	4.25 (.96)	4.15 (.98)	.100	.238	.418	.677
Normative Commitment	3.54 (1.35)	3.85 (1.29)	-.307	.319	-.962	.340
Self-Efficacy	4.22 (.58)	4.23 (.44)	-.013	.122	-.106	.916
AFFAM Averages	87.13 (5.49)	87.94 (6.67)	-.815	1.306	-.624	.534

Bravo class was observed before and after the treatment implementing the "longitudinal" design. An Independent t-test analyzed the block scores of O_1 and O_3. A Levene's test for equality of variance for affective commitment, normative commitment, self-efficacy, and AFFAM averages all showed the groups had equal variances. The comparison between O_2 and O_3 is the longitudinal part of the design which controls for selection and mortality. Table 22 reflects data evaluated in the independent t-test between O_1 and O_2.

Table 22 Independent T-test for Affective Commitment, Normative Commitment, and Self-Efficacy Between O_1 and O_2

	Means		t-test for Equality of Means			
Independent Variables	O_1	O_2	t	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Affective Commitment	4.25	4.35	-.414	.680	-.101	.244
Normative Commitment	3.54	4.33	-2.422	.018	-.784	.324
Self-Efficacy	4.22	4.27	-.399	.691	-.051	.127

`

Class A	X	O_1				
	--	--	--	--	--	
Class B		O_2	X	O_3		

Figure 3 Institutional Cycle Experimental Design Phase I (Campbell and Stanley)

Comparing O_1 and O_2 should show the value at O_1 to be positive when compared to O_2, the cross-sectional part of the design; this measure is more precise than the comparison of $O_2 - O_3$. Thus, the analysis follows: $O_1 > O_2$, $O_2 < O_3$, $O_2 < O_6$ (Campbell and Stanley, 1963). The O_4 observations and above are shown in Figure 4, illustrating one possible pattern of how the randomization would come into play.

Class A	X	O_1				O_5						
Class B		O_2	X	O_3			O_7					
Class C				X								
Class D				R	X	O_6		O_9				
Class E				RO_4		X	O_8		O_{12}			
Class F						R	X	O_{10}				
Class G								X			O_{13}	
Class H									X			
Class I								RO_{11}		X	O_{14}	

Figure 4 Institutional Cycle Experimental Design Phase I & II (Campbell and Stanley)

Summary

The methodology was quantitative utilizing two media types. The initial research probe into the AFFAM effectiveness was analyzed with SPSS looking for correlations between the measures. The majority of the instruments come from other previously validated research. Portions of the wording in some of those measures were changed to be consistent with USAF terminology (Appendix E). Some new measures were

developed by this team and more data is required to fully validate them. Trainees for two different AFFAM classes were invited to participate in this research. The research collected 28 surveys at observation 1 and 36 surveys for observation 2 and 3. Returned surveys account for 80%, 64%, and 64% response rate respectively. A total of 33 participants or 59% of the Bravo class completed pre and post surveys. Chapter IV will analyze the data utilizing the methodology described above. Chapter V discusses conclusions and recommendations for the overall study.

IV. Data Analysis and Results

Analysis

As previously discussed in chapter three, Statistical Package for the Social Sciences (SPSS) software is used for the data analysis. SPSS uses predictive analytics analysis techniques. This study utilizes a "recurrent institutional cycle design," that is it is a combination of a "cross-sectional" and a "longitudinal" design (Campbell and Stanley, 1963).

Data input

Raw data survey for all three observations was imported from a spreadsheet into SPSS. The number of respondents for each of the observation periods varied (N = 28 for observation 1, N= 45 for observation 2, and N= 47 for observation 3), still a smaller number for Bravo class completed both before and after training surveys (N = 36 for observations 2 and 3). All but two respondent surveys had complete data. With such a complete data set the SPSS default of listwise deletion of missing cases was used. Listwise deletion deletes the entire case if any of the variables used in the calculation for an evaluation has missing data (Miller et al., 2002: 172). All reverse coded items were recoded once the data was imported into the SPSS database. Analysis of the data consisted of scale reliability analysis, independent T-tests, paired T-tests, and Bivariate correlation.

Results

The first procedure completed was reliability analysis. A coefficient of reliability or consistency is Cronbach's α - a test to measure a scale's internal consistency. Cronbach's α measures how well a set of items measures a single "unidirectional" latent

construct, in other words, the reliability of scales (UCLA, 2006). Nunnally (1978) is credited for determining that Cronbach's α should be 0.70 or higher for a set of items to be considered an acceptable scale, the research standard. All test instruments returned a Cronbach's α of 0.73 or higher (Tables 22 and 23).

Correlations were calculated for the three observation periods and are presented in Tables 22 and 23. The calculations used data sets specific to each observation period which have the following sample sizes. Observation one N = 28,; observation two N = 44 or 45, observation three N = 41 to 45.

Table 23 Correlation Table of Variables for Observations 1 (Time 2) Alpha Class

O_1 Variables	Mean (Std Dev)	1	2	3	4	5
1. Affective Commitment	4.25 (.96)	(.79)				
2. Normative Commitment	3.54 (1.35)	.72**	(.93)			
3. Self-Efficacy	4.22 (.58)	.22	.06	(.86)		
4. Intrinsic Motivation	5.70 (1.37)	.09	.00	.30	(.97)	
5. Training Fulfillment	3.55 (.76)	.30	.33	-.02	-.12	(.75)
6. AFFAM Test Average	87.13 (5.48)	.04	-.06	-.10	.04	.04

** Correlation is significant at the 0.01 level (2-tailed).

Cronbach's α in parenthesis on the diagonal.

Table 24 Correlation Table of Variables for Observations 2 (Time 1) and 3 (Time 2) Bravo Class

	Mean (Std Dev)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Affective Commitment O_2	4.35 (1.04)	(.85)															
2. Affective Commitment O_3	4.15 (.99)	.85**	(.84)														
3. Normative Commitment O_2	4.33 (1.34)	.71**	.66**	(.88)													
4. Normative Commitment O_3	3.85 (1.29)	.63**	.76**	.76**	(.89)												
5. Self-Efficacy O_2	4.27 (.49)	.32*	.31	.29	.24	(.93)											
6. Self-Efficacy O_3	4.23 (.44)	.09	-.08	-.08	-.06	-.03	(.85)										
7. Pre-Training Motivation O_2	4.11 (.53)	.46**	.45**	.42**	.36*	.84**	-.05	(.91)									
8. Intrinsic Motivation O_3	6.29 (.75)	.01	.30	-.05	.18	-.13	.50**	-.13	(.80)								
9. Training Expectations O_2	4.95 (.70)	.45**	.47**	.41**	.35*	.44**	-.01	.59**	-.10	(.73)							
10. Training Fulfillment O_3	3.64 (.56)	.35*	.49**	.25	.41**	.12	.20	.26	.52**	.38*	(.83)						
11. AFFAM Test Average	87.94 (6.67)	-.06	.02	-.15	.05	-.10	.27	-.11	.06	-.04	.18	-					
12. Knowledge Test O_2	47.33 (14.39)	.02	.16	.10	.19	.16	.11	.08	.10	.05	.13	.38*	-				
13. Knowledge Test O_3	75.78 (9.58)	.20	.22	.17	.31	.25	.16	.12	.12	-.03	.17	.57**	.25	-			
14. Number of Acquisition Classes	.36 (.68)	.10	-.05	.05	-.07	-.05	.13	-.09	-.01	-.14	-.06	.21	.42**	.24	-		
15. Months in Acquisition Job	1.23 (3.86)	.07	.01	-.22	-.19	-.01	.17	-.07	.06	.08	.02	.26	.13	.18	.05	-	
16.Time In Service	23.44 (28.31)	.18	.38*	.16	.42*	.10	.21	.15	.24	.07	.36*	.20	.08	.09	-.14	.18	-
17. Rank	1.51 (1.12)	.25	.23	.19	.14	.07	.25	.06	.17	.22	.25	.04	.28	-.02	.50**	.14	.36*

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). Cronbach's α in parenthesis on the diagonal.

The T-test analysis eliminates type I error. It not only compares the scores of the two groups but also evaluates the spread or variability of the scores (Miller et al., 2002: 119). "Type I error occurs if you accept a hypothesis as being correct when it is really false (Miller et al., 2002: 118)." Two types of t-tests are available; independent when the data compared is from groups that are different, and paired samples when data compared is from the same group but at different times. Independent t-tests were used to analyze the test criteria between O_1 and O_2 and between O_1 and O_3 which were taken from two different classes, previously discussed in chapter III. Paired samples t-tests were used to analyze the test criteria between O_2 and O_3 which were taken from the same class at two different times.(Table 25).

Class A	X	O_1				
	--	--	--	--	--	
Class B		O_2	X	O_3		

Figure 5 Institutional Cycle Experimental Design Phase I (Campbell and Stanley)

Table 25 Paired T-test for Affective Commitment, Normative Commitment, Self-Efficacy, Knowledge Test, and AFFAM Averages for Bravo class observations 2 (Time 1) and 3 (Time 2)

Independent Variables	Mean O_2	Mean O_3	Mean Difference	Std. Deviation	Std. Error Mean	t	Sig. (2-tailed)
Affective Commitment	4.35	4.15	-.25	.56	.10	-2.62	.013
Normative Commitment	4.33	3.85	-.58	.91	.15	-3.74	.001
Self-Efficacy	4.27	4.23	-.03	.66	.11	-.30	.768
Knowledge – Course test	47.33	87.94	41.21	13.36	1.99	20.69	.000
Knowledge - Knowledge	47.33	75.78	27.43	15.42	2.54	10.82	.000

Hypothesis 1 Analysis.

Hypothesis 1 suggested affective commitment prior to taking the class would positively influence training scores. The correlation analysis between affective commitment measured prior to Bravo class (O_2) and AFFAM test score averages indicated the influence of affective commitment on training was not significant ($r = -.06$, $p > .05$). It was also not significantly correlated with the knowledge test administered prior to the course start ($r = .02$, $p > .05$). Affective commitment measured after Bravo class was also not significantly related to the knowledge test administered after the course was completed ($r = .22$, $p > .05$), although with more data this correlation may be significant. However, at this time, Hypothesis 1 is not supported.

Hypothesis 2 Analysis.

Hypothesis 2 suggested affective commitment would be positively influenced by training. The mean of affective commitment decreased from 4.35 to 4.15, and a paired t-test compared affective commitment O_2 with affective commitment O_3 indicated a significant difference ($t = -2.62$; $p<.05$). Training negatively influenced affective commitment therefore Hypothesis 2 is not supported.

Hypothesis 3 Analysis.

Hypothesis 3 suggested that normative commitment would be positively influenced by training. Means for normative commitment decreased from 4.33 to 3.85 in Bravo class, (O_2 to O_3) respectively. The paired t-test comparing normative commitment O_2 with normative commitment O_3 found a significant negative difference ($t = -3.74$; $p<.001$). Additionally, when post-course normative commitment from Alpha class (mean = 3.54) was compared with pre-course normative commitment from Bravo class (mean =

4.33, the t-test showed a significant difference as well ($t = -2.42$, $p < .05$). Thus, training significantly negatively influenced normative commitment, opposite of expectations, and thus Hypothesis 3 is not supported.

Hypothesis 4 Analysis.

Hypothesis 4 suggested self-efficacy would positively influence training scores. The correlation analysis between self-efficacy and AFFAM test averages indicated the influence of self-efficacy on training was not significant ($r = -.10$, $p > .05$). All correlations between self-efficacy (pre- and post-class), and knowledge measures (pre-, post- and block averages), were insignificant, whether it was between prior self-efficacy (O1) and the pre-course knowledge test ($r = .16$, $p > .05$), prior self-efficacy (O1) and the post course knowledge test ($r = .25$, $p > .05$), or in looking at both classes self-efficacy post course (O2), with AFFAM test score averages ($n = 69$, $r = .11$, $p = .36$), or self-efficacy post course (O2) and knowledge test post course scores for Bravo class ($r = .16$, $p = .33$). Therefore, contrary to previous research, Hypothesis 4 is not supported.

Hypothesis 5 Analysis.

Hypothesis 5 suggested self-efficacy would be positively influenced by training. The mean for self-efficacy for Bravo class decreased from 4.27 to 4.23, but the paired t-test comparing self-efficacy O_2 with self-efficacy O_3 showed no significant difference ($t = -.03$; $p>.05$). Therefore Hypothesis 5 is not supported.

Hypothesis 6 Analysis.

Hypothesis 6 suggested pre-training motivation will positively influence training scores. The correlation analysis between pre-training motivation and AFFAM test

averages indicated the influence of pre-training motivation on training was not significant ($r = -.11$, $p > .05$). Therefore Hypothesis 6 is not supported.

Hypothesis 7 Analysis.

Hypothesis 7 suggested intrinsic motivation would be positively influenced by organizational level factors. While an instrument measuring these factors was developed, it was not administered in this thesis effort, therefore this hypothesis remains to be tested.

Hypothesis 8 Analysis.

Hypothesis 8 suggested training expectations would positively influence training. The correlation analysis between training expectations and the AFFAM averages indicated the influence of training expectations on training was not significant ($r = -.04$, $p > .05$). Therefore Hypothesis 8 is not supported.

Hypothesis 9 Analysis.

Hypothesis 9 suggests training fulfillment will be positively influenced by training expectations. The correlation analysis between training expectations and training fulfillment indicated the influence of training expectations on training fulfillment was significant ($r = .38$, $p < .05$). Therefore Hypothesis 9 is supported.

Hypothesis 10 Analysis.

Hypothesis 10 suggests employees with background / experience in acquisition will positively influence training. The correlation analysis between months in an acquisition job and AFFAM averages indicated the influence of employees with background/experience in acquisition was not significant ($r = .26$, $p > .05$). The correlation analysis between the number of prior acquisition classes and AFFAM averages was not significant ($r = .21$, $p > .05$). However, the number of prior acquisition

classes was significantly related to the pre-course knowledge test ($r = .42$, $p < .01$). Therefore Hypothesis 10 is partially supported.

Hypothesis 11 Analysis.

Hypothesis 11 suggested knowledge measures at Time 2 will be positively influenced by training. The mean test score increased from 47.3 to 75.8, and the paired t-test showed this increase to be significant ($t = 10.82$; $p<.001$). Therefore Hypothesis 11 is supported.

Summary

This chapter provided the analysis obtained through the use of SPSS. Ten of 11 hypotheses were analyzed, of which 2 were fully supported, and one partially supported. One hypothesis could not be tested. Chapter V will provide conclusions and recommendations based on the observations of the analysis offered in this chapter.

V. Discussion

Overview

The purpose of this chapter is to draw conclusions about the first phase in the longitudinal study of the effectiveness of AFFAM training. This study tested several instruments, which were used in the evaluation of the course and also developed recommendations for the second phase of this study and future research. This chapter also discusses the limitations of this phase of the research.

Conclusions

The current study attempted to evaluate the training effectiveness of the AFFAM course. A model was developed to measure employee attitudes at different points in the training cycle and at a point 4 -6 months after they have been performing their job. The field measures were geared to gather the employee's attitudes and organizational support, all of which can be related to training effectiveness. Due to difficulties encountered in the survey approval process, only the first phase of the research was accomplished. This first phase evaluated the reliability of the instruments and tested effects of training on individual-level variables, and gives a glimpse of where the research may go.

All the instruments employed in the study proved to be very reliable, evident by the high Cronbach's α presented in chapter IV. The instruments for affective commitment, normative commitment, self-efficacy, pre-training motivation, and intrinsic motivation were taken from other research efforts. This research confirms these original instruments validity. The training expectations and training fulfillment instruments specifically developed for this study returned Cronbach's α of .73 and .83 respectively.

Elimination of one of the training expectations question would raise the Cronbach's α for this variable to .76. A limited amount of data was collected for this research. However, based on the small amount of data some theories started to form.

Contrary to previous research, affective commitment, normative commitment, and self-efficacy, were unrelated to AFFAM test averages. More data needs to be collected to further study this preliminary finding.

Second, the paired t-test evaluated commitment, self-efficacy, AFFAM test averages, and knowledge tests. All variables were significantly correlated with each other except self-efficacy. These observations indicate the probability they would occur by chance are less than 1 in 1000 ($p < .001$) for normative commitment, knowledge test O_2 to AFFAM test average, and knowledge test O_2 to O_3. Self-efficacy t-test results are not significant ($t = .30$; $p > .05$), likewise, the self-efficacy had no correlation between O_2 and O_3 ($r = -.06$; $p > .05$). These results for self-efficacy cannot be explained, all -data was checked to ensure an error did not occur during input. No errors were found in the reexamination of the data. One possible answer to the self-efficacy results is the lack of data points (N=33) or the low amount of variation in the scores.

Next, an interesting observation was uncovered in a matched pairs analysis of the means for affective commitment, normative commitment, and self-efficacy. When these means were compared to themselves at the two different observation points (O_2 to O_3), they all decreased. The decline in these variables might indicate that new employees were overwhelmed by the training, causing the drop in these attitude variables.

Finally, there appears to be little correlation between scores on knowledge test O_2 and knowledge test O_3 ($r = .25$; $p > .05$), however, the paired t-test showed the changes

from the first to second test were significant. This is good news for the course instructor, as the class is actually leading to an increase in knowledge in the students. The question that has not been tested yet is "How does that knowledge transfer to the workplace?" A highly positive correlation exists between the AFFAM test averages and knowledge test O_3 ($r = .57$, $p < .01$). The lack of significant correlations between the O_3 knowledge test and other variables may be due to a lack of data, or could indicate the students know this knowledge test will not impact their graduation, and/or they are ready to leave the course environment, thus it may not be a good measure of their knowledge. Possible solutions to the findings in this section will be discussed next.

Recommendations

This research has broken the ground and developed a model that needs to be completely tested. More data is required before any definitive discussion can be offered. A larger data pool will allow the research team to analyze relationships in the hypothesized model. Regression analysis as well as Structural Equation Modeling (SEM) is recommended which would provide better insight into the models variables and their relationships. However, SEM analyses with software tools such as Amos require very large data sets to produce relevant results. As valuable as regression analysis is it was not attempted due to the low number of participants in this phase of the research.

Additionally, participants need to be informed of the importance of the study and the potential impact on the Acquisition workforce. The apparent disregard for the knowledge test at O_3 needs to be further analyzed. One possible solution for this perceived disregard might be to add one hour to the end of overall AFFAM course. The additional hour would allow the research team to reiterate the purpose of the research and

inform the participants of the need for them to legitimately attempt the knowledge test. Knowledge transfer can be measured in the field with such an instrument as a knowledge test if the participants honestly attempt the test on their own (Alvarez et al., 2003).

One final recommendation is that all surveys and knowledge tests should be administered in hardcopy form. This would add to formatting consistency and aid in the database entry. No advantage was realized in the use of Blackboard as a testing media.

At this time, not enough data have been analyzed to recommend changes to the AFFAM course. These recommendations for administrating the research will eliminate confusion and increase participation in the study.

Limitations

This study contains two major limitations. First, the number of participants is small N=28 in some cases. This lack of data made it unrealistic to accomplish an in-depth analysis and develop solid findings, or to offer recommendations to the AFFAM course. Second, the time required to test the proposed model will take about a year, to gather sufficient responses from all the desired time periods before a complete analysis of the model can be accomplished. As this study goes on, these limitations will be resolved.

Summary

Evaluation of the effectiveness of the AFFAM course and the impact of the ACAT level on the new acquisition employee will take more time and data than was available for this research. A rich research area has been developed for the evaluation of training and this model, once verified; the model may logically be used in the analysis of other Air Force education and training courses.

This study accomplished the first phase of the research proving reliable instruments and providing a hint of the possible findings, which with further analysis may prove out. However, this study cannot make any recommendations about the effectiveness of the AFFAM course or the impact of ACAT level on acquisitions employees because of data and time. As this research continues, the acquisitions work force will be better served by its findings.

Appendix A Alpha Class Post Survey on Blackboard

Name:	EOC questionnaire
Instructions:	The purpose of this questionnaire is to gather data from AFFAM students on their reactions to the course and how those reactions might be different based on different attitudes that students might possess. By completing this survey you will be providing important feedback to AFIT and the acquisition career field in their efforts to improve instruction. Your participation is voluntary, and all data will be confidential. The survey should only take a few minutes to complete.

Question 1 Multiple Choice

I would be very happy to spend the rest of my career with this specialty.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 2 Multiple Choice

I enjoy discussing my career field with people outside it.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 3 Multiple Choice

I really feel as if this organization's problems are my own.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 4 Multiple Choice

I think that I could easily become as attached to another organization as I am to this one.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 5 Multiple Choice

I do not feel like part of the family at my organization.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 6 Multiple Choice

I do not feel emotionally attached to this organization.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 7 Multiple Choice

This organization has a great deal of personal meaning for me.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 8 Multiple Choice

I do not feel a strong sense of belonging to my organization.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 9 Multiple Choice

I believe people who have been trained in a profession have a responsibility to stay in that profession for a reasonable period of time.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 10 Multiple Choice

I do not feel any obligation to remain in this profession.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 11 Multiple Choice

I feel a responsibility to the this profession to continue in it.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 12 Multiple Choice

Even if it were to my advantage, I do not feel that it would be right to leave this profession now.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 13 Multiple Choice

I would feel guilty if I left this profession.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 14 Multiple Choice

I am in this profession because of a sense of loyalty to it.

Answers
Strongly Disagree
Moderately Disagree
Disagree
Neutral
Agree
Moderately Agree
Strongly Agree

Question 15 Multiple Choice

I will be able to achieve most of the goals that I have set for myself.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 16 Multiple Choice

When facing difficult tasks, I am certain that I will accomplish them.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 17 Multiple Choice

In general, I think that I can obtain outcomes that are important to me.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 18 Multiple Choice

I believe I can succeed at most any endeavor to which I set my mind.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 19 Multiple Choice

I will be able to successfully overcome many challenges.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 20 Multiple Choice

I am confident that I can perform effectively on many different tasks.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 21 Multiple Choice

Compared to other people, I can do most tasks very well.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 22 Multiple Choice

Even when things are tough, I can perform quite well.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 23 Multiple Choice

When I do my work well, it gives me a feeling of accomplishment.

Answers
Strongly Agree
Moderately Agree
Agree
Neutral
Disagree
Moderately Disagree
Strongly Disagree

Question 24 Multiple Choice

When I perform my job well, it contributes to my personal growth and development.

Answers
Strongly Agree
Moderately Agree
Agree
Neutral
Disagree
Moderately Disagree
Strongly Disagree

Question 25 Multiple Choice

I feel a great sense of personal satisfaction when I do my job well.

Answers
Strongly Agree
Moderately Agree
Agree
Neutral
Disagree
Moderately Disagree
Strongly Disagree

Question 26 Multiple Choice

Doing my job well increases my feeling of self-esteem.

Answers
Strongly Agree
Moderately Agree
Agree
Neutral
Disagree
Moderately Disagree
Strongly Disagree

Question 27 Multiple Choice

The instructors were very knowledgeable about the subject matter in the AFFAM course.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 28 Multiple Choice

The training was what I expected.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 29 Multiple Choice

It was hard to understand all the concepts presented in the AFFAM course.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 30 Multiple Choice

I feel this training will help me in my job.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree
Unanswered

Question 31 Multiple Choice

I enjoyed the AFFAM course.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Appendix B Bravo Class Pre-Education Survey (Hard Copy)

25 November 2005

TO: Students in AFFAM class of 29 Nov 05
SUBJECT: Pre-course survey
FROM: AFIT/ENV

Dear student,

Please take time to complete the following survey, put it back in the envelope, and **bring the envelope to class on the first day.** The study is supported by SAF/AQXD and AFIT/LS. Your participation is crucial to evaluation of the course, and program manager education and training overall. Details about the study are as follows:

Purpose: We are investigating the effectiveness of a newly established course as part of the Career Field Education and Training Plan (CFETP) for acquisition professionals. Our goal is to more fully understand how various organizational and individual level factors influence individual effectiveness for new personnel in the acquisition career field. This survey will help us gauge the effectiveness of the Air Force Fundamentals of Acquisition Management (AFFAM) course and the CFETP, and how they are related to these factors.

Confidentiality: We would greatly appreciate your completing the survey. Your attitudes and experiences about education and your work experience are essential to the study. ALL ANSWERS ARE STRICTLY CONFIDENTIAL. No one outside the research team will ever see your questionnaire. Although we ask for your name, no identification of individual responses will occur. Findings will be reported at the group level only. We ask for some demographic information in order to interpret results more accurately, and in order to link responses to future surveys in this study.

PRIVACY NOTICE

In accordance with AFI 37-132, Paragraph 3.2, the following information is provided as required by the Privacy Act of 1974:

Authority: 10 U.S.C. 8012, Secretary of the Air Force; powers and duties; delegation by; implemented by AFI 36-2601, Air Force Personnel Survey Program.

Purpose: To obtain information regarding the attitudes and knowledge of personnel enrolled in the fundamentals of acquisition management course, and evaluate the effectiveness of acquisition program manager education and training.

Routine Use: A final report will be provided to SAF/AQXD. No analysis of individual responses will be conducted and only members of the research team will be permitted access to the raw data. Reports summarizing trends in large groups of people may be published.

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

Disposition: We will make the research results available to you if you are interested. Please contact us via email at Christopher.Ward@AFIT.EDU or Michael.Rehg@afit.edu. Results will help AFIT evaluate the AFFAM course effectiveness, and determine what factors influence course effectiveness.

Time Required: It will probably take you about 35-40 minutes to complete this questionnaire, depending on your acquisition knowledge level. To ensure your privacy, please complete the questionnaire, seal it in the envelope which is provided, and return it to your instructor the first day of class.

Contact Information: If you have questions or comments about the survey contact the faculty advisor, Dr. Michael Rehg – Phone 937-255-3636 x4574; E-mail – Michael.Rehg@afit.edu or graduate student, Captain Christopher Ward – Cell Phone (937) 307-9258; E-mail – Christopher.ward@afit.edu. Thank you very much for your participation.

Sincerely,

CHRISTOPHER J. WARD, Capt, USAF
Graduate Student, AFIT/ENV

MICHAEL T. REHG, Ph.D.
Assistant Professor, AFIT / ENV

Part I. Instructions. This part of the survey asks you about your attitudes towards your job, this course, and your career field. We also ask you to provide some background information about yourself. Please fill in the circle with the answer that most closely represents your response to the question. <u>For the following questions use the scale below.</u>

① Strongly Disagree	② Disagree	③ Slightly Disagree	④ Neutral	⑤ Slightly Agree	⑥ Agree	⑦ Strongly Agree

1.	I enjoy discussing my career field with people outside it.	①	②	③	④	⑤	⑥	⑦
2.	I am looking forward to learning the material in this class.	①	②	③	④	⑤	⑥	⑦
3.	I really feel as if the career field problems are my own.	①	②	③	④	⑤	⑥	⑦
4.	I do not feel like part of the family in my career field.	①	②	③	④	⑤	⑥	⑦
5.	Taking this class will help me to perform my job.	①	②	③	④	⑤	⑥	⑦
6.	I do not feel emotionally attached to this career field.	①	②	③	④	⑤	⑥	⑦
7.	This career field has a great deal of personal meaning for me.	①	②	③	④	⑤	⑥	⑦
8.	I do not feel a strong sense of belonging to my career field.	①	②	③	④	⑤	⑥	⑦
9.	I think this class will be below my current level of acquisition knowledge.	①	②	③	④	⑤	⑥	⑦
10.	I do not feel any obligation to remain in this career field.	①	②	③	④	⑤	⑥	⑦
11.	I feel a responsibility to this career field to continue in it.	①	②	③	④	⑤	⑥	⑦
12.	I think that I could easily become as attached to another career field as I am to this one.	①	②	③	④	⑤	⑥	⑦
13.	Even if it were to my advantage, I do not feel that it would be right to leave this career field now.	①	②	③	④	⑤	⑥	⑦
14.	I believe people who have been trained in a career field have a responsibility to stay in that career field for a reasonable period of time.	①	②	③	④	⑤	⑥	⑦
15.	I would feel guilty if I left this career field.	①	②	③	④	⑤	⑥	⑦
16.	I am in this career field because of a sense of loyalty to it.	①	②	③	④	⑤	⑥	⑦
17.	I would be very happy to spend the rest of my career with this specialty.	①	②	③	④	⑤	⑥	⑦
18.	I think this class will be difficult.	①	②	③	④	⑤	⑥	⑦
19.	As a result of taking this class, I will be a better	①	②	③	④	⑤	⑥	⑦

program manager.

20. The concepts in this class will be easy to understand.	①	②	③	④	⑤	⑥	⑦
21. I think I know enough about acquisition that I shouldn't have to attend this class.	①	②	③	④	⑤	⑥	⑦
22. I am not really interested in taking this class.	①	②	③	④	⑤	⑥	⑦

For the following questions use the scale below.

① Strongly Disagree	② Disagree	③ Neutral	④ Agree	⑤ Strongly Agree

23. I will be able to achieve most of the goals that I have set for myself.	①	②	③	④	⑤
24. Even when things are tough, I can perform quite well.	①	②	③	④	⑤
25. I believe I can succeed at most any endeavor to which I set my mind.	①	②	③	④	⑤
26. If I have trouble understanding the material presented in an education program, I try harder.	①	②	③	④	⑤
27. Doing well in educational programs is important to me.	①	②	③	④	⑤
28. I will be able to successfully overcome many challenges.	①	②	③	④	⑤
29. I make a special effort to complete all course assignments during educational courses.	①	②	③	④	⑤
30. I am confident that I can perform effectively on many different tasks.	①	②	③	④	⑤
31. Compared to other people, I can do most tasks very well.	①	②	③	④	⑤
32. In general, I think that I can obtain outcomes that are important to me.	①	②	③	④	⑤
33. I get really involved in learning the material presented in educational courses.	①	②	③	④	⑤
34. I get more out of educational programs than most of my peers.	①	②	③	④	⑤
35. I look forward to actively participating in educational programs.	①	②	③	④	⑤
36. I try to learn as much as I can from educational programs.	①	②	③	④	⑤
37. When facing difficult tasks, I am certain that I will accomplish them.	①	②	③	④	⑤
38. The opportunity to acquire new skills appeals to me.	①	②	③	④	⑤
39. I use my own time to prepare for educational courses by reading, practicing skills, completing assignments, etc.	①	②	③	④	⑤

For the following questions, please fill in the blanks

40. Gender _____
41. Rank / GS rating _____
42. Age _____
43. How long have you been in the Military or time as a GS? (all periods of active military service as a commissioned officer and as an enlisted member)
    Years_____ Months_____
44. Have you ever held a position in which you performed acquisition tasks? Yes_____ No_____
45. How long did you perform duties in which acquisition knowledge was required?
    Months_____
46. Have you ever taken any formal acquisition training? (Yes/No) _____ If yes, list below:

    _____
    _____
    _____

Appendix C Bravo Class Post Survey on Blackboard

Name:	Post-Class Survey
Instructions:	The purpose of this questionnaire is to gather data from AFFAM students on their reactions to the course and how those reactions might be different based on different attitudes that students might possess. By completing this survey you will be providing important feedback to AFIT and the acquisition career field in their efforts to improve instruction. Your participation is voluntary, and all data will be confidential. The survey should only take a few minutes to complete.

Question 1 **Multiple Choice** **Average Score 0 points**

I enjoy discussing my career field with people outside it.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 2 **Multiple Choice** **Average Score 0 points**

When facing difficult tasks, I am certain that I will accomplish them.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 3 **Multiple Choice** **Average Score 0 points**

The concepts in this class were difficult to understand.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 4 **Multiple Choice** **Average Score 0 points**

I do not feel any obligation to remain in this career field.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 5 **Multiple Choice** **Average Score 0 points**

I do not feel like part of the family in my career field.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 6 **Multiple Choice** **Average Score 0 points**

I am confident that I can perform effectively on many different tasks.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 7 **Multiple Choice** **Average Score 0 points**

When I perform my job well, it contributes to my personal growth and development.

Answers
Strongly Disagree
Slightly Disagree
Disagree
Neutral
Agree
Slightly Agree
Strongly Agree

Question 8 **Multiple Choice** **Average Score 0 points**

I believe people who have been trained in a career field have a responsibility to stay in that career field for a reasonable period of time.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 9 **Multiple Choice** **Average Score 0 points**

I do not feel a strong sense of belonging to my career field.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 10	Multiple Choice	Average Score 0 points

This class helped me gain useful knowledge and/or skills.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 11	Multiple Choice	Average Score 0 points

I believe I can succeed at most any endeavor to which I set my mind.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 12	Multiple Choice	Average Score 0 points

I think that I could easily become as attached to another career field as I am to this one.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 13 **Multiple Choice** **Average Score 0 points**

I feel a responsibility to this career field to continue in it.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 14 **Multiple Choice** **Average Score 0 points**

I enjoyed the AFFAM course.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 15 **Multiple Choice** **Average Score 0 points**

I feel a great sense of personal satisfaction when I do my job well.

Answers
Strongly Disagree
Slightly Disagree
Disagree
Neutral
Agree
Slightly Agree
Strongly Agree

Question 16 **Multiple Choice** **Average Score 0 points**

I am in this career field because of a sense of loyalty to it.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 17 **Multiple Choice** **Average Score 0 points**

I will be able to achieve most of the goals that I have set for myself.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 18 **Multiple Choice** **Average Score 0 points**

I feel I learned a lot in this class.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 19 **Multiple Choice** **Average Score 0 points**

When I do my work well, it gives me a feeling of accomplishment

Answers
Strongly Disagree
Slightly Disagree
Disagree
Neutral
Agree
Slightly Agree
Strongly Agree

Question 20 **Multiple Choice** **Average Score 0 points**

This career field has a great deal of personal meaning for me.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 21 **Multiple Choice** **Average Score 0 points**

In general, I think that I can obtain outcomes that are important to me.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 22 **Multiple Choice** **Average Score 0 points**

This class has increased my interest in the Acquisition program manager career field.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 23 **Multiple Choice** **Average Score 0 points**

Even when things are tough, I can perform quite well.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 24 **Multiple Choice** **Average Score 0 points**

I do not feel emotionally attached to this career field.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 25 **Multiple Choice** **Average Score 0 points**

Doing my job well increases my feeling of self-esteem.

Answers
Strongly Disagree
Slightly Disagree
Disagree
Neutral
Agree
Slightly Agree
Strongly Agree

Question 26 **Multiple Choice** **Average Score 0 points**

I would feel guilty if I left this career field.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 27 **Multiple Choice** **Average Score 0 points**

I am really glad that I took this class.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 28 **Multiple Choice** **Average Score 0 points**

I would be very happy to spend the rest of my career with this specialty.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 29 **Multiple Choice** **Average Score 0 points**

I will be able to successfully overcome many challenges.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 30 **Multiple Choice** **Average Score 0 points**

The class was what I expected.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 31 **Multiple Choice** **Average Score 0 points**

I feel this class will help me do my job.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 32 **Multiple Choice** **Average Score 0 points**

I really feel as if the career field problems are my own.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 33 **Multiple Choice** **Average Score 0 points**

Compared to other people, I can do most tasks very well.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Question 34 **Multiple Choice** **Average Score 0 points**

Even if it were to my advantage, I do not feel that it would be right to leave this career field now.

Answers
Strongly Disagree
Disagree
Slightly Disagree
Neutral
Slightly Agree
Agree
Strongly Agree

Question 35 **Multiple Choice** **Average Score 0 points**

Overall, I think this class will be valuable to my career.

Answers
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Appendix D AFFAM Knowledge Test Pre and Post Education

Part II. Acquisition Knowledge. Please take this short test covering acquisition. The scores on this test will not be part of your formal performance evaluation for the AFFAM course. Just answer the questions as best as you can. There is no penalty for wrong answers.

1. Which of the following are characteristics of a project? (check all that apply)
   - ◯ Repetitive
   - ◯ Unique
   - ◯ Requires multifunctional resources (i.e. different skill sets, knowledge areas, educational backgrounds, etc.)
   - ◯ Temporary
   - ◯ On-going; proceeds indefinitely
   - ◯ Unfamiliar; involves uncertainty

2. The Project Management Institute's Project Management Body of Knowledge (PMBOK) outlines nine knowledge areas within project management. Some of the nine knowledge areas are: *(check all that apply)*
   - ◯ Policy management
   - ◯ Integration management
   - ◯ Communication management
   - ◯ Expectation management
   - ◯ Risk management
   - ◯ Scope management
   - ◯ Time management
   - ◯ Cost management

3. Managing stakeholder expectations is one of the most difficult challenges of project management because:
   - ◯ No one really knows who the stakeholders are
   - ◯ Stakeholders are usually reluctant to publicly disclose their requirements or objectives
   - ◯ Stakeholders often have very different objectives that may conflict with one another
   - ◯ There is no way to balance or resolve multiple stakeholder expectations

4. The "Triple Constraint" of project management that is found on almost every project is:

- ◯ Schedule, scope, integration
- ◯ Politics, cost, schedule
- ◯ Cost, personnel, politics
- ◯ Scope, time, cost

5. Because of the enormous complexity of most large-scale projects, it is essential that the project manager be a technical expert on the project team.

- ◯ True
- ◯ False

6. A project manager states, "I will take the necessary measures required to reduce the probability of the risk occurring or the consequences associated with the risk." He/she is exercising the _____ method of risk handling.

- ◯ Avoidance
- ◯ Transference
- ◯ Assumption
- ◯ Control
- ◯ Postponement

7. Assume that Activity A and Activity B are the first activities in a network schedule and both can begin at the same time. Activity A has a duration of 3 days and Activity B has a duration of 5 days. Activity A's successors, Activities C and D, have durations of 4 days and 2 days, respectively. Activity B's successors are Activity D and Activity E, and Activity E has a duration of 3 days. Activity F is a successor of both Activity D and Activity E, and has a duration of 3 days. Activity G is a successor of both Activity C and Activity F, and has a duration of 4 days. The total project duration is _____ days, and the critical path is _____:

- ◯ 14; A-D-F-G
- ◯ 14; B-D-F-G
- ◯ 15; B-E-F-G
- ◯ 15;B-D-F-G

For Questions 8 – 11 refer to the attachment at the back.

8. A project manager is analyzing the critical path on her network schedule. The expected duration of the critical path is 40 weeks, and the variance of the critical path (obtained by summing the variances of all the tasks on the critical path) is 16 weeks. Her boss really needs her project to complete in 32 weeks, and has asked her what the probability is that she can complete in 32 weeks or less. What should the project manager tell her boss?

- ◯ 97.7%
- ◯ 2.3%
- ◯ Between 65.5% and 72.6%
- ◯ Between 34.5% and 42.1%
- ◯ Impossible to determine without additional information

9. A network schedule has 4 possible paths through the network. The length of each path, along with the variance of each path, is provided here:

A-B-D-G-I; length = 20 months; variance = 5 months

A-B-E-G-I; length = 22 months; variance = 4 months

A-C-E-G-I; length = 18 months; variance = 4.5 months

A-C-F-H-I; length = 19 months; variance = 3 months

The probability of completing the network schedule in 24 months or less is:

- ◯ 15.9%
- ◯ 84.1%
- ◯ Between 65.5% and 72.6%
- ◯ Unable to determine from the information provided

10. A recent status report on a project reveals the ACWP = $2500, the CV = $-500, and the SV = $250. The BCWS = :

- ◯ $2750
- ◯ $3250
- ◯ $2250
- ◯ $1750

11. Based on the table provided, which WBS element is under budget and behind schedule?

WBS Element	BCWS	BCWP	ACWP
P	$1,000	$1,100	$1,150
Q	$2,000	$1,800	$2,100
R	$1,000	$1,200	$1,050
S	$2,000	$1,900	$1,800

- ◯ Element P
- ◯ Element Q
- ◯ Element R
- ◯ Element S
- ◯ none of the above

---

12. The Project Management Institute's Project Management Body of Knowledge (PMBOK) outlines nine knowledge areas within project management. Some of the nine knowledge areas are: *(check all that apply)*
    - ◯ Problem Analysis Report (PAR)
    - ◯ Initial Capabilities Document (ICD)
    - ◯ Requirements Needs Document (RND)
    - ◯ Capability Development Document (CDD)

13. Which way of meeting the needs of the user requires an Initial Capabilities Document (ICD)?
    - ◯ Doctrine & Training
    - ◯ Personnel & Facilities
    - ◯ Material Solution
    - ◯ All of the above

14. O&M funds are active for _____year(s):
    - ◯ One
    - ◯ Two
    - ◯ Three
    - ◯ Five

15. Which of the following is the primary interface to the user for a given weapon system?
    - ◯ Program Executive Officer (PEO)
    - ◯ Chairman of the Joint Chiefs of Staff
    - ◯ Milestone Decision Authority
    - ◯ System Program Manager (SPM)

16. Unique aspects of space systems acquisition include:
    - ◯ Majority of life cycle costs are incurred during operations and sustainment.
    - ◯ Prototypes are more common during design phase.
    - ◯ Relatively low quantities of very expensive items.
    - ◯ Greater emphasis on sustainment activities.

17. Who is the DoD Space Milestone Decision Authority?
    - ◯ The Undersecretary of Defense for Acquisition, Technology, and Logistics
    - ◯ The Undersecretary of the Air Force
    - ◯ The Space and Missile Systems Center Commander
    - ◯ The Space Defense Acquisition Board

18. The Program Executive Officer for AF space activities is:
    - ◯ The Undersecretary of Defense for Acquisition, Technology, and Logistics
    - ◯ The Undersecretary of the Air Force
    - ◯ The Space and Missile Systems Center Commander
    - ◯ The Space Defense Acquisition Board

19. Which category(ies) of research and development (R&D) is(are) **not** managed by the Air Force Research Laboratory?
    - ◯ Basic Research (6.1) only
    - ◯ Applied Research (6.2), only
    - ◯ Advanced Technology Development (6.3)
    - ◯ Advanced Component Development and Prototypes (6.4)
    - ◯ a & b
    - ◯ c & d

20. Which of the following are some of the key considerations in the development of an acquisition strategy?

- ◯ Technical risk, contract type, logistics
- ◯ Management risk, deployment, international use
- ◯ Compatibility with other services, training, deployment
- ◯ Test and evaluation, future modifications, manufacturing risk

21. Which of the following activities is a goal of a well-developed Acquisition Strategy?

- ◯ Provide the basis of accountability for cost, schedule and performance
- ◯ Avoid early agreements with test organizations
- ◯ Provide a consistent decision making framework
- ◯ Define agreements with other government agencies

22. Who approves changes to the Acquisition Program Baseline (APB)?

- ◯ The Program Manager
- ◯ The Milestone Decision Authority
- ◯ The Comptroller
- ◯ The Lead Project Engineer

23. The Acquisition Program Baseline (APB) establishes a commitment between the program manager and the Milestone Decision Authority and serves as the basis for accountability.

- ◯ True
- ◯ False

24. One of the elements a contract must contain to be legally enforceable is:

- ◯ Consistency
- ◯ Confirmation
- ◯ Consideration
- ◯ Completeness

25. A purpose for having a contract is to?
- ◯ Define the rights and responsibilities of each party
- ◯ Establish a moral relationship between two parties
- ◯ Require sufficient consideration to be exchanged between parties
- ◯ All of the above

26. If a reasonable estimate of cost can be made prior to award, it would be appropriate to use a _____ contract:
- ◯ Letter
- ◯ Firm-fixed-price (FFP)
- ◯ Cost-plus-award-fee (CPAF)
- ◯ Cost-plus-incentive-fee (CPIF)

27. The government program office staff has very little involvement in the systems engineering process. It is a contractor activity.
- ◯ True
- ◯ False

28. Which of the following software challenges often causes software development to delay a military system acquisition effort?
- ◯ Advances in computer hardware coupled with the proliferation of software-intensive systems leads to drastically larger and more complex software
- ◯ A rapidly changing environment creates an overwhelming demand of adaptive changes
- ◯ Hard real-time requirements are difficult to define, design to, and test
- ◯ All of the above

29. The State Department is not involved in the Foreign Military Sales Program.
- ◯ True
- ◯ False

30. The test documentation which provides the who, what, when, where, and how for the daily execution of testing is the:
- ◯ Test and Evaluation Master Plan (TEMP).
- ◯ Statement of Capability (SOC).
- ◯ Test Plan.
- ◯ Annual Report.

31. Which of the following statements is true:

- ◯ Pollution prevention is a systems engineering task that should be integrated into the acquisition process.
- ◯ The prime contractor is usually tasked to accomplish the environmental impact statement.
- ◯ Only ACAT 1 programs require environmental impact statements.
- ◯ The Air Force Space and Missile Center programs are exempt from the requirements of the National Environmental Policy Act.

32. Temporary-2 (T-2) modifications temporarily add, remove, or change equipment to:

- ◯ Support research and development or engineering evaluations
- ◯ Provide increased capability for a special mission
- ◯ Correct deficiencies that affect mission capability
- ◯ Correct deficiencies found during production

33. The key factor to consider during system transition from the product center to the supporting organization are:

- ◯ Design stability
- ◯ Availability of adequate technical orders, support equipment and reprocurement data
- ◯ Test results
- ◯ All of the above

34. A system eventually transitions from a Product Center to an Air Logistics Center (ALC) because:

- ◯ The Product Center specializes in research, development, and production.
- ◯ The ALC is best for supporting the fielded system and managing modifications.
- ◯ It is required by Congress.
- ◯ Both a and b are correct.

35. Interim Contractor Support (ICS) is used to:

- ◯ Provide the system permanent logistics support
- ◯ Achieve full operational capability as soon as possible
- ◯ Satisfy the 50/50 rule
- ◯ Bridge the transition from contractor to organic depot support

36. The primary benefit of employing a disciplined systems engineering program is:
    - ◯ Improved program cost and schedule performance
    - ◯ Reduced government engineering insight/oversight
    - ◯ Eliminated technology transition risk
    - ◯ Reduced need for integrating with other systems' developments

37. Systems Engineering Management is:
    - ◯ The same as program management on complex programs
    - ◯ Primarily a government only activity
    - ◯ The effort to integrate and control the design maturation
    - ◯ All of the above
    - ◯ None of the above

38. What is the first major activity in the systems engineering process?
    - ◯ Prioritize design alternatives
    - ◯ Requirements allocation
    - ◯ Requirements analysis
    - ◯ Configuration management

Reassurance of Anonymity

ALL ANSWERS ARE CONFIDENTIAL. No one other than the research team will see your completed questionnaire. Findings will be reported at the group level only (i.e. individual level findings will not be reported). We asked for some demographic information in order to interpret results more accurately. Reports summarizing trends in large groups may be published.

Questions/Concerns

If you have any questions or concerns please feel free to contact the research team members listed at the beginning of the questionnaire. We appreciate your participation and would be happy to address any questions you may have regarding the questionnaire or our research in general.

Feedback

If you are interested in getting feedback on our research results, please contact me via email at Christopher.Ward@AFIT.EDU.

Formulae ATTACHMENT

Network Statistic Formulae

$$T_e = \frac{a + 4m + b}{6} \qquad Z = \frac{T_s - T_e}{\sqrt{V_p}}$$

$$V = \left[\frac{b - a}{6}\right]^2$$

EVMS Formulae

$$CV = BCWP - ACWP \qquad SV = BCWP - BCWS$$

$$CV\% = \frac{CV}{BCWP}(100) \qquad SV\% = \frac{SV}{BCWS}(100)$$

$$CPI = \frac{BCWP}{ACWP} \qquad SPI = \frac{BCWP}{BCWS}$$

$$EAC = \frac{BAC}{CPI}$$

Estimated Project Duration = Originally Planned Project Duration / SPI

Communication Channels Formula

$$\text{\# comm channels} = \frac{(n)(n-1)}{2}$$

Z-Table

Z	Prob of completing project by Ts
3.000	0.999
2.800	0.997
2.600	0.995
2.400	0.992
2.200	0.986
2.000	0.977
1.645	0.950
1.600	0.945
1.400	0.919
1.282	0.900
1.200	0.885
1.000	0.841
0.800	0.788
0.600	0.726
0.400	0.655
0.200	0.579
0.000	0.500

Z	Prob of completing project by Ts
-0.200	0.421
-0.400	0.345
-0.600	0.274
-0.800	0.212
-1.000	0.159
-1.200	0.115
-1.400	0.081
-1.600	0.055
-1.645	0.050
-1.800	0.036
-2.000	0.023
-2.200	0.014
-2.400	0.008
-2.600	0.005
-2.800	0.003
-3.000	0.001

Appendix E Change of Wording to Air Force

Career Affective Commitment	**Career Affective Commitment**
(Allen and Meyer, 1990)	
1. I would be very happy to spend the rest of my career with this organization.	1. I would be very happy to spend the rest of my career with this specialty.
2. I enjoy discussing my organization with people outside it.	2. I enjoy discussing my career field with people outside it.
3. I really feel as if this organization's problems are my own.	3. I really feel as if the career field problems are my own.
4. I think that I could easily become as attached to another organization as I am to this one. **R**	4. I think that I could easily become as attached to another career field as I am to this one. **R**
5. I do not feel like part of the family at my organization. **R**	5. I do not feel like part of the family in my career field. **R**
6. I do not feel emotionally attached to this organization. **R**	6. I do not feel emotionally attached to this career field. **R**
7. This organization has a great deal of personal meaning for me.	7. This career field has a great deal of personal meaning for me.
8. I do not feel a strong sense of belonging to my organization. **R**	8. I do not feel a strong sense of belonging to my career field. **R**
Career Normative Commitment	**Career Normative Commitment**
(Meyer et al., 1993)	
1. I believe people who have been trained in a profession have a responsibility to stay in that profession for a reasonable period of time.	1. I believe people who have been trained in a profession have a responsibility to stay in that profession for a reasonable period of time.
2. I do not feel any obligation to remain in the nursing profession. **R**	2. I do not feel any obligation to remain in this profession. **R**
3. I feel a responsibility to the nursing profession to continue in it.	3. I feel a responsibility to this profession to continue in it.
4. Even if it were to my advantage, I do not feel that it would be right to leave nursing now.	4. Even if it were to my advantage, I do not feel that it would be right to leave this profession now.
5. I would feel guilty if I left nursing.	5. I would feel guilty if I left this profession.
6. I am in nursing because of a sense of loyalty to it.	6. I am in this profession because of a sense of loyalty to it.

Self-Efficacy	**Self-Efficacy**
(Chen et al., 2001)	
1. I will be able to achieve most of the goals that I have set for myself.	1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.	2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.	3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.	4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.	5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.	6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.	7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.	8. Even when things are tough, I can perform quite well.
Pre-Training Motivation	**Pre-Training Motivation**
(Facteau et al., 1995)	
1. If I have trouble understanding the material presented in a training program, I try harder.	1. If I have trouble understanding the material presented in a education program, I try harder.
2. I get more out of training programs than most of my peers.	2. I get more out of educational programs than most of my peers.
3. I look forward to actively participating in training programs.	3. I look forward to actively participating in educational programs.
4. The opportunity to acquire new skills appeals to me.	4. The opportunity to acquire new skills appeals to me.
5. I try to learn as much as I can from training programs.	5. I try to learn as much as I can from educational programs.
6. I make a special effort to complete all course assignments during training courses	6. I make a special effort to complete all course assignments during education courses
7. I get really involved in learning the material presented in training courses.	7. I get really involved in learning the material presented in education courses.
8. I use my own time to prepare for training courses by reading, practicing skills, completing assignments, etc.	8. I use my own time to prepare for education courses by reading, practicing skills, completing assignments, etc.
9. Doing well in training programs is important to me.	9. Doing well in educational programs is important to me.

Intrinsic Motivation	**Intrinsic Motivation**
(Lawler & Hall, 1970)	
1. When I do my work well, it gives me a feeling of accomplishment.	1. When I do my work well, it gives me a feeling of accomplishment.
2. When I perform my job well, it contributes to my personal growth and development.	2. When I perform my job well, it contributes to my personal growth and development.
3. I feel a great sense of personal satisfaction when I do my job well.	3. I feel a great sense of personal satisfaction when I do my job well.
4. Doing my job well increases my feeling of self-esteem.	4. Doing my job well increases my feeling of self-esteem.
Task Constraints	**Task Constraints**
(Mathieu et al.1992)	
1. Do you receive adequate information from other sources (e.g., co-workers, departments, outside companies or agencies, etc.) needed to perform your job well? **R**	1. Do you receive adequate information from other sources (e.g., co-workers, departments, outside companies or agencies, etc.) needed to perform your job well? **R**
2. Do you have adequate equipment (e.g., typewriters, software) for performing your job? **R**	2. Do you have adequate equipment (e.g., computers, software, printers, media) for performing your job? **R**
3. Do you have adequate supplies (e.g., paper, mailing envelopes) for performing your job? **R**	3. Do you have adequate supplies (e.g., paper, mailing envelopes) for performing your job? **R**
4. Is there a shortage of help in your office?	4. Is there a shortage of help in your office?
5. Have you had the opportunity to receive adequate educational and/or training experiences necessary to perform your job well? **R**	5. Have you had the opportunity to receive adequate educational and/or training experiences necessary to perform your job well? **R**
6. Is there enough time available to complete your job duties as assigned? **R**	6. Is there enough time available to complete your job duties as assigned? **R**
7. Are the physical aspects of your office (e.g., space, lighting, etc.) adequate? **R**	7. Are the physical aspects of your office (e.g., space, lighting, etc.) adequate? **R**
8. Are your job duties and tasks scheduled in an efficient manner? **R**	8. Are your job duties and tasks scheduled in an efficient manner? **R**
9. Do you have sufficient authority to complete the tasks that are assigned to you? **R**	9. Do you have sufficient authority to complete the tasks that are assigned to you? **R**

Task Constraints continued	**Task Constraints continued**
10. Is the operating budget in your office sufficient to cover the amount of work produced in your unit? **R**	10. Is the operating budget in your program sufficient to fulfill the requirements as expected by the customer? **R**
11. Do administrative rules or policies hinder your effectiveness on the job?	11. Do administrative rules or policies hinder your effectiveness on the job?
12. Do you receive sufficient forewarning to plan your work activities? **R**	12. Do you receive sufficient forewarning to plan your work activities? **R**
13. Does your supervisor encourage you to learn new skills or to try out new ideas? **R**	13. Does your supervisor encourage you to learn new skills or to try out new ideas? **R**
14. Do your co-workers resist new ideas or the use of new work procedures?	14. Do your co-workers resist new ideas or the use of new work procedures?
15. Does your office have prescribed ways of doing things that must be followed?	15. Does your office have prescribed ways of doing things that must be followed?
16. Is time made available to you in order to practice new skills or to experiment with different work procedures? **R**	16. Is time made available to you in order to practice new skills or to experiment with different work procedures? **R**
Type of tasks	**Type of tasks**
(Ford et al. 1992)	
1. I am allowed to work on critical equipment repairs	1. I am allowed to work on critical areas of the program.
2. I am allowed to work on difficult problems with others.	2. I am allowed to work on difficult problems with others.
3. I spend more time watching others demonstrate tasks than actually working on the tasks myself.	3. I spend more time watching others demonstrate tasks than actually working on the tasks myself.
4. I am only allowed to work on the easiest problems	4. I am only allowed to work on the easiest problems
5. I am given chances to learn new tasks.	5. I am given chances to learn new tasks.

Supervisor attitudes	**Supervisor attitudes**
(Ford et al. 1992)	
1. This airman is a nice person	1. This airman is a nice person
2. I would not like to see this airman remain in the Air Force	2. I would not like to see this airman remain in the Air Force
3. This airman gets along well with others.	3. This airman gets along well with others.
4. This airman's abilities are adequate to perform assigned tasks	4. This airman's abilities are adequate to perform assigned tasks
5. This airman could be promoted below the zone.	
6. It is difficult to get along with this airman.	6. It is difficult to get along with this airman.
7. I am confident that this airman's skills can improve with experience.	7. I am confident that this airman's skills can improve with experience.
8. If I need something done, I know this airman can do it.	8. If I need something done, I know this airman can do it.
9. This airman demonstrates high military bearing.	9. This airman demonstrates high military bearing.
10. I trust this airman to work on difficult equipment repairs.	10. I trust this airman to work on difficult tasks.
11. This airman has high potential in the AGE career field.	11. This airman has high potential in the Acquisition career field.
12. This airman's values are similar to my own.	12. This airman's values are similar to my own.
Work flow	**Work flow**
(Ford et al. 1992)	
1. There are not enough people to get the work done.	1. There are not enough people to get the work done.
2. We are constantly under time pressure to get the work done.	2. We are constantly under time pressure to get the work done.
3. There are long periods of time when there is not much to do. **R**	3. There are long periods of time when there is not much to do. **R**
4. We are constantly getting equipment to fix.	4. We are constantly getting program tasking and re-tasking.
5. There are many days when airmen have little to do. **R**	5. There are many days when airmen have little to do. **R**
6. The work pace is slow. **R**	6. The work pace is slow. **R**

Trainee Performance Evaluation (Lynch et al.,1999)	**Trainee Performance Evaluation**
1. This employee performs tasks that are expected of him/her.	1. This employee performs tasks that are expected of him/her.
2. This employee exhibits punctuality in arriving at his/her work station on time after breaks.	2. This employee exhibits punctuality in arriving to work on time.
3. This employee spends time in idle conversation. (R)	3. This employee spends time in idle conversation. (R)
4. This employee adequately completes assigned duties.	4. This employee adequately completes assigned duties.
5. This employee fulfills responsibilities specified in his/her job description.	5. This employee fulfills responsibilities specified in his/her job description.
6. This employee's attendance at work is above the norm.	6. This employee's attendance at work is above the norm.
7. This employee works cooperatively with his or her supervisor.	7. This employee works cooperatively with his or her supervisor.
8. This employee meets formal performance requirements of the job.	8. This employee meets formal performance requirements of the job.
9. This employee gives advanced notice when unable to come to work.	9. This employee gives advanced notice when unable to come to work.
10. This employee makes constructive suggestions to improve the overall functioning of his/her work group.	10. This employee makes constructive suggestions to improve the overall functioning of his/her work group.
11. This employee encourages others to try new and more effective ways of doing their job.	11. This employee encourages others to try new and more effective ways of doing their job.
12. This employee keeps well-informed where opinion might benefit the organization.	12. This employee keeps well-informed where opinion might benefit the organization.
13. This employee continues to look for new ways to improve the effectiveness of his or her work.	13. This employee continues to look for new ways to improve the effectiveness of his or her work.
14. This employee takes action to protect the organization from potential problems.	14. This employee takes action to protect the organization from potential problems.
15. This employee goes out of his/her way to help new employees.	15. This employee goes out of his/her way to help new employees.
16. This employee volunteers for things that are not required.	16. This employee volunteers for things that are not required.

Vita

Captain Christopher Ward was born in Kalispell, Montana and graduated from Flathead High School in 1985. He then enlisted in the Air Force as a Crew Chief in 1986. Captain Ward attended Southern Illinois Universities satellite undergraduate program at Edwards AFB, California and graduated with a Bachelor of Science degree in Industrial Technology in 2000. Captain Ward was commissioned into the United States Air Force as a second lieutenant in May 2001.

Captain Ward's first assignment was to the System Reconnaissance (SR) System Program Office (SPO), Hanscom Air Force Base, Massachusetts, where he served as the Program Manager (PM) for the integration of the Common Image Processor.

After three years with the SR SPO, he relocated to Wright-Patterson Air Force Base, Ohio, where he entered the Research and Development Management program at the Graduate School of Engineering and Management, Air Force Institute of Technology. Upon graduation, he will be assigned to Reconnaissance Systems Wing, Wright-Patterson Air Force Base, Ohio.

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14. ABSTRACT

This study analyzed the affect of the acquisition career field's initial education course on the individual level variables of commitment, motivation, self-efficacy, and knowledge, and developed a measure for future use of organizational factors that may impact that effectiveness. Effectiveness was assessed using a recurrent institutional cycle design, using two classes of students in the Air Force Fundamentals of Acquisition Management course. A total of 89 students responded to the surveys. Even with a small amount of data, the results showed that fulfilling the course expectations of the students increased the affective commitment to their career field. More data is required before recommendations for changes in education and training design can be made.

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