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A STUDY OF THE EFFECTS OF LOCUS OF CONTROL AND COMMITMENT ON RETENTION AND PERFORMANCE AT THE UNITED STATES AIR FORCE ACADEMY

THESIS

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A STUDY OF THE EFFECTS OF LOCUS OF CONTROL AND COMMITMENT ON RETENTION AND PERFORMANCE AT THE UNITED STATES AIR FORCE ACADEMY

THESIS

Presented to the Faculty of the School of Engineering
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Operations Research

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Second Lieutenant, USAF

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Preface

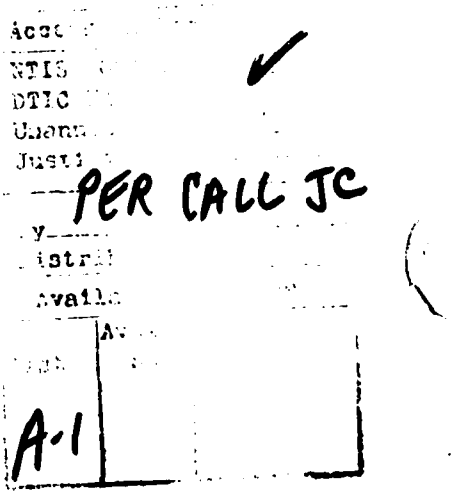
The purpose of this thesis was to identify the effects of locus of control and commitment on retention and performance at the United States Air Force Academy. The immediate need for this research is to better understand factors that might contribute to either attrition from the Academy, typically 35 to 40 percent, or the military and academic performance of those cadets who chose to remain at the Academy.

This study is an extension of a research plan initiated by the Office of Institutional Research at the United States Air Force Academy in 1982. It is only a small portion of a much larger study designed to understand attrition and to propose making meaningful changes to the admissions process, military training, and academic year training.

Extensive survey measurement of commitment and locus of control, a personality measure of the degree to which people believe they have control of events around them or are controlled by outside forces was performed. However, most of the research was carried on without directly addressing any of the antecedents or related factors of the two variables. Although this limits some of the power of the conclusions drawn in this thesis, it does not prohibit significant relations and measures found in much of the analysis.

In producing this thesis, I have had a great deal of help from others. I am deeply indebted to my faculty advisor, Colonel Michael J. O'Connell, for his assistance and insight throughout the entire thesis. I wish to give a loving note of thanks to my parents, Colonel and Mrs James F. Beatty, for their inspiration, faith and undying support. Most of all I wish to attribute a great deal of thanks to my wife Janine for her patience and understanding. Her support made the project a success.

Steven J. Beatty



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Abstract

This thesis determined the effects of individual's locus of control and level of commitment on retention and performance at the United States Air Force Academy. The subjects studied were cadets who entered the Academy in 1982. A key hypothesis assessing the interactive effect of commitment and locus of control on attrition and performance was analyzed and found to be significant.

Data was collected using attitudinal surveys and cadet military and academic performance ratings. The analysis was accomplished by longitudinal analysis, ANOVA, cross-lagged correlation analysis, and regression designs. The results indicate the significant negative correlation between commitment and attrition and between locus of control and performance. Further results indicate a significant difference in level of commitment between staying and leaving cadets. Those with an internal locus of control perform at higher levels within the Academy. Finally, a trade-off between locus of control may exist in determining performance levels and retention.

A STUDY OF THE EFFECTS OF LOCUS OF CONTROL AND COMMITMENT ON RETENTION AND PERFORMANCE AT THE UNITED STATES AIR FORCE ACADEMY

I. INTRODUCTION

This chapter provides the reasoning behind this study, the scope of the research involved, the specific problem faced in the area of performance and attrition at the United States Air Force Academy, the research question to be answered and subsidiary questions, the measures involved, and a brief overview of this text.

Background

The Office of Institutional Research at the United States Air Force Academy has for many years conducted research on a number of factors that may be related to retention and performance. Most of the research, however, has been conducted as an 'after-the-fact' response to growing concerns about retention. Most efforts to understand cadet retention and attrition at the Academy have centered around the admissions process and how it may or may

not relate to cadet turnover. In contrast, little attention has been given to understanding the factors that influence military performance, though considerable research has been conducted on aptitude and achievement measures that predict cadet academic performance. Even less effort has been directed towards understanding the process by which well-qualified individuals decide after entrance to leave or exhibit substandard performance (23:1).

Explaining what appears to be lack of motivation and commtment is difficult. As a consequence, the Office of Institutional Research collected extensive data on the United States Air Force Academy Class of 1986 when they entered in 1982. Data was collected in order to determine what pre-admission factors, aspects of Basic Cadet Training (BCT), and academic year training contribute to retention and effective cadet performance. While a number of the varibles on which data was collected are possible predictors, only two are analyzed here: locus of control and commitment.

Julian B. Rotter, in 1966, developed the concept of locus of control from his social learning theory. The concept was established in order to explain why some individuals ignored reinforcement contingencies (30:482). This inresponsiveness to reward or punishment was attributed to generalized expectancy that their own actions would not effect the reward or punishment. Locus of control, therefore, is an important variable in the explanation of

human behavior. Locus of control as a personality measure assesses the degree to which people believe they have control of events around them or are controlled by outside forces. The former individuals are called internals and the latter externals. Locus of control has been related to performance, motivation, effort, job satisfaction, and job perception. Other research has found that locus of control is related to organizational performance with analytical dichotomys surrounding the relationship between locus of control and attrition. However, locus of control may moderate the relation between commitment and turnover.

Commitment concerns the process of identification and the dedication of individuals to expend their own energy towards an organizations goals and values. The definition used by Mowday et al. for commitment is "the relative strength of an individual's identification with and involvement in a particular organization (22:226)". Commitment has proven to be a consistent predictor of turnover or attrition in many organization environments and has recently been found to be related to performance.

These variables continue to be widely researched and appear to be very relevant to understanding Air Force Academy motivation, performance, and attrition. However, little research has focused on the joint effect of locus of control and commitment or the possible interaction of the

two variables on attrition and performance.

Scope

In designing the overall research plan, researchers at the Office of Institutional Research decided to use existing survey instruments and cadet performance measures rather than develop new ones. This enables researchers to relate relevant research already conducted in other settings which may shed more light on better understanding of the cadet socialization, performance, and retention process.

Specific Problem

In recent years, the attrition rate for cadet's four years at the United States Air Force Academy has averaged thirty-five percent or greater. A need exists, therefore, 'to systematically study' the changes young men and women experience when they move from the high school, family-based environment to the military training and cadet environment (23:1). Better understanding of both a person's locus of control and commitment during this first year socialization experience may help describe and explain these changes. Consequently, with better understanding of the changes in a person's locus of control and level of commitment during their time at the Academy, it may be possible to institute meaningful changes to the admissions process. Basic Cadet

Training and academic year training. This would alleviate two significant concerns surrounding the attrition rate: low officer output from the Academy, and loss of funds invested in non-graduating cadets.

Research Question

How do locus of control and commitment relate to cadet performance, both military and academic, and retention at the United States Air Force Academy?

Subsidiary Questions

(1) How does a cadet's locus of control change over time?

(2) How does a cadet's commitment change over time?

(3) If commitment decreases or increases over time, what impact does this have on a cadet's subsequent performance and retention?

(4) If locus of control shifts from internal to external, or external to internal, what impact do such shifts have on future performance and retention?

(5) What are the correlations between performance and locus of control, locus of control and attrition, commitment and performance, and commitment and attrition?

Overview of the Thesis

Chapter Two contains an extensive literature review on the relation between locus of control and performance, locus of control and attrition, commitment and performance, and commitment and attrition. Chapter Three explains the methodology employed in conducting this research: the data

base, the subjects, the measures, and the procedure for analyzing the variables. Chapter Four contains the longitudinal and cross-lagged analysis and descriptive statistics for the variables in the study. Chapter Five reflects the results of the regression and correlational analysis performed. Chapter Six contains the conclusions and results and lists the suggestions and recommendations generated from the study.

II. Literature Review

Introduction

The four key variables used in this thesis are performance, attrition or turnover, locus of control, and commitment. Extensive literature has been written with regards to these individual measures. The primary focus of this literature review is on the interactions and correlations that have been found between the variables and their relation to the hypotheses and research questions of this study. The review is organized by the primary relationships: locus of control and performance, locus of control and attrition, commitment and performance, and commitment and attrition.

Locus of Control and Performance. If internal individuals are found to take charge, perform better on complex tasks, are easier to motivate, and exercise a higher degree of initiative than externals, as much of the Research using Rotter's I-E questionnaire suggests, then it is reasonable to expect internal cadets to recieve higher performance ratings and maintain a significantly greater performance average. Internals tend to have greater expectancies that their own effort will lead to good performance and in turn to reward (30:488). A study by

Lawler (15) provides evidence that expectancies of good performance being a precursor to rewards is, in fact, a causal factor in high job performance. He found, through cross-lagged and dynamic correlations, that reported expectancies were related to both peer and supervisor ratings of performance in a manner consistent with the notion that expectancies affect performance (15:467).

Several studies support the notion that internals exert greater effort on the job and are subsequently better performers. The measure of performance within these studies is of key concern. Four studies have investigated the relation of job performance to locus of control with measures of performance being supervisor ratings. The results showed a modest but significant relationship. Hersch and Scheibe (10) studied the effects of locus of control and performance on students working for the Conneticut Service Corps state mental hospitals. Supervisor ratings of performance were found to be significantly correlated with Rotter's I-E scores for two years worth of data: $r = -.20$ and $r = -.37$. Broedling (5) conducted a study on 207 naval personnel with performance ratings made by the subjects themselves, peers, and supervisors. Correlations between the ratings and I-E control scores were small but supported the hypothesis that internals tend to score better on performance ratings. Lied and Pritchard (16) collected scores and trainer ratings for 146 Air Force trainees and found significant correlation of

r = -.30. Finally, Majumder, MacDonald, and Greever (17) studied the relationship of locus of control and several organizational variables including supervisor ratings of performance. For a sample of 90 rehabilitaion counselors working in a state rehabilitaion program, locus of control was correlated (r = -.40) with performance, with internals, as in the studies reported above, recieving the higher performance ratings.

Using a more global measure of performance, career effectiveness, several studies investigated the relation between performance and locus of control. Valecha (32), using a national sample of 4330 men, conducted a five year longitudinal study, and found that internals make significantly more career progress than externals. Heisler (9) collected data on 196 government employees and computed an effectiveness measure based on number of promotions, salary increases, awards received, current salary, and grade differential. The correlation, r = -.25, between locus of control and Heisler's measure was found to be modest but significant. Finally, Andrisani and Nestel (1) examined both the influence of internal-external control on a number of facets of work experience, and the influence of work experience on change in internal-external control. Their sample was composed of 2972 respondents from the National Longitudinal Survey's nation sample of middle-aged males. Using multiple regression analysis and an 11-item abbreviated

version of Rotter's I-E questionnaire, the study observed a systematic relationship between internal-external control on success in the work environment. The observed relationships were independent of individual differences in skill, ability, and demographic distribution, and were obtained on basis of longitudinal and cross-sectional data, providing greater confidence in their findings (1:163). Additionally, they found that success at work improves the expectancy of internal control.

The conclusions and findings of these studies suggest that internals do perform better than externals. Internals are seen to exert greater effort with the expectation that greater performance leads to reward, exhibit greater personnel career success, and in general perform better within the organization. Some of these conclusions though, are based on the knowledge that internals will only display better performance if they perceive that effort will lead to reward (29:5).

Locus of Control and Attrition. The relationship between locus of control and attrition is extremely complex and not as well researched as the relationship between locus of control and performance. A consistent direct correlation between locus of control and attrition has not been established and would not be expected. Conflicting findings are prevelant in the literature analyzing these two

measures. For example, an internal takes action and therefore, might be expected to quit jobs more readily because of this. Likewise, internals tend to be more successful, as was previously found, and thus more satisfied with their jobs (30:493). For this reason, the direction of the relationship between locus of control and attrition may depend on other variables. In fact, possible interaction with other variables has been proposed.

Spector (30:494) suggests that locus of control might be interactively a moderator of turnover through job satisfaction. Job satisfaction and turnover relations have only been modest, suggesting dissatisfaction alone does not account for employee turnover. Externals "tend not to take action, and therefore *even if they are dissatisfied* they may stay on the job, at least until environmental factors force them to leave (30:493)". Conversely, internals tend to take action and would be expected to quit a dissatisfying job. Therefore, the correlation between job satisfaction and turnover should be higher for internals than for externals. If this is, in fact, the case, research would tend to suggest that since commitment is a better predictor of turnover than job satisfaction (24:606), there should be a high interactive relationship between locus of control, commitment, and turnover. Hypothetically, highly committed internals should have the lowest attriton rates, followed by highly committed internals, then low committed externals,

and finally, low committed internals.

The limited research literature on the relationship between locus of control and attrition seems to suggest only moderate to small correlation between the two variables.

Commitment and Performance. "The theory underlying the commitment construct suggests that highly committed employees will be less likely to leave their jobs and may under some circumstances, perform at higher levels than their less committed counterparts (24:606)". In reviewing the findings that have emerged from the studies of the consequences of orgainzational commitment, the relationship between performance and commitment is rather weak. Correlations have been found to be modest, but significant. For example, Mowday, Porter, and Dubin (21) found that highly committed employees tend to perform better than less committed ones. Angle and Perry (2) also found a possible relationship between commitment and performance.

Steers (31) analysis of a preliminary model concerning the antecedents and outcomes of employee commitment to organizations using a cross-validated framework found a rather weak relationship between commitment and overall performance. The study was carried out on two samples: 382 hospital employees and 119 scientist and engineers. For the hospital sample, four seperate measures of performance were available for the single time period.

Correlations of .05, .07, .11, and .10 were found between commitment and performance, however, only the latter two were statistically significant at the .05 level ($p < .05$). Hence, only a small relationship was found with no direct or consistent association. A study of 212 management-trainees by Porter et al. (25) analyzed the performance-commitment linkages using measures taken at three points in time, with cross-lagged correlations between commitment and subsequent performance in the 4-6 month, 6-9 month, and 4-9 month time periods. Two of four correlations approached statistical significance at the .05 level: $r = .35, .35$.

The strongest relationship between the two variables was reported by Van Maanen (33) in a study conducted on an urban police department. The longitudinal analysis of job attitudes was conducted on 136 police recruits with the framework of orgainzational socialization. Organizational commitment scores and patrol sergeants evaluations of job performance in the field showed a strong positive relationship. Across the nine time periods, the relationship was found to be consistent and enduring, with correlations ranging from .21 to .30, all significant at the .05 level. A second finding in the study pertained to Police Academy performance prior to entering the force. Although the relationship between Police Academy performance and organizational commitment did not reach significance across any of the time periods, the directionality between

the two variables was suggested to show that recruits who did well academicallly were more likely to report lower commitment levels towards the organization than those who were not doing so well (32:218).

With the exception of Van Maanen's study, most of the research in the literature found only modest relationships between commitment and performance, but seems to suggest that some of the variance and correlation in commitment levels and performance are significant.

Commitment and Attrition. The theory prevelant in the research suggests that one of the most predictable outcomes of employee commitment is reduced turnover. By definition, highly committed individuals have "a strong desire to maintain membership in the organization (21:226)," and would therefore be less likely to leave the organization. In determining the extent of the relationship between commitment and attrition, a series of studies have been accomplished.

Many of the studies represent predictive correlational designs of commitment and turnover among various samples. Mowday et al. (21) reported the predictive power of the Organizational Commitment Questionnaire (OCQ) in explaining turnover through four studies. Across nine data points, eight significant correlations between the two variables were found ($r = -.19, -.17, -.20, -.32, -.43, -.43, -.41,$

-.43, -.43). Koch and Steers (13) findings with respect to the consequences of organizational commitment showed a highly significant ($p < .001$) correlation between commitment and turnover ($r = -.38$). Testing the hypothesis that organizational commitment, independently of other factors, has a causal influence on subsequent voluntary employee turnover, Clegg (7) found zero-order correlation of -.09. A study by Steers (30) was carried out on 328 hospital employees. The OCQ was employed and had an internal consistency of .88. Organizational commitment was found to be a better predictor of turnover than job satisfaction, and inversely related to employee turnover. Hom, Katerburg, and Hulin (12) examined three approaches to prediction of turnover in a sample of 252 National Gaurd members. Based on the sample, organizational commitment had a correlation of .58 with actual enlistment behavior, a measure of attrition. In a study conducted on 1244 employees of a bus company, Angle and Perry (1) found turnover, as implied by seperation rate and intent to quit, significantly related to organizational commimtment.

Michaels and Spector (17) tested the Mobley, Griffeth, Hand, and Meglino model of turnover using data gathered on employees of a mental health facility. They added organizational commitment, assessed by the OCQ, to the model. The path analysis was consistent with the original model and the correlation between commitment and turnover

was -.16 ($p < .01$). Hom and Hulin (11) researched the effectiveness of the OCQ in predicting Army Guardsmen reenlistment. Of the sample of 1169 guardsmen, 255 were making a reenlistment decision. A moderate prediction of reenlistment was found.

Besides the standard concurrent correlational designs, longitudinal studies have produced very significant results in predicting turnover.

A longitudinal study conducted by Porter, Steers, Mowday, and Boulian (25) investigated changes across time in measures of commitment and job satisfaction, and how each related to turnover. The sample of recently employed psychiatric technician trainees was studied through a ten and one-half month period, with measures of commitment taken at four points in the period. The results of the discriminant analysis indicate a significant relationship between commitment and turnover, with the strongest relationships at points closest to when the individual terminates his enrollment in the organization. As expected, commitment attitudes strengthen over time for those individuals who remain with the organization and decline for those who leave (24:606). Organizational commitment was also found to discriminate better between individuals who leave and those who stay than the job satisfaction measure.

Another commitment-turnover study using a longitudinal design, analyzed the turnover of a sample of managerial

trainees in a large merchandising company (25). The fifteen month longitudinal design consisted of data collected from the first day of training through the end of the first 15 months, or in the case of leavers, until the time they left the organization. The results indicated that voluntary leavers during the fifteen month period had begun to show a decline in commitment prior to termination. The results also demonstrate a strong relationship between commitment and turnover, and again it was found that the magnitude of the relationship increased over time.

A third longitudinal study was carried out by Youngblood and Mobley (34) on 1445 Marine Corps enlistees. Their findings showed significant changes in the precursors of turnover over time. All groups, stayers and leavers, generally experienced a decline in attitudes toward the Marine Corps after completion of recruit training, although those who completed declined less than those who attrited.

The conclusion drawn from these three longitudinal studies is that when "a marked decline in commitment starts to occur, it is likely (though obviously not invariably) signaling a voluntary termination in the near future (Mobley).

Summary

The review of literature pertaining to the four primary relationships of interest to this thesis present several

findings of importance. First, as in previous studies we expect the strongest linkage that will be produced by this study will be between commitment and attrition. In the previous research, much emphasis is placed on the validity of the commitment construct (OCQ) to significantly predict the attrition of organizational participants. It should be the case, therefore, that those cadets who chose to leave the Academy voluntarily within their first year will have a declining commitment level across the six administrations, while the stayers should remain constant or increase their commitment levels. Secondly, commitment levels should modestly be predictive of the performance factors. That is, there should be a statistically significant difference in performance scores for those cadets with high levels of commitment. Also, declining levels of commitment should indicate a deteriorating level of performance.

From the locus of control research, the most significant finding is the relationship between locus of control and performance. The construct itself, as well as the performance validity, suggest that internals will in general perform better. This indicates that those individuals selected to attend the Academy should possess an internal locus of control. This is contingent upon the significance of the reward for good performance nature of the Academy. Finally, the relationship drawn between locus of control and attrition is modest. The

dichotomys which exist in interpretation of the nature of internals within the organization does not allow for strong inferences about the correlation of locus of control and attrition. The determination of changes in a person's locus of control will be necessitated by the military training aspect of the Academy.

III. Methodolgy

Introduction

This chapter explains the data base, defines the subjects under consideration, the data collection procedures, and the procedure and measures involved in testing the hypotheses and research questions. This includes the data tape information provided by the Office of Institutional Research, the breakdown of cadets involved in the study, survey frequency counts, explanations of the measures incorporated, and a discussion of the regression, correlation, and longitudinal analysis performed.

Data Base

A listing of the contents of the research file compiled by the Office of Institutional Research, USAFA, can be found in appendix E, along with the survey listing for those surveys specifically addressed by this thesis. A copy of the attrition code used to classify departed cadets as either voluntary or involuntary losses can be found in appendix C.

Subjects

The subjects for this thesis were 1494 entering cadets to the United States Air Force Academy Class of 1986 in 1982. All the cadets are high school graduates and a

small percentage had prior college or prep school experience. Upon acceptance to the Academy, the cadets had to complete six weeks of Basic Cadet Training (military and physical training). After satisfactory completion of BCT, the cadets began four years of academic instruction, military training, and physical education and development. A detailed description of the Academy program is not given in this thesis, but can be found in the USAFA admissions catalog and other admissions literature.

Of the original 1494 persons given appointments to the Air Force Academy Class of 1986, 19 were required to leave due to medical reasons and 4 cadets died during their first two and one-half years at the Academy. Therefore, 23, or 1.5%, of the original study pool was initially dropped from consideration. Out of the remaining 1471 cadets, 122 or 8.1%, involutarily left the Academy within their first two and one half years. For this thesis, involuntary attrition will be described as those cadets discharged from the Academy for medical reasons or for academic or military deficiences. The major portion, 75%, ot those involuntarily attriting were due to academic discharge. Those cadets leaving involuntarily are dropped from consideration when the hypothesis being tested involves only voluntary attrition. However, the cadets leaving on academic discharge will be included in the sections of testing addressing performance factors. Voluntary attrition

among the original 1494 cadets was 27%, 399, within the first two and one-half years at the Academy. Table I contains a listing of the reasons cadets gave for attriting.

Procedure

Data Collection. The overall research plan established by the Office of Institutional Research was designed to collect data, both behavioral and attitudinal, during the first year at the Air Force Academy. This, combined with performance and attrition data kept until a cadet attrited or was commissioned, was collected to better understand what preadmission factors contribute to retention and cadet performance and what aspects of BCT and academic year training contribute to subsequent retention and performance.

In order to accomplish this, two data collection sources were used: (1) measures of actual cadet performance and retention data and (2) responses by cadets to paper and pencil surveys and questionnaires (22:7). The paper and pencil data collection by surveys and questionnaires began on 4 June 1982 prior to entering. Samples of cadets were asked to complete several different surveys prior to and shortly after admission, and then at three times periods during there first year. The pre-admission data collections were administered on 4 June, mailing surveys to 705 prospective cadets who had accepted an appointment to the

Table I

Reason for Attrition

Non-Voluntary and Voluntary

Code	Number Attriting	Reason
2Q	117	Insufficient Desire to Complete
1C	96	Academic Discharge
2S	61	Changed Career Interest
4G	42	Inability to Cope with Military Training Program
5*	32	Resign for Honor Code Violations
6K	23	Stop-Out
2H	20	Too Much Regimentation/Not Enough Freedom
6D	19	Turned Back to more junior class
1A	19	Medical Discharge
2C	18	Academic Pressure
4T	13	Parental Pressure
2G	12	Unwilling to Make Group Adjustment
4A	9	Personal Reason
2T	6	Change in Physical Condition
6L	6	Suspended
6A	6	Departed Pending Turnback
4V,U	6	Resign in Lieu of Board Action
2R	6	Always Desired Another Career
2A	4	Insufficient Choice of Classes
5A	4	Deceased
4E	4	Personal Hardship
1E,B,Z	4	Discharge for Apptitude,Conduct,Academic
4C	3	Personal(to be Married)
4Q	2	Lack of Military Aptitude
Other	13	

Total Number of Cadets Attriting: 544

* Several categories of honor code violations included in one category

NOTE: Codes numbered 1, 5, and 6 represent involuntary attrition.
Codes numbered 2, 3, and 4 represent voluntary attrition.

Academy. Post-admission survey data collection consisted of administrations on 30 June, 2, 4, and 5 July, 8 and 11 August, and November 1982, and April 1983. The final administration took place in August of 1983. The number of returns for each of the administrations can be found in table II. The table is a percentage measure of the number of cadets available to take the survey.

In addition to the paper and pencil surveys, data was collected on cadet's retention and performance during their first year. This data includes GPA, MPA, supervisor and peer ratings, and respective attrition dates and reasons. GPA and MPA data is collected semesterly, but cumulative measures are also computed.

Measures. The four measures that will make up the primary emphasis within this study are performance, attrition, locus of control, and commitment. Performance as used in this study will be measured by Grade Point Average (GPA) and Military Performance Average (MPA). GPA is computed in the normal way ranging from 0.00 to 4.00. Military Performance Average is an aggregate measure for military performance using peer evaluations, cadet supervisor ratings, ratings by officers in charge of each cadet squadron, ratings by faculty instructors, and military training grades. Military Performance Average will be given on a scale from 0.000 to 4.000. Attrition, or its counter

Table II

Sample and Missing Cases for Survey Administrations

Survey	Cadets available to take survey	Cadets departing prior to survey	Approximate number who took survey	Percent of cadets to take survey
Commitment Questionnaire Administrations				
Pre-admission attitude survey (June 1982)	705*	-	553	78%
Basic Cadet attitude survey (July 1982)	1489	5	813	54%
End of BCT attitude survey (August 1982)	1361	133	746	55%
Fall Semester attitude survey (November 1982)	1293	201	585	45%
Spring Semester attitude survey Form A (Apr 83)	1162	332	392	34%
Summer Semester attitude survey (August 1983)	1070	424	763	71%
Locus of Control Questionnaire Administrations				
Belief Questionnaire (July 1982)	1489	5	533	35%
Spring Semester attitude survey Form B (Apr 83)	1162	332	372	56%

* The pre-admission administration was mailed to 705 prospective cadets. The percent measure, therefore, is a return rate for this particular administration.

part retention, is determined by counting the number of cadets departing from the Academy, either voluntarily or involuntarily. Data is kept giving the term in which the cadet attrited, and the reason for attrition. Within the statistical framework of this study, attrition will be treated as a zero-one variable: zero representing a cadet who attrits, and one representing a cadet who remains at the Academy. In this form, attrition becomes 'retention' and will be addressed this way unless otherwise stated.

Locus of control is a personality measure that assesses the degree to which people belive they have control of the events around them or are controlled by outside forces. A person who believes he or she controls events is said to have an internal locus of control and is referred to as an internal. A person who believes he or she is controlled by others and events beyond his or her control is referred to as an external. Based on extensive research internals are considered to take charge more readily, perform better on complex tasks and in complex situations, are easier to motivate, and exercise a much higher degree of initiative than externals. Externals are more compliant and conforming in nature, perform better on routine tasks and work better under direct supervision (21:5;22:1).

To measure locus of control, Julian B. Rotter developed in 1966 an Internal-External (I-E) questionnaire. The survey deals exclusively with the subject's belief about

the nature of the world and is considered to be a measure of generalized expectancy. The Internal-External questionnaire consists of 23 forced-choice questions and six filler questions. For example, one question consists of the pair of statements: "(a) Children will get into trouble because their parents punish them too much; (b) The trouble with with most children today is that their parents are too easy with them (29:10)". The respondent is required to indicate which of the two statements he or she most agrees with. The scores are tabulated by summing the number of externally oriented responses, with scores ranging, therefore, from one (highest degree of internality) to 23 (highest degree of externality). As a measure of generalized expectancy no items are directly addressed to the preferences for internal or external control (22:2). A copy of the Rotter survey can be found in Appendix A.

Organizational commitment is the "relative strength of an individuals identification with and involvement in a particular orgainzation (21:226)". This type of commitment is characterized by three related factors: "(1) a strong belief in and acceptance of the organization's goals and values; (2) a willingness to extend considerable effort on behalf of the organization; (3) a strong desire to maintain membership in the organization (1:226)".

The survey designed to measure commitment is Mowday, Steers, and Porter s (1979) Organizational Commitment

Questionnnaire (OCQ). The OCQ is a fifteen-item instrument based on the definition of commitment stated in the previous paragraph and Chapter One. The response format employs a seven point Likert scale with anchors strongly disagree, disagree, slightly disagree, disagree, neither agree nor disagree, slightly agree, agree, and strongly agree. An example of one of the questions is: "1. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization (21:227)." The results are summed (1-strongly disagree...7-strongly agree, unless it is a negatively phrased question) and divided by fifteen to arrive at a summarized indicator of commitment. To reduce bias, several items are negatively phrased, and subsequently reversed scored (21:227). A copy of the questionnaire may be found in Appendix B.

The two attitude instruments used in by the Office of Institutional Research on which the survey data of this thesis are based were a complete Rotter survey and an abbreviated version of the OCQ. The original OCQ was modified to more appropriately reflect the Academy environment. Rather than the original 15 items, only 12 items were used in this research. See appendix D for the actual items used.

There were two administrations of the Internal-External Questionnaire: the first administration was in July of 1982 and then one administration was given in April 1983

as part of the Spring semester attitude survey. The first administration questionnaire, however, contains an incorrectly worded phrase in the external choice. It was necessary, therefore, to delete question 29 from the total score and only divide the total by 22, not 23. In the April 83 administration, the error was corrected and thus was scored using 22 and 23 items. The correlation between the two measures was .95. Both sets of survey administations were scored with 22 forced choice questions and six filler questions. This format still maintains the same psychometric properties and is consistent with the original Internal-External questionnaire. The original I-E had a biserial item correlation with the total score with item 29 removed of .109 (n = 400). This is .004 for 200 males and .211 for 200 females. A copy of the Belief questionnaire administered can be found in appendix D.

The attitude instrument used by the Office of Institutional research to measure commitment levels was a 12-item abbreviate version of Mowday et al.'s Organizational Commitment Questionnaire. Appendix D contains a copy of the 12-item questionnaire. This instrument focused on various components of commitment to the Academy and each of the 12 items were phrased in terms of a statement to which the respondent was asked to rate his or her agreement on a scale of one (strongly disagree) to seven (strongly agree). The overall commitment score for each cadet was computed

by averaging across the 12 items.

Administration of this instrument was over six time periods. The questionnnaire was administered in June 1982 as part of the pre-admission attitude survey, July 1982 as part of the Basic Cadet Training attitude survey, August 1982 as part of the End of BCT attitude survey, November 1982 as part of the Fall Semester attitude survey, April 1982 as part of the Spring Semester attitude survey, and finally in August 1982 as part of the Summer attitude survey. In each administration the cadets were instructed that the 12 items represent possible feeelings that individuals might have about the Air Force Academy and to answer with respect to their own feelings.

Methods. The two primary methods employed for analyzing the findings from the questionnaires measuring commitment and locus of control are longitudinal designs and reqressional designs. Both designs are based on the findings of previous studies showing the two instrument's predictive validity.

The longitudinal designs compare locus of control and commitment between the time cadets enter the Air Force Academy with the same variables at the end of their first year or the termination of the cadet from the Academy. The three types of longitudinal analysis employed are: (1) a "months-prior" technique, (2) analysis of variance,

and (3) a cross-lag correlational analysis.

The 'months-prior' technique establishes a relationship between those cadets who remain at the Academy and those who chose to attrit at the end of their first year. The time frame for this analysis is July 1982 to April 1983. Only those cadets attriting during April or May 1983 and those remaining at the Academy are used in this analysis. The mean scores for both groups will be cross-sectional however, because of the lack of all survey administrations for each cadet. Analysis of variance provides the summary statistics for the population under consideration with one repeated factor. This type of design will indicate any significant differences that might exist between cadets who stay and those who leave the Academy (between subjects design). Additionally, differences in commitment scores for stayers and for leavers over the one year period can be analyzed (within subjects design). The repeated measures nature of the study makes it also possible to examine cross-lag correlations between commitment and performance across three time periods, and locus of control and performance (MPA only) across two time periods.

In order to generate answers to the possible interaction of locus of control and commitment on retention and performance, a series of regressions were run where retention or performance in some instances) was the dependent variable and initial commitment levels, initial locus of control

measures, and subsequent levels of commitment and locus of control were used as individual independent variables. Statistical inferences are made using the Biomedical Data Processing (BMDP) package (4). From the correlations, part correlations, and regression analyses generated, other inferences were established. Such inferences include analyzing how cadets with high commitment levels differ from those cadets with low commitment levels in locus of control measures. Additionally, levels of commitment were analyzed to determine how cadets with high degrees of externality differed from cadets with low degrees of externality across varying commitment levels. Finally, regressions were run using both commitment and locus of control and an interaction term as independent variables and performance and retention as independent variables.

IV. Longitudinal Analysis

Introduction

This chapter contains the summary statistics and several longitudinal analyses for the four primary variables: commitment, locus of control, performance, and attrition. The three longitudianl designs employed are a 'months-prior' technique, analysis of variance, and cross-lagged correlation analysis.

Analysis of Variance

The process of becoming committed to an organization involves a relationship among attitudes that become stronger over time. "The commitment process may be characterized by increasing consistency among attitudes as length of service in the organization increases (22:225)."

The analysis of variance analysis and 'months-prior' technique are used to address the relationship between attrition and commitment, with the cross-lag design employed to analyze the weaker relationship that may exists between commitment and performance. These methods for analyzing of the abbreviated OCQ administered involve comparing the changes in commitment attitudes of the cadets across an 11-month period from the beginning of Basic Cadet Training in June 1982 until April 1983. Primary focus centered on

the 129 cadets who departed the Academy during April and May 1983. Five administrations of the commitment questionnaire were given during the 11-month period.

The results of the longitudinal analysis of changes across time from the pre-admission attitude survey (June 1982) to the Spring Semester attitude survey (April 83) was examined first by means of analysis of variance (ANOVA). Table III shows the summary of statistics for the analysis of variance for repeated measures on one factor.

Table III

Summary of Analysis of Variance:
Repeated Measures on One Factor (26:92)

Source of Variation	SS	df	MS	F
Between subjects				
Stayers-leavers	6.401	1	6.401	7.17
Subjects within groups	124.089	139	.893	
Within subjects				
Pre-ad - last month	105.793	1	105.793	189.53
Interaction	2.566	1	2.566	4.60
Pre-ad - last month x subjects within groups	77.589	139	.558	.56

The ANOVA compares those cadets who stayed at the Academy versus those cadets who chose to leave at the end of the first year. This analysis indicates that staying cadets differed significantly from leaving cadets, and both the

difference between the pre-admission and last month scores and the interaction effect reached significance.

Table IV presents the means and standard deviations for the attriting and staying cadets at the two points in time associated with the analysis of variance results printed in Table III. The individual t-tests (seperate because of the difference in sample size) show that the commitment scores for both groups did not differ significantly at the pre-admission survey ($p = .00$, $p < .05$) eleven months prior to when the leavers departed the Academy, but did differ significanlty one month prior to departing ($t = 2.25$, $p < .05$).

Table IV

Summary Statistics

Group		June	April	t
Stayers (N = 283)	mean	6.2393	4.5700	2.97
	std. dev.	.527	.92	
Leavers (N = 40)	mean	6.2353	4.1563	3.03
	std. dev.	.598	.96	
t		.000	2.25	

The t-tests also indicate a sigificant difference for the two groups across the two administrations. The commitment level for those cadets who chose to remain at the Academy decreased significantly ($t = 2.97$) from a pre-admission high

commitment level of 6.285 to an end of the first 11 months average commitment level of 4.684. The commitment level for attriting cadets, which should begin a slow decline within a couple months of the time they decide to leave (25:607), showed a very significant drop (t =3.03) across the two administrations.

Months-Prior Technique

A second analysis of the commitment levels for attriting cadets versus staying cadets consisted of a graphical analysis of a months-prior to leaving for the attriting cadets. The results comparing staying cadets to leaving cadets at five time periods (corresponding to the survey administrations) during their first year at the Academy are shown in Figure 1. The population sizes vary across time because of the nature of the administrations: cadets were not given all surveys, therefore, cross-sectional data must be used for sufficient sample sizes. Cadets who are 11 months away from voluntarily leaving the Academy show no significant difference in commitment scores with those cadets who are going to remain. In fact, no significant difference is evident until less than five months prior to departing. Cadets who are a month or less away from actually voluntarily leaving the Academy show significantly (4.684/4.156 at t=2.25) lower commitment levels than those cadets who stay.

The results of these two analyses demonstrate that

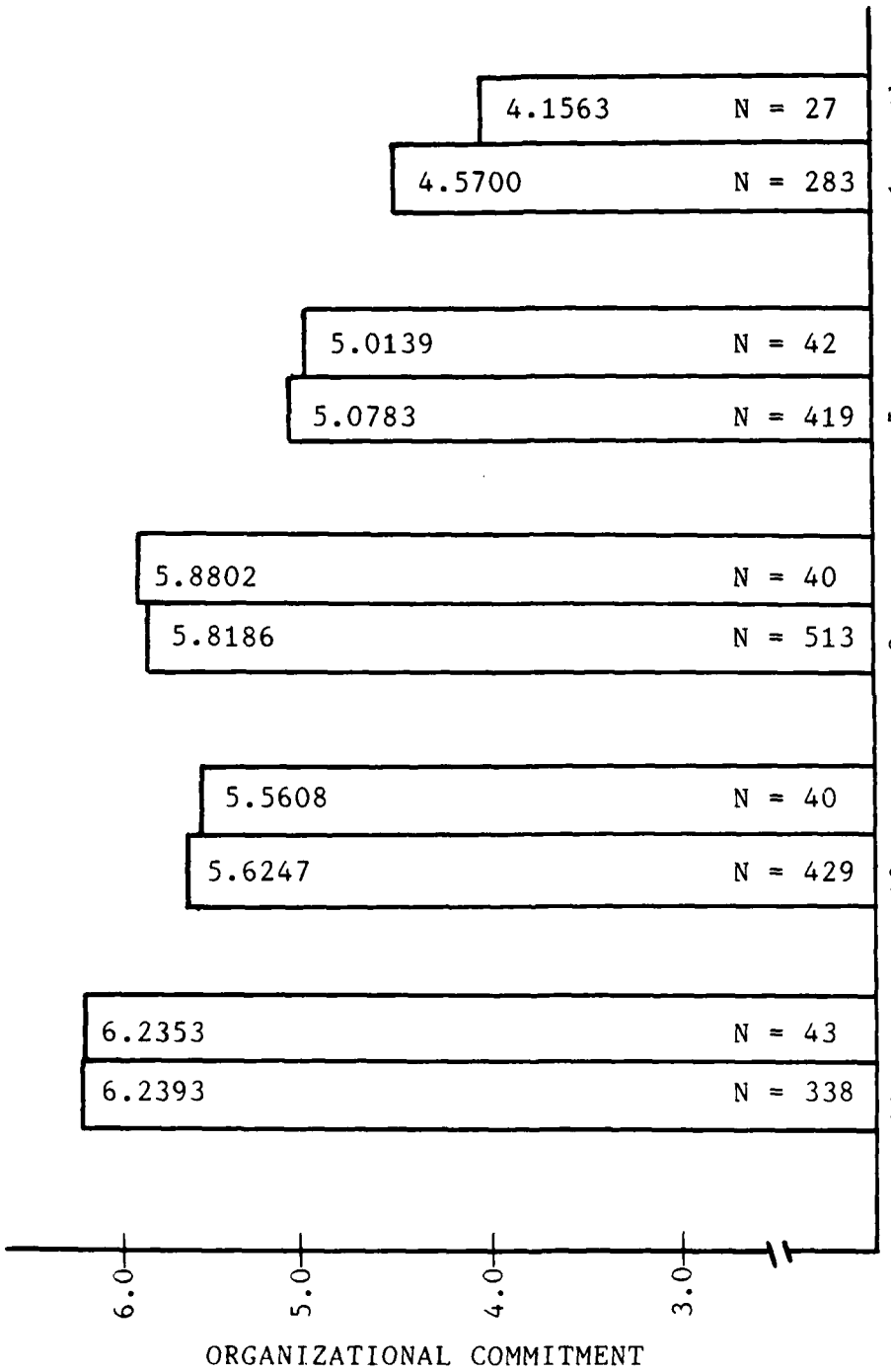


Figure 1. Degree of Organizational Commitment of Stayers vs Leavers (26:95)

cadets who voluntarily leave the Academy during their first year show a definite decline in commitment prior to leaving, and in fact show a statistically significant difference in commitment levels with the respect to cadets who remain at the Academy. However, this result is subject to the qualification that even those cadets who remain at the Academy show a significant decline in commitment levels across the first year, although not as severe as that of leaving cadets. Therefore, it can be concluded that a marked decline in commitment, relative to others, likely signals a voluntary attrition from the Academy.

The declining commitment levels for those cadets who remain at the Academy is not consistent with most of the research. In other studies, individuals who remain with the organization were found to exhibit consistent or increasing levels of commitment across time (26:95;25:608). However, it should also be noted that the overall level of commitment for the Academy cadets was abnormally high prior to admission. The levels reported towards the end of the first year are more consistent with scores reported in other studies. Whereas a general decline in commitment was observed, those who remained at the Academy had a significantly smaller decline than did those who left.

Locus of Control

Analysis of cadet's locus of control is primarily

found in the regression analysis. The longitudinal analysis presented here depicts general statistics that provide the basis for the types of regressions analyzed in Chapter Five.

The results from computing a locus of control measure on the 28-item (corrected) version of the Belief Questionnaire are shown in Table V. Only cadets attriting after the respective administrations are depicted in the voluntary and involuntary attrition measures.

Table V
Summary Statistics

GROUP		JULY	APRIL
Male		8.27 (n=455)	9.56 (n=315)
Female		9.09 (n=53)	9.24 (n=28)
t		n.s.	n.s.
Vol Attrit		8.83 (n=125)	10.82 (n=36)
Invol. Attrit		9.32 (n=40)	11.44 (n=20)
Stay		8.07 (n=343)	9.24 (n=287)
t	vol/invol	n.s.	n.s.
	invol/stay	n.s.	n.s.
	vol/stay	1.79,p=.07 (a.s.)	2.21,p=.03

* n.s. means not significant at p<.05, p<.01
a.s indicates approaching significance at .05 level

The findings of these statistics show that there are definite increases in the measures of cadet's locus of control across the two administrations; that is, they tend

to become more external. However, none of the differences between those who stayed and those who left could be found statistically significant because of the limited sample size in the April administration and the high variance associated with the measures. The results do suggest differences in the voluntary leavers and the cadets who stayed at the Academy. The t-statistic is approaching significance at the .05 level at the July administration and does reach significance for the April administration.

Performance

Performance measures in the form of GPA's and MPA's were collected from the end of BCT until December 1984. This supplies six military performance averages and five grade point averages. A longitudinal analysis of the performance measures is shown in Tables VI and VII. Table VI depicts the relationship of MPA to time by grouping the scores according to sex and leaving versus staying cadets. Voluntary and involuntary attrition are those cadets who left after each of the respective time periods.

Sample sizes in Table VI were ommitted because all samples contained at least 100 cadets, except for the Fall of 1983 and the Fall of 1984 averages for involuntary leavers. The results for the MPA s show no significant differences between males and females. Significant differences do occur between those cadets who involuntarily

Table VI

Military Performance Averages

Group	MPA BCT	MPA FALL 1982	MPA SPRING 1983	MPA FALL 1983	MPA SPRING 1984	MPA FALL 1984
Male	2.809	2.799	2.826	2.834	2.878	2.917
Female	2.828	2.814	2.796	2.830	2.826	2.960
t(not significant across all time periods)						
Invol	2.691	2.439	2.477	2.356	2.387	NA
Vol	2.761	2.702	2.708	2.659	2.637	2.869
Stay	2.837	2.866	2.867	2.864	2.889	2.924
t values between voluntary and involuntary leavers were significant at the .01 level across all time periods.						
t values between stayers and voluntary leavers were 2.65 or greater at the .01 level across all time periods.						

NA reflects a sample size of zero

attrited and those who voluntarily attrited, and between those cadets who stayed at the Academy and those who left. The relationship between poor military performance and possibility of discharge may account for this difference. Of more importance is the significant difference that exists between cadets who voluntarily attrit and those cadets who remain at the Academy. This difference suggests that voluntary attritees exhibit lower military performance across all time periods. Graphical analysis of the differences in MPA's among the groups can be found in Figure 2.

Grade point average results are depicted in a similar

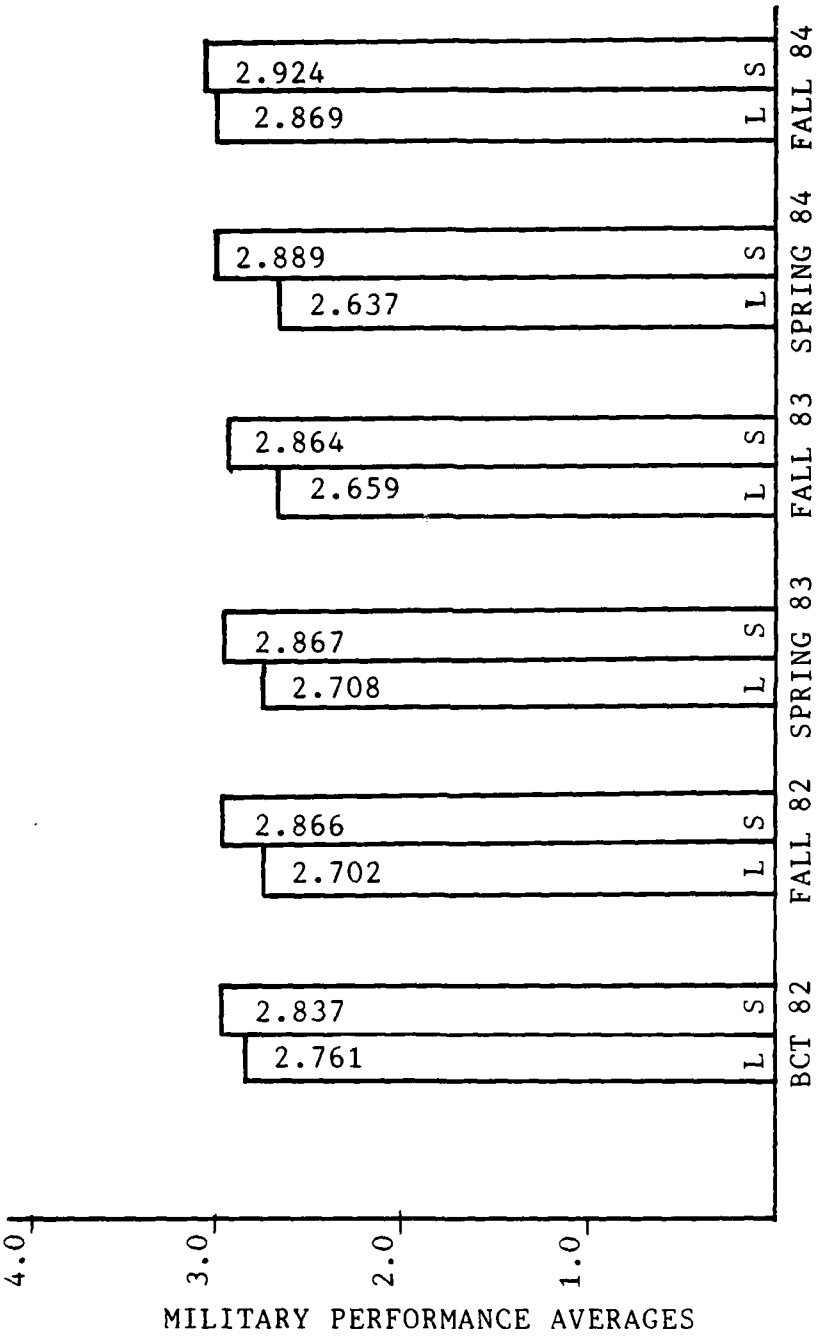


Figure 2. Military Performance Averages Across First Two and One-Half Years for Leavers and Stayers

manner in Table VII. Significant differences between the

Table VII

Grade Point Averages (GPA)

GROUP	GPA FALL 1982	GPA SPRING 1983	GPA FALL 1983	GPA SPRING 1984	GPA FALL 1984
Males	2.66	2.66	2.71	2.86	2.69
Females	2.63	2.58	2.54	2.74	2.82
t	n.s.	n.s.	3.13	2.11	-2.58
Invol	1.80	1.78	1.64	1.85	NA
Vol	2.57	2.60	2.67	2.88	2.60
Stay	2.78	2.72	2.73	2.84	2.71
t					
Invol/Vol	-11.1	-10.4	-8.5	-6.1	NA
Invol/Stay	-16.6	-15.5	-11.2	-6.5	NA
Vol/Stay	-4.5(.001)	-2.0(.05)	n.s.	n.s.	n.s.

*unless otherwise indicate p-values are at the .05 level
NA depicts insufficient sample size

involuntarily attritting cadets and the other two groups are attributable to the definition of involuntary attrition given earlier. Approximately 75% of the cadets who were involuntarily dismissed from the Academy were given academic discharges. This will account for the great differences in in GPA s between the groups. The differences in GPA's which are significant between the voluntary leavers and the cadets who stay is of importance. The two occurences at which significant values are indicated are during the first year.

in which the greatest number of cadets attriting left (75% of the total number of cadets to attrit).

Graphical depiction of the results of the analysis of the academic performance factor can be found in Figure 3.

Attrition

The longitudinal description of attrition shows attrition of cadets by terms, a statistical table of cumulative attrition, and the numerical frequency count of the reasons for attrition. Cumulative number of attriting cadets is shown in Table VIII.

Table VIII

Voluntary and Non-Voluntary Attrition

Year Term	Number	Cumulative	Percent	Cumulative
Summer 82	128	133*	23.48	24.03
Fall 82	147	280	26.97	51.37
Spring 82	123	403	22.56	73.94
Summer 83	12	415	2.20	76.15
Fall 83	50	465	9.17	85.32
Spring 83	60	525	11.00	96.33
Summer 84	18	543	3.48	99.81
Fall 84	1	544	.18	100.00

TOTAL NUMBER OF CADETS ATTRITING = 544
PERCENTAGE OF CADETS ATTRITED = 37%

Last update of data: December 1984

*Five cadets who were turned back from previous classes were included in the total

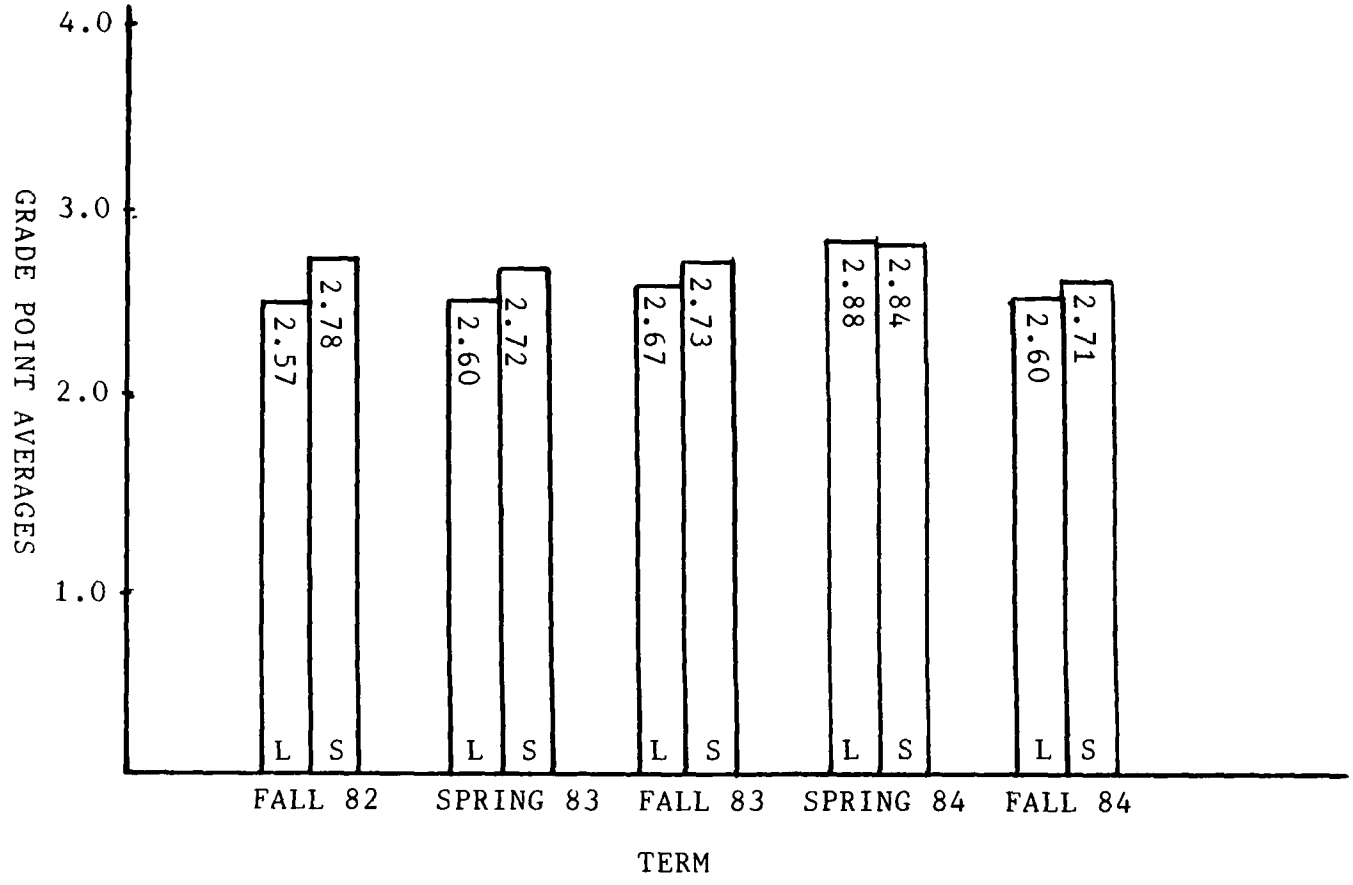


Figure 3. Grade Point Averages Across First Two and One-Half Years for Leavers and Stayers

Figure 4 shows the number of cadets attriting for all reasons by the term in which they attrited.

Cross-Lag Analysis

The point-biserial correlations between commitment and retention, measured as those cadets leaving after the respective survey administrations, for the first three terms of the Class of 1986 are very significant. For the summer term r = .1621, for the Fall term r = .1967, and for the the Winter term r = .1279. Possible explanation for the correlations between commitment and retention could be explained in the declining commitment levels for both the cadets who leave the Academy and those who stay. Across the three time periods listed above, commitment goes from 6.23 to 4.68 for staying cadets, and from 6.23 to 4.15 for attriting cadets.

The repeated measures of the variables of interest allow an examination of the cross-lag correlations between commitment and performance, and locus of control and performance. The cross-lag correlations for commitment and performance will be duplicated for both military and academic performance. The cross-lag analysis for locus of control and performance is inhibited since there are only two measures of locus of control.

The commitment-performance analysis shown in Figure 5 suggests a reciprocal relationship across a 11-month time

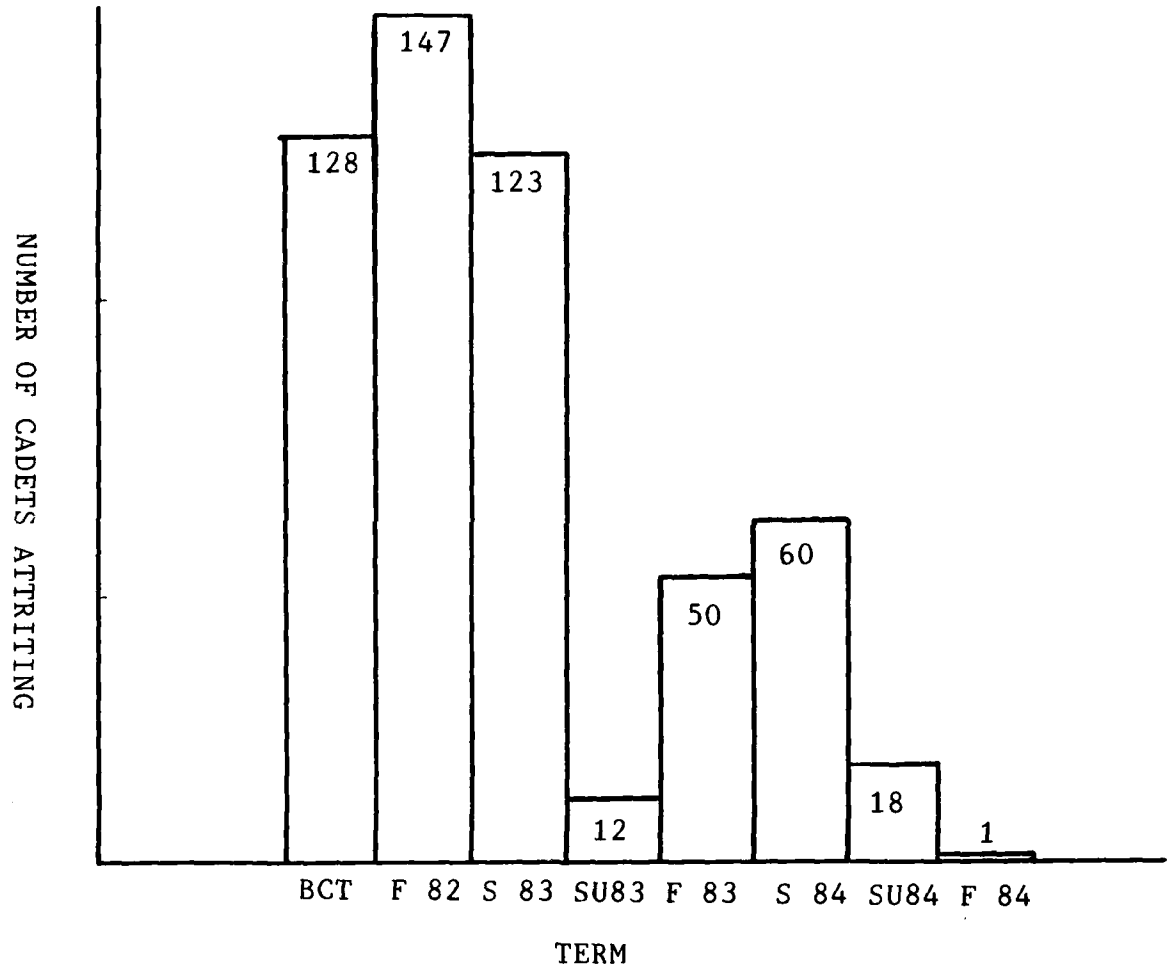
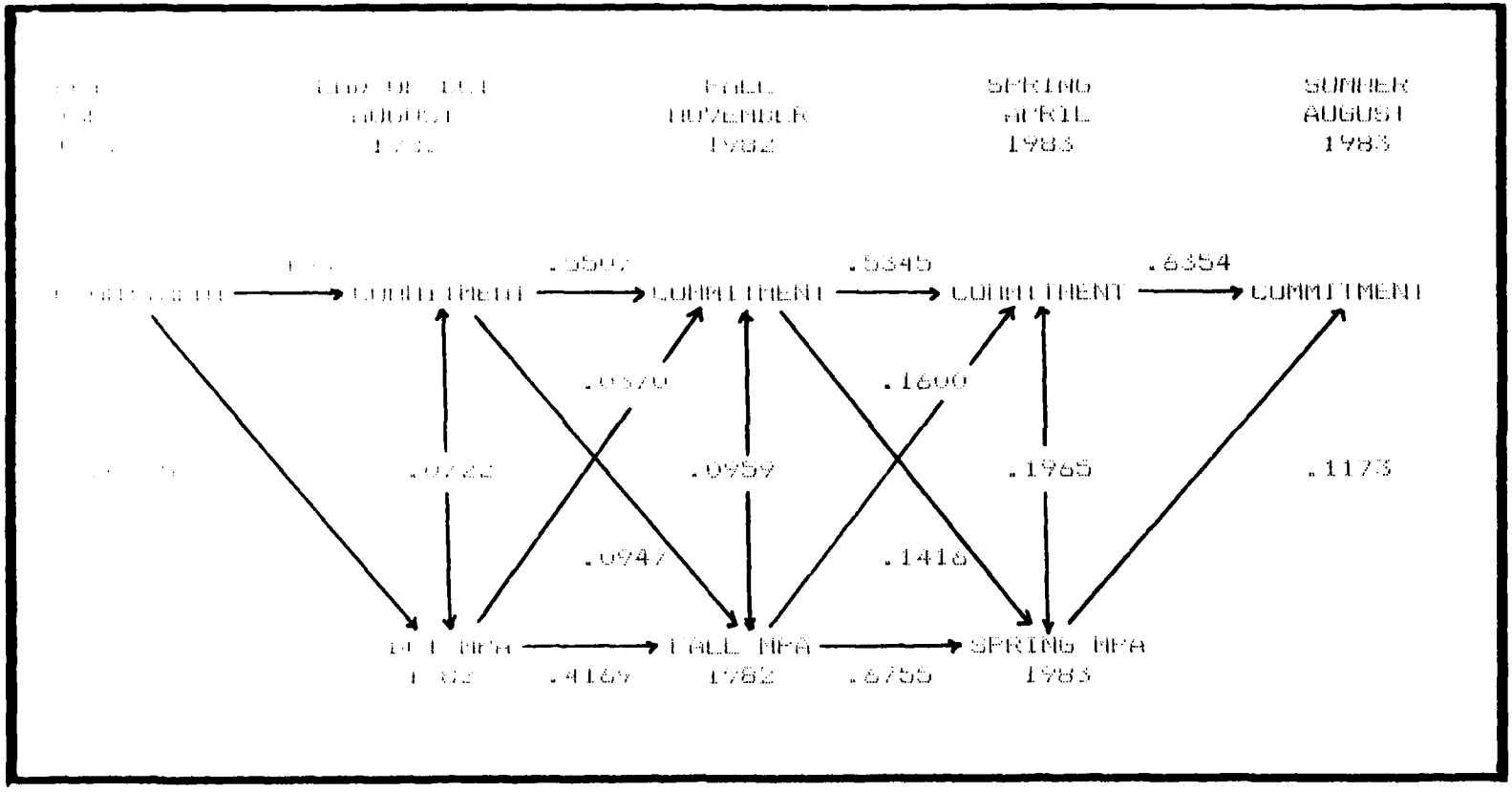


Figure 4. Total Attrition of Cadets by Term



Lag Analysis of Commitment and Military Performance

period on which both performance and commitment levels are available. Commitment measured at the end of BCT was more strongly related to military performance during the Fall semester ($r = .0947$) than was military performance at the end of BCT related to commitment levels during the Fall semester, the alternative causal relationship. On the other hand, military performance during the Fall semester was more strongly related to commitment during the Spring semester ($r = .160$) than was the commitment level during the Fall semester related to military performance in Spring semester. However, the correlations in both cases were quite small and should be interpreted with caution.

The cross-lag correlations for the commitment-performance relationship were generaly slightly larger than the relationships between commitment and performance at each of the first two administrations (end of BCT and Fall) and only slightly lower in the Spring, making the power of the argument weaker. Sample sizes for the correlations were between 350 and 1100.

This correlational pattern suggests similar results as presented by Mowday et al. (20:226) that the relationship among cadets performance and commitment is that attitudinal commitment leads cadets to engage in commiting behaviors, reflected by military performance, which results in higher subsequent commitment.

Figure 6 depicts the pattern of cross-lag correlations

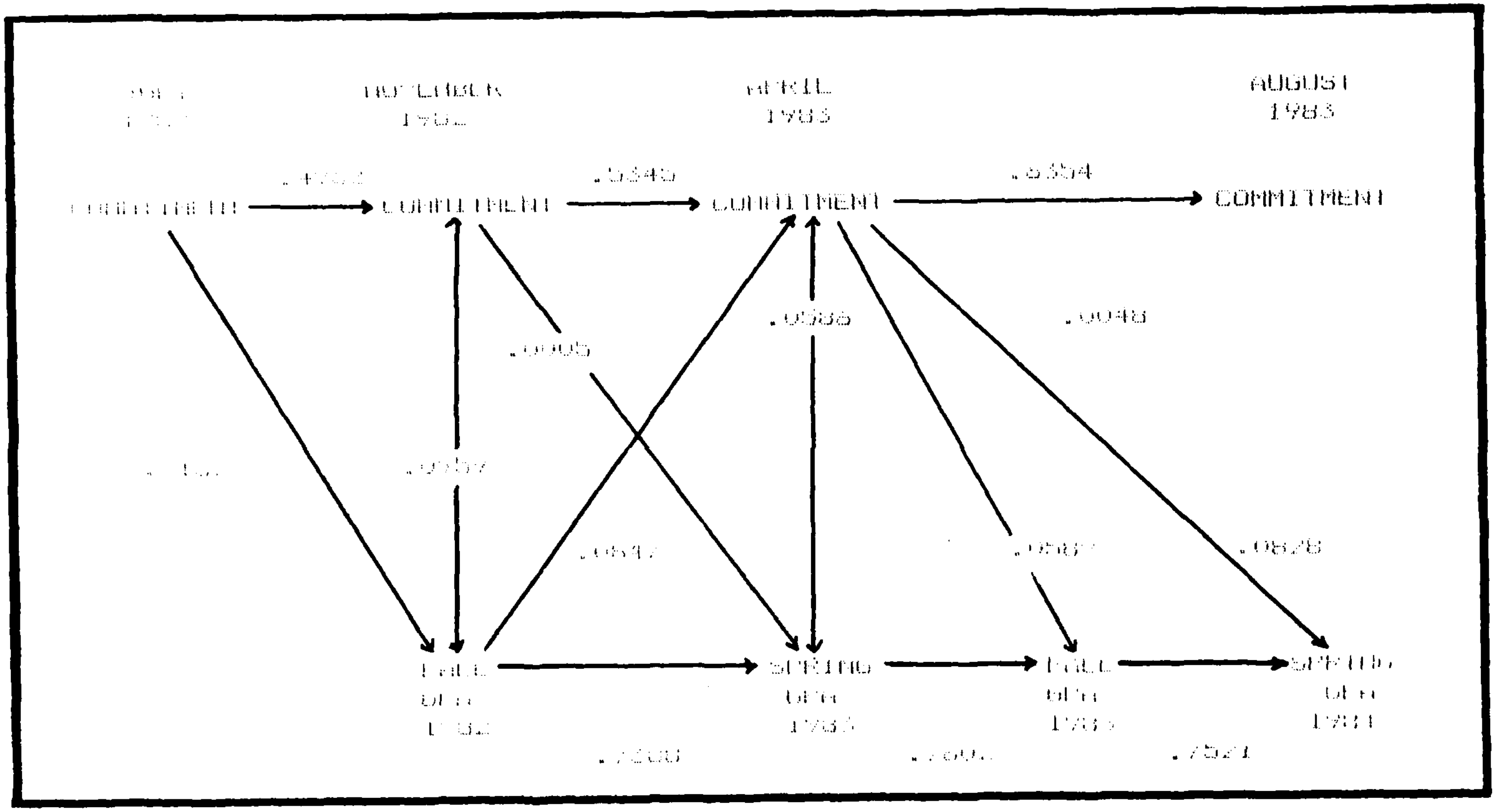


Figure [illegible]. Cross-lag analysis of Commitment and Academic Performance

for commitment and academic performance. The relationship is similar to that for military performance.

The pattern of the cross-lag correlations depicted in Figure 7 suggest that locus of control was a stronger predictor of future military performance than military performance was a predictor of locus of control. This type of relationship seems to be suggested by the literature because of the nature of internals, but is not a finding that can be assumed consistent with previous literature. Locus of control measures for July (during Basic Cadet Training) were more strongly related to military performance ($r = -.1092$) than was the alternative causal relationship ($r = -.0134$ and $r = -.0459$) with a statistically significant difference at the .05 level. The same is true for the relationship of locus of control and academic performance depicted in Figure 8.

Summary

The results of the three types of longitudinal designs represent consistent findings. The commitment level of all cadets decreases across the administrations during the first year (with the exception of the Summer 1983 attitude survey which depicts a slight improvement in commitment levels during the months following the first three terms). This decline in commitment attitudes begins to differ between cadets who stay with the Academy and those who chose to

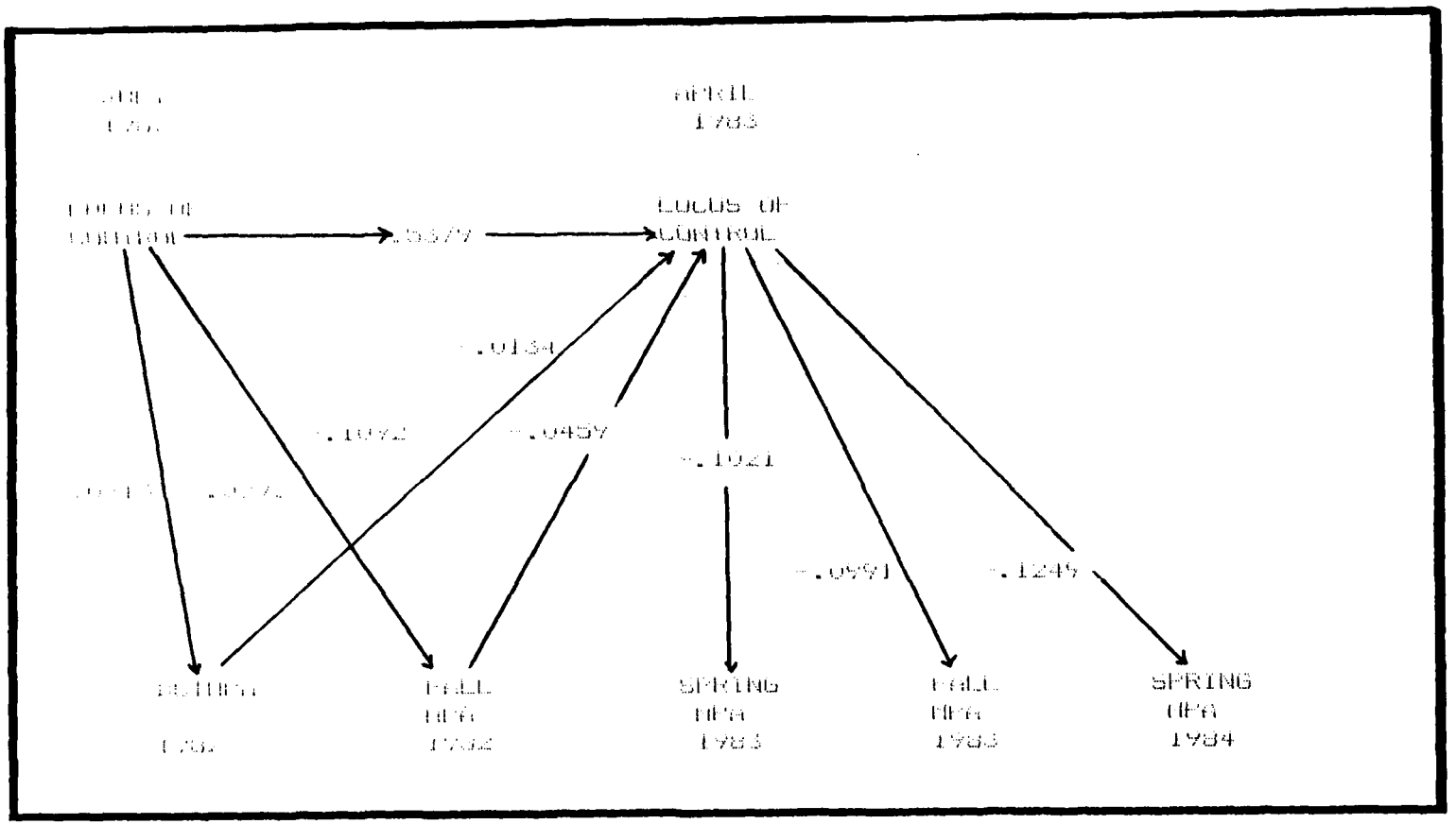


Figure 7. Cross Lag Analysis of Locus of Control and Military Performance

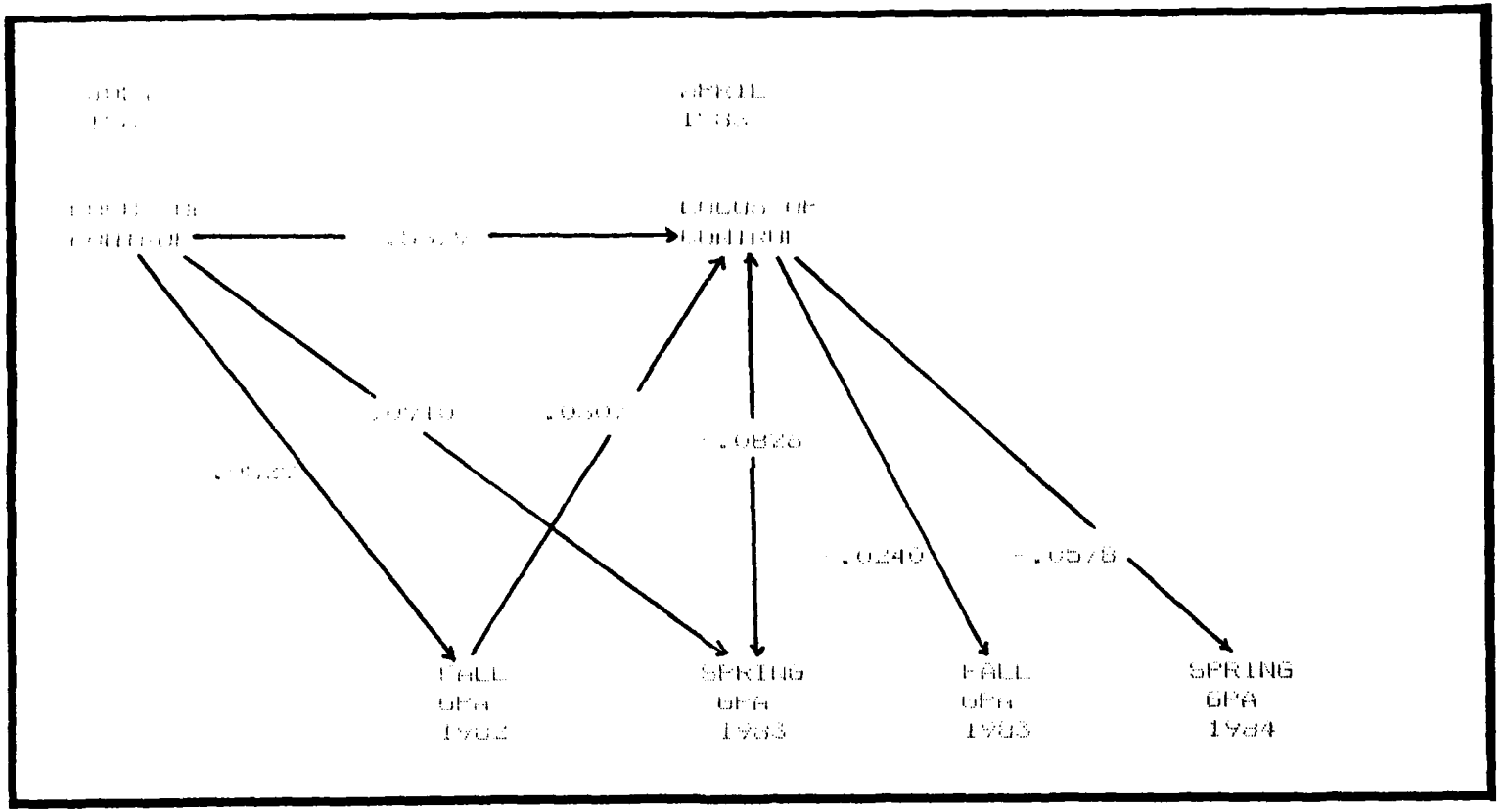


Figure 3. Trimmed Analysis of Locus of Control and Academic Performance

voluntarily attrit. This difference reaches significance within five months prior to departing and is in fact almost identical to this point. Locus of control measures show a definite increase among all groups towards externality. This increase will be addressed in detail in Chapter Five. The performance measures longitudinally suggest no significant differences across the time period, but will be analyzed more fully in its interaction with locus of control and commitment in the following Chapter.

V. Regression Analysis

Introduction

This chapter analyzes the findings of the two varible measures, locus of control and commitment, in the context of correlational and regression analysis. The correlational analysis summarizes the correlations between commitment and performance and locus of control and performance. Two regression techniques are used to analyze the possible interaction relationship of locus of control and commitment: regression with an interaction term and group analysis across different levels of commitment and locus of control.

Correlational Analysis

The findings of the cross-lagged correlational analysis were presented in Chapter Four. Further predictive correlational analysis in this chapter reinforces these conclusions.

The cross-lagged analysis found a modest positive relationship between commitment and performance and an inverse relationship between locus of control and performance. The additional correlational designs found commitment to have a highly significant ($p < .001$) positive correlation with retention across the Summer 1982, Fall 1982, and Spring 1983 time periods. Attrition refers to those cadets leaving after the respective surveys were administered.

The correlation of retention and commitment for the three time periods was r = .1621, .1967, and .1279, respectively. Locus of control approached a significant negative correlation with retention and was found to be correlated with commitment: r = -.2451 for July and -.3823 for April.

Summarizing the predictive correlational analysis carried out establishes several consistent results: (1) a cadet's degree of externality effects his performance; (2) a cadet's level of commitment also effects his performance; (3) a cadet's degree of externality effects his retention; (4) a cadet's level of commitment also effects his retention; and (5) there exists a significant relationship between locus of control and commitment.

These conclusions are all consistent with previous literature except for the joint effects of locus of control and commitment. Most, if not all, of the previous literature surrounding locus of control and commitment has focused on one or the other variable as being a precursor to attrition and performance without directly addressing the possible interaction that exists between the two variables.

Simple Regression

To study the combined effect of the two key variables, simple linear regressions were run with both locus of control and commitment as independent variables with

retention and then performance as the dependent variable.

In the first case, at both the July and April time periods, commitment was found to be a positive factor on retention while degree of externality was a negative factor. However, only the July regression was significant using an F ratio. The regression coefficient for locus of control only approached having a significant difference from zero. Equation 1 shows the regression.

$$RET = -.14576 + .15575(COM) - .00400(LOC) \qquad (1)$$

$$t = 6.068 \quad t = 1.645$$
$$p = .0000 \quad p = .1137$$

In the case of military performance, commitment had a positive influence and locus of control a negative influence, not significant, as shown in equation 2.

$$BCTMPA = 2.455 + .06732(COM) - .00092(LOC) \qquad (2)$$

$$t = 2.566 \quad t = -.153$$
$$p = .0108 \quad p = .8782$$

However, in the case of academic performance, the regression coefficient for commitment was negative, suggesting that a a decrease in commitment would result in an increase in performance, given a level of externality. This finding is is similar to the conclusion drawn by Van Maanen (33) in his study on Police Academy recruits. His findings suggested

that those recruits who did well academically were more likely to report lower commitment levels twoards the Police Academy than those recruits who were not doing as well. The regression equation and t-statistics for the regression coefficients are given in Equation 3.

$$GPA = 3.398 - .0868(COM) - .0218(LOC) \qquad (3)$$

$$t = -1.76 \quad t = -1.69$$
$$p = .0936 \quad p = .0810$$

Interaction of Locus of Control and Commitment

Two techniques were employed in trying to establish the significance of the interaction between locus of control and commitment. The first technique used grouping across simple linear regressions. The regressions consisted of a dependent variable, either of the two outcomes - performance or retention, and an independent variable, either commitment or locus of control. When locus of control was the independent variable, commitment became the grouping variable, and vice versa. The second technique simply added an interaction term to regressions of locus of control and commitment on retention or performance shown in Equations 1, 2, and 3.

In all, four sets of grouped regressions were run: locus of control on retention across commitment levels, locus of control on performance across commitment levels, commitment on retention across varying degrees of

externality, and commitment on performance across varying degrees of externality.

The cutpoints established for the commitment groupings were 4.5 and 6. Thus, a cadet with a commitment score of less than 4.5 was considered to have a low commitment level. A cadet with a commitment score greater than 4.5 but less than 6 was considered to have a moderate commitment level, and finally, any cadet with a commitment score 6 or above was considered to have a high level of commitment.

The cutpoints established for locus of control were 4,8 and 11. Thus, a cadet with measure of locus of contol less than 4 had a low level of externality (actually considered an internal), a cadet with locus of control measure between 4 and 8 a level of externality listed as 'low mean', a cadet with locus of control measure between 8 and 11 a level of externality listed as 'high mean', and finally, those cadets with a locus of control measure 11 or greater were considered to have a high degree of externality (actually considered an external).

The forms of equations are given below. For regression of commitment on retention (or performance) across the four levels of locus of control the equations are:

$$\text{low: } RET = C + B1(COM) \quad (4)$$

$$\text{low mean: } RET = C + B2(COM) \quad (5)$$

$$\text{high mean: } RET = C + B3(COM) \quad (6)$$

$$\text{high: } RET = C + B4(COM) \quad (7)$$

where

RET = retention
C = regression intercept
Bi = regression coeffiecients
COM = commitment score

(substituting performance(PER) for retention(RET) will produce the similar equations for performance)

The equations for regression of locus of control on retention or performance are the same as 4 through 7 above except that LOC (locus of control measure) is substituted for COM and the grouping now becomes low, mean, and high across commitment levels rather than locus of control.

Five regression equations using the interaction term were analyzed: two for retention (across the July and April time periods) and three for performance, with two for military performance and one for academic performance (the lack of an academic performance measure during BCT and the first survey administration accounts for this individual regression).

The form for the interaction regressions are given in in equation 8.

$$RET = C + B1(COM) + B2(LOC) + B3(LOC*COM) \qquad (8)$$

where

RET = retention
COM = commitment score
LOC = locus of control measure
LOC*COM = interaction effect

(substitution of PER for RET will produce the regressions on performance).

Analysis of Interaction on Retention

Paul Spector (30) suggested that locus of control might be a moderator of turnover through job satisfaction. Since job satisfaction and turnover relations are usually modest, satisfaction alone does not account for employee turnover. It may be the case, therefore, that externals "tend not to take action and even if they are dissatisfied may stay on the job at least until environment factors force them to leave (30:406)". Conversely, internals tend to take action and would be expected to leave a dissatifying job. Therefore, the correlation between job satisfaction and turnover should be higher for internals than externals.

Since commitment is a better predictor of turnover than job satisfaction (24:606;22:225), there may be a high interactive relationship between locus of control and commitment in moderating turnover.

Analyzing the correlations between commitment and attrition for internals and externals produces several results. Regressing commitment on retention across the four levels of externality produced different results in the July and April time periods. For July, the correlation between retention and commitment for internals was .1533 and for externals was .4514. This would be converse to the hypothesis generated and suggests that, at least in the

early stages of the Academy socialization period, externals exhibit a more consistent attrition behavior with repect to commitment. That is, externals are more likely than internals to attrit when they have a low level of commitment and are more likely to remain when they have a high level of commitment. This would suggest that commitment has a high degree of interaction with locus of control, and is not a causal factor in the stay-leave decision of internals, at least in the early socialization period. However, the correlations for the April time period, while much smaller and barely significant, tend to show a diferent relationship. The correlation of commitment and retention for internals in April is .0604, whereas the correlation of commitment and retention for externals is .0488. These correlations tend to support the hypothesis that internals would have a higher correlation between commitment and retention because of their tendency to take charge of the situation. However, these correlations are much lower than the July correlations, suggesting that commitment and retention have a much smaller relationship in the later stages of the socialization process. Thus, it is impossible to draw any strong conclusions with just these two measures.

Extending the analysis to the two regression techniques enhances the findings concerning a possible moderating effect of locus of control on the relation between commitment and

turnover. The four regressions of commitment and retention across locus of control only produces significant coefficients across the July measures. These regressions are depicted in equations 9 through 12.

Low:	RET = .42502 + .05765(COM)	t=2.10 , p=.035	(9)
Lmean:	RET = .07213 + .11573(COM)	t=3.13 , p=.002	(10)
Hmean:	RET = .36194 + .08453(COM)	t=2.15 , p=.034	(11)
High:	RET = -.3917 + .20788(COM)	t=3.82 , p=.000	(12)

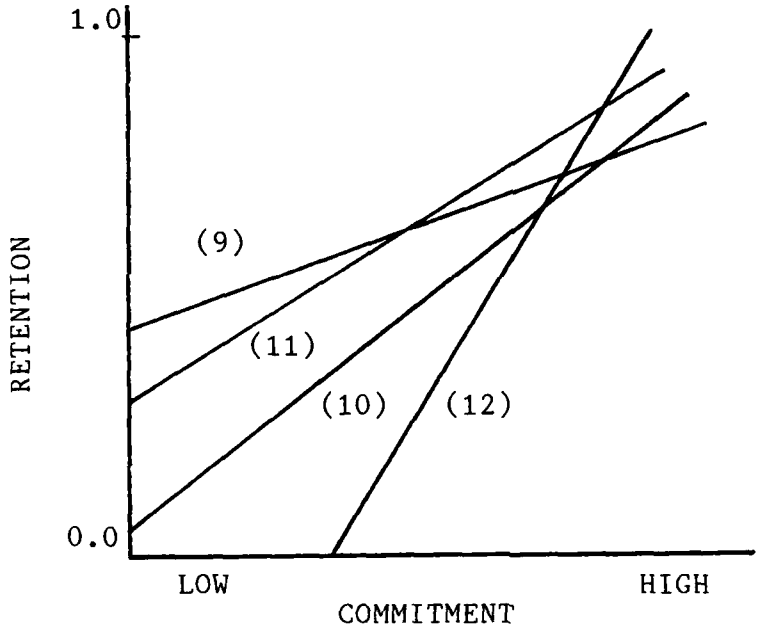


Figure 9. Interaction of Locus of Control and Commitment on Retention

Figure 9 depicts these equations graphically. All groups show increases in retention across increasing commitment levels. The regressions are significant at the .05 level across all groups. Additionally, the equations depict

a definite interaction of the variables locus of control and commitment, especially across high levels of commitment.

The analysis of how locus of control levels effect retention on cadets grouped from high commitment to low commitment showed no significant regression coefficients on any of the three regressions. The interaction regression equation, equation 8, on retention for July only approached significance for the regressions. Appendix F contains the grouping and interaction regression coefficients for the July measures. Attrition in these equations counts only those cadets departing after the July administration.

The results of April administration were not significant. The regression equation with the interaction term had no significant regression coefficients, and the grouping analysis did not allow a for a sufficient sample size in one of the equations. This problem may be overcome by changing cutpoints, but was foregone because of the insignificance of the interaction term in the second regression technique, shown in equation 8.

Analysis of Interaction on Performance

With the regression analysis of retention producing results suggesting a moderating effect of locus of control on commitment and retention, it may be that the high correlation between locus of control and performance may in turn be moderated by commitment.

The correlation between locus of control and military performance is inconsistent across the July and April administrations. For July, the correlation of BCT MPA and locus of control is .2443 for low commitment cadets, and -.2310 for high commitment cadets. For April, the correlation between Spring semester MPA and locus of control is -.0190 for low commitment cadets and -.1015 for high commitment cadets. This may be a function of the abnormally high level of commitment still reported by cadets in the early stages of the socialization process.

Analyzing the relationship between locus of control and performance across commitment groups produced only one significant regression for either of the July or April regressions on military performance. Equation 12 represents the regression equation of locus of control on BCT performance for cadets with low commitment levels. Commitment and locus of control are the July measures.

$$\text{Low: BCTMPA} = 2.516 + .2072(\text{LOC}) \quad t=2.26 \ , \ p=.03 \qquad (12)$$

More significant regression effects on were found in the interaction regressions. The regression coefficients for the July measures are not significant at the .05 level, but the coefficients for the April measures are significant and presented in equation 13.

$$MPA = 2.114 + .194(COM) + .062(LOC) - .016(COM*LOC) \quad (13)$$

t=2.41	t=1.98	t=-2.3
p=.017	p=.050	p=.020

This equation suggests that highly committed internals will have the best military performance in the later stages of the socialization process. Cadets with average commitment levels will generally perform at the same level regardless of their locus of control. Cadets with low commitment show a reverse tendency in that externals have greater MPA's than their internal counterpart. This relationship is depicted in Figure 10.

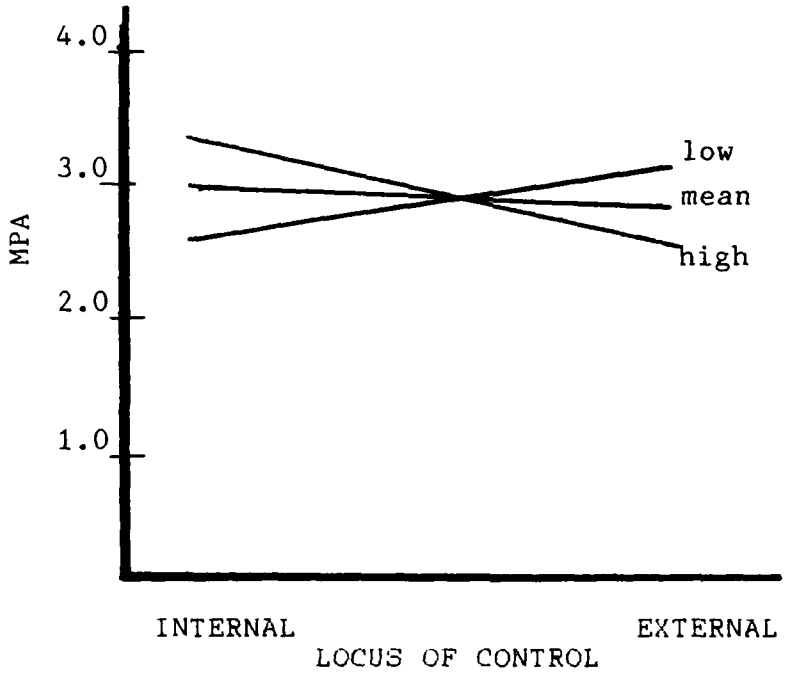


Figure 10. Interaction of Locus of Control and Commitment on MPA

The interaction regression on academic performance did not reach significance. The regression equation for July military performance average and additional statistics may be found in Appendix F.

Summary

The most significant findings of the regression analysis is the level of retention of the different interaction levels of commitment and locus of control on cadets. In the early stages of the socialization process, highly committed external cadets will have the greatest retention levels followed sequentially by highly committed internals, low committed internals, and finally low committed externals. In the latter stages of the socialization process, the relation remains fairly much consistent with that of the earlier stages, with cadets of low commitment levels becoming equal in retention across the spectrum of internality and externality

For the relation of the interaction on performance, the conclusions are not as strong. Externals seem to show a more consistent relationship between commitment and performance than internals, but the relation is still small and not significant. For both the July and April time periods, highly committed internals showed the highest levels of both military and academic performance. The low commitment internals, however, had a lower performance average than did there external counterparts for military performance, but the reverse held true for academic performance.

VI. Results and Discussion

Predictive Ability

In summary, the conceptually relevant variable commitment was shown to differentiate among those cadets who left the Academy voluntarily and those cadets who chose to continue their Academy appointments. More importantly, changes in the cadets level of commitment over the first year were shown to be related to the voluntary attrition behavior, and locus of control was shown to be somewhat related to the low performance ratings held be many cadets.

Commitment Results

Additionally, the results show that both staying cadets and attriting cadets experienced a decline in commitment attitudes toward the Air Force Academy after completion of Basic Cadet Training and then fall even further after the completion of their first term of academic instruction. However, the differentiation between staying and leaving cadets became apparent only five months before the actual time of departure for the leaving cadets. The magnitude of this difference becomes greater towards the time the leaving cadets depart.

Locus of Control Results

Locus of control was found to be related to cadet performance. Military performance had the strongest correlation to the I-E variable. The findings show that cadets with the higher degrees of internality perform at higher levels than those cadets with greater degrees of externality. However, longitudinal analysis of the locus of control variable shows that the average change in cadet's locus of control is towards externality. This is possibly a result of the rigourous military and academic training. Without further measures it is impossible to pinpoint exact points in time where this changes take place.

Interaction of Locus of Control and Commitment

The interaction of locus of control and commitment on retention and performance was found to differentiate between staying and leaving cadets in the early stages of the socialization process and not in the latter stages. In the early stages, highly committed externals were most likely to remain at the Academy, followed by highly committed internals, then cadets with average commitment levels, and finally, low committed internals and then externals. With respect to performance, highly committed committed internals performed best, then highly committed externals, followed by low committed externals and finally, low committed internals. This relationship may account for

the Van Maanen results suggesting that those who do well academically will report lower commitment scores than those who do not do as well.

Summary

The practical implications of these findings include the use of periodic administration of these measures to detect significant shifts in commitment attitudes and locus of control beliefs. Also, it may be useful to develop placement, training and counseling strategies to deal with these shifts. Thus, the precursors of attrition and performance should be followed and, where appropriate, actions to counter attrition and increase performance should be implemented. This might stop a cadet from attriting or improve his overall level of performance, to the benefit of the cadet and the United States Air Force.

Suggestions and Reccomendations

This thesis only analyzed two of the precursors of performance and attrition: locus of control and commitment. The results obtained were not strongly conclusive, and were inexact in their overall ability to understand the reasons for voluntary attrition and low cadet performance. The present study needs to be expanded to include additional precursors to attrition and performance so as to better understand the influences each of the precursors have. This will allow a more detailed description of the turn-

over process and suggest additional actions to avoid the high rate of turnover and increase the performance level of cadets.

A more detailed look into the interaction of locus of control and commitment needs to be initiated. The results of this research suggest that a significant interaction does exist and understanding the interaction will significantly increase the overall predictive abiltity of commitment on retention and locus of control on performance.

Appendix A

Rotter's Internal-External Questionnaire

This appendix contains the instructions specified for the I-E questionnaire administration. It also contains the means and standard deviations for Rotter's initial respondents and a listing of the 29 original questions.

Instructions for the I-E Scale (29:26)

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Your answers to the items on this inventory are to be recorded on a seperate answer which is loosely inserted in the booklet. REMOVE THIS ANSWER SHEET NOW. Print your name and any other information requested by the examiner on the answer sheet, then finish reading these directions. Do not open the booklet until you are told to do so.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Find the number of the item on the answer sheet and black-in the space under the number 1 or 2 which you chose as the statement more true.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice: do not be influenced by your previous choices.

Means and Standard Deviations for 575 Male and 605 Female Ohio State Elementary Psychology Students

Males: N = 575; Mean = 8.15; Std Dev. = 5.88
Females: N = 605; Mean = 8.42; Std Dev. = 4.06

1. a. Children will get into trouble because their parents punish them too much.

   b. The trouble with most children today is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.

   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.

   b. There will always be wars no matter how hard people try to prevent them.

4. a. In the long run, people get the respect they deserve in this world.

   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.

   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try, some people just don't like you.

   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plans a major role in determine one's personality.

   b. It is one s experiences in life which determine what they're like.

9. a. I have often found that what is going to happen, will happen.

b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student, there is rarely, if ever, such a thing as an unfair test.

    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.

    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government dicisions.

    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. Where I make plans, I am almost certain I can make them work.

    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.

    b. There is some good in everybody.

15. a. In my case, getting what I want has little or nothing to do with luck.

    b. Many times we might just as will decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends upon who was lucky enough to be in the right place first.

    b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

    b. By taking an active part in political and social

affairs, the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    b. There is really no such thing as "luck".

19. a. One should always be willing to admit mistakes.

    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.

    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run, the bad things that happpen to us are balanced by the good ones.

    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.

    b. It is difficult for the people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand the way teachers arrive at the grades they give.

    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.

    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.

    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.

    b. There's not much use in trying too hard to please

people; if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.

    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.

    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.

    b. In the long run, the people are responsible for bad government on a national and on a local level as well.

Appendix B

Organizational Commitment Questionnaire (OCQ)

This appendix is a listing of the Organizational Commitment Questionnaire and the means and standard deviations of the nine samples used to check the validity and internal consistency of the OCQ.

Instructions (22:228)

Listed below are a series of statements that represent possible feelings that individuals might have about the company or organization for which they work. With respect to your own feelings about the particular organization for which you are now working (company name) please indicate the degree of your agreement or disagreement with each statement by checking one of the seven alternatives below each statement.

---

1. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.
2. I talk up this organization to my friends a a great organization to work for.
3. I feel very little loyalty to this organization. (R)
4. I would accept almost any type of job assignment in order to deep working for this organization.
5. I find that my values and the organization's values are very similar.
6. I am proud to tell others that I am part of this organization.
7. I could just as well be working for a different organization as long as the type of work were similar. (R)
8. This organization really inspires the very best in me in the way of job performance.
9. It would take very little change in my present circumstances to cause me to leave this organization. (R)
10. I am extremely glad that I chose this organization to work for over others I was considering at the time I

joined.

11. There's not much to be gained by sticking with this organization indefinetly. (R)
12. Often, I find it difficult to agree with this organizations policies on important matters relating to its employees. (R)
13. I really care about the fate of this organization.
14. For me this is the best of all possible organizations for which to work.
15. Deciding to work for this organization was a definite mistake on my part. (R)

Responses to each item are measured on a seven points scale with scale point anchors labeled (1) strongly disagree; (2) moderately disagree; (3) slightly disagree; (4) neither agree nor disagree; (5) slightly agree; (6) moderately agree; (7) strongly agree. An R denotes a negatively phrased and reverse-scored item.

Means, Standard Deviations, and Internal Consistencies for Organizational Commitment Questionairre (22:232)

	N	Mean	SD	Coefficient
Public Employees	569	4.5	.90	.90
Classified university employees (a)	243	4.6	1.30	.90
Hospital employees (a)	382	5.1	1.18	.88
Bank employees	411	5.2	1.07	.88
Telephone company employees	605	4.7	1.20	.90
Scientist and Engineers (a)	119	4.4	.98	.84
Auto company managers	115	5.3	1.05	.90
Psychiatric technicians (b)	60	4.0/3.5	1.00/1.00	.82-.93
		4.3/3.5	1.10/0.91	
		4.3/3.3	.96/.88	
		4.0/3.0	1.10/.098	
Retail Management Trainees	59	6.1	.64	NA

---

a A nine-item shortened version of the OCQ was used in this study.

b For this sample, means and standard deviations are reported for stayers and leavers across four time periods.

Appendix C

Attrition Codes and Reason

CODE	STATUS	REASON
10	DISCH	Academic and Military Deficiency
11	DISCH	Military Deficiency
12	DISCH	Dismissed by Direction of Court Martial
13	DISCH	Voluntary Discharge
1A	DISCH	Medical
1B	DISCH	Conduct
1C	DISCH	Academic
1D	DISCH	Aptitude
1E	DISCH	Aptitude and Conduct
1F	DISCH	Aptitude adn Academic
1G	DISCH	Conduct and Academic
1H	DISCH	Failure in Summer Training
1I	DISCH	Failure in Physical Education
1J	DISCH	Honor
1K	DISCH	Honor-Lying
1L	DISCH	Honor-Stealing
1M	DISCH	Honor-Cheating
1N	DISCH	Honor-Toleration
1O	DISCH	Honor-Lying and Stealing
1P	DISCH	Honor-Lying and Cheating
1Q	DISCH	Honor-Lying and Toleration
1R	DISCH	Honor-Lying, Stealing, and Cheating
1S	DISCH	Honor-Lying, Cheating, and Toleration
1T	DISCH	Honor-Lying, Cheating, Stealing, and Toleration
1U	DISCH	Honor-Stealing and Cheating
1V	DISCH	Honor-Stealing and Toleration
1W	DISCH	Honor-Stealing, Cheating, and Toleration
1X	DISCH	Honor-Cheating and Toleration
1Y	DISCH	Honor-Used Honor Code as a Means of Departing
1Z	DISCH	Aptitude, Conduct, and Academic
2A	RESGN	Insufficient Desire to Complete
2B	RESGN	Dislike Instructional Mehtods
2C	RESGN	Pressure of Academic System
2D	RESERVED	
2G	RESGN	Unwilling or Unable to Make Group Adjustment
2H	RESGN	Too much Regimentation and Lack of Personal Freedom
2I	RESGN	Too Much Competition
2J	RESGN	Disappointed in Caliber of Cadets, Peers, Upperclassmen

2P	RESGN	Lack of Desire of Motivation
2Q	RESGN	Insufficient Desire to Complete Academy Program
2R	RESGN	Always Desired Another Career
2S	RESGN	Changed Career Interest After Entering
2T	RESGN	Change in Physical Condition not Requiring Seperation
3A	RESGN	Honor
3B	RESGN	Honor-Lying
3C	RESGN	Honor-Stealing
3D	RESGN	Honor-Cheating
eE	RESGN	Honor-Toleration
3F	RESGN	Honor-Lying and Stealing
3G	RESGN	Honor-Lying and Cheating
3H	RESGN	Honor-Lying and Toleration
3I	RESGN	Honor-Lying, Stealing, and Cheating
3J	RESGN	Honor-Lying, Cheating, and Toleration
3K	RESGN	Honor-Lying, Cheating, Stealing, and Toleration
3L	RESGN	Honor-Stealing and Cheating
3M	RESGN	Honor-Stealing and Toleration
3N	RESGN	Honor-Stealing, Cheating, and Toleration
3O	RESGN	Honor-Cheating and Toleration
3P	RESGN	Honor-Used Honor Code as a Means of Departing
4A	RESGN	Personal Reason
4B	RESGN	Personal-Marriage
4C	RESGN	Personal-to be Married
4D	RESGN	Personal-Lack of Confidence
4E	RESGN	Personal-Hardship
4F	RESGN	Personal-Good of Service
4G	RESGN	Personal-Inability to Cope with Military Training Program
4H	RESGN	Personal-Unable/Unwilling to Accept All of Honor Code
4P	RESGN	Other- Unclassified
4Q	RESGN	Resign in Lieu of Board Action/Lack of Military Aptitude
4R	RESGN	Conscientious Objector
4S	RESGN	Anti-Military Feelings
4T	RESGN	Parental Pressure
4U	RESGN	In Lieu of Board Action/Conduct
4V	RESGN	In Lieu of an Honor Board Hearing
5A	Deceased	
5B	Involuntary Seperation Other	
6A	Departed Pending Turnback	
6B	Turnback	

6C	Turnforward
6D	Departed Cadet Returned and Turned Back
6E	Departed Cadet Returned and Stayed with Class
6F	Reentry of Previously Resigned or Discharged Cadet
6G	Foreign Exchange Student
6H	USMA Exchange Student
6I	USNA Exhcange Student
6J	USCG Exchange Student
6K	Departed on Stop-Out
6L	Suspended
7A	Graduated and Commissioned USAF
7B	Graduated-Deceased at Time of Graduation
7C	Graduated-Not Commissioned
7D	Graduated-Commissioned in Another Service

Appendix D

The Rotter (I-E) Questionnaire and the 12-item abbreviated version of the Mowday et al. Organizational Commitment Questionnaire are listed in this appendix. The I-E represents a copy of the actual (question 29 is incorrect, as administered) survey administered. The 29 correct items were included along with other variable measures in the *Spring Semester Attitude Survey (Form a and* Form b). The OCQ listing is a representation of the instructions and the 12 items included as the commitment measure portion of the six survey administrations in which it was included.

Belief Questionnaire

Instructions

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief; obviously there are no right of wrong answers.

Your answers to the items on this inventory are to be recorded on a seperate answer sheet which has been provided. Write your name and cadet number in the appropriate boxes and blacken the corresponding spaces beneath each box.

Please answer these items carefully, but do not spend too much time on any one item. Be sure to indicate a choice for each item. In some instances, you may discover that you believe both statements or neither one. In such cases, be sure to select the one you most believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

1. a. Children will get into trouble because their parents punish them too much.

   b. The trouble with most children today is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.

   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.

   b. There will always be wars no matter how hard people try to prevent them.

4. a. In the long run, people get the respect they deserve in this world.

   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.

   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.

   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try, some people just don't like you.

   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plans a major role in determine one's personality.

   b. It is one s experiences in life which determine what they re like.

9. a. I have often found that what is going to happen, will happen.

b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student, there is rarely, if ever, such a thing as an unfair test.

    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.

    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government dicisions.

    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. Where I make plans, I am almost certain I can make them work.

    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.

    b. There is some good in everybody.

15. a. In my case, getting what I want has little or nothing to do with luck.

    b. Many times we might just as will decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends upon who was lucky enough to be in the right place first.

    b. Getting people to do the right thing depends upon ability; luch has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

    b. By taking an active part in political and social

affairs, the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    b. There is really no such thing as "luck".

19. a. One should always be willing to admit mistakes.

    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.

    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run, the bad things that happpen to us are balanced by the good ones.

    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.

    b. It is difficult for the people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand the way teachers arrive at the grades they give.

    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.

    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.

    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don t try to be freiendly.

    b. There's not much use in trying too hard to please

people; if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.

    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.

    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can understand why politicians behave the way they do.

    b. In the long run, the people are responsible for bad government on a national and on a local level as well.

Organizational Commitment Questions

Listed below is a series of statements that represent possible feelings that individuals might have about the Air Force Academy. With respect to your own feelings about the Air Force Academy, use the scale below and indicat the degree of your agreement or disagreement with each statement by marking the appropriate letter on the answer sheet.

A---------B---------C---------D---------E---------F---------G

Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree

1. I am willing to put a great deal of effort beyond that normally expected in order to help the Air Force Academy be successful.

2. I talk up the Academy to my friends as a great place to go to school.

3. I feel very little loyalty to the Air Force Academy.

4. I find that my values and the Academy's values are very similar.

5. I am proud to tell others that I am part of the Academy.

6. Rather than the Air Force Academy, I could just as well be going to another service academy.

7. The Academy will greatly inspire the very best in me in the way of military and academic performance.

8. It would take very little change in my present circumstances to cause me to want to leave the Academy.

9. I am extremely glad that I chose to attend the Air Force Academy over other service academies or colleges.

10. I really care about the future of the Academy.

11. For me, the Air Force Academy is the best of all possible service academies to attend.

12. Deciding to enter the Academy was a definite mistake on my part.

Appendix E

Data Base and Survey Listings

Data Base

The research file compiled by the Office of Institutional Research, USAFA, is a magnetic tape, 1600 BPI, EBCDIC, unlabeled, one record per block, 3336 characters per record, and 1494 records. Each record corresponds to an entering cadet to the Class of 1986.

Each cadet record contains 99 characters of personal data with a respective identifier. There are a total of 810 characters of term data, containing GPA's, MPA's and other aspects of performance retained on a cadet. Each term occurences is represented by a standard summer=A, Fall=B, and Winter=C sequence. A standard cadet entering the Class of 1986 began Basic Cadet Training in the summer of 1982 (82A) and will graduate in the spring of 1986 (85C). The data is current through the fall of 1984 (84B) at the time this study was initiated.

Attrition data consists of 3 occurences representing all aspects of a cadets attrition, listing the term and reason for attrition. The reason is coded according to a predetermined sequence. The attrition code can be found in Appendix C.

The main portion of each cadet record contains the listing of 18 possible surveys and questionnaires

administered during the freshman year. The surveys contain an identifier followed by the respective responses. The survey listing may be found in Appendix E.

Survey Listing

The following list contains only those surveys employeed by this research. The surveys are listed according to the variable they address and then by the time at which they were administered.

Commitment Surveys

Preadmission Attitude Survey - 2	June 1982	Q42 to Q53
Basic Cadet Attitude Survey - 2	July 1982	Q55 to Q66
End of BCT Attitude Survey - 1	August 1982	Q150 to Q161
Fall Semester Attitude Survey -2	November 1982	Q112 to Q123
Spring Semester Attitude Survey -2	April 1983	Q112 to Q123
Summer Semester Attitude Survey	August 1983	Q37 to Q48

Locus of Control Surveys

Belief Questionnaire	July 1982	Q1 to Q29
Spring Semester Attitude Survey - 1 Form B	April 1983	Q1 to Q29
Spring Semester Attitude Survey - 2 Form B	April 1983	Q1 to Q29

Appendix F

Regression Statistics

The following summary statistics are part of the regression runs made in Chapter 5 to determine the nature of the correlation and interaction of the variables locus of control and commitment on performance and retention. GPA's and MPA's have an assumed decimal place when referred to as regression coeficients.

1. Regression of commitment on retention using a grouping along locus of control. Cutpoints are 4,8,12. Names associated with these cutpoints are low, low mean, high mean, and high.

Month	N	Mean Comm.	Correlation Ret/Comm.	Regress. Int/Coeff.	t	p
July 1982						
Low	62	5.603	.1533	.435/.057	2.10	.035
Low Mean	129	5.396	.2673	.072/.116	3.12	.002
High Mean	102	5.229	.2103	.362/.085	2.15	.034
High	58	4.787	.4542	-.39/.208	3.82	.000
April 1983						
Low	27	4.519	-.0199	.951/-.005	-.10	.921
Low Mean	46	4.938	.1288	.620/.0505	.861	.394
High Mean	36	4.299	.1820	.745/.0463	1.079	.288
High	37	3.817	.0414	.853/.0101	.245	.808

2. Regression of commitment on performance using a grouping along locus of control. Cutpoints are 4,8,12. Names associated with these cutpoints are low, low mean, high mean, and high.

July BCTMPA	N	Mean Comm	Correlation Perf/Comm.	Mean GPA	Regres. Int/Coef	t	p
Low	96	5.686	.0936	2.795	2601/34.1	.91	.36
Low Mean	85	5.579	.2717	2.855	2320/95.6	2.57	.01
High Mean	85	5.262	.1554	2.782	2478/57.6	1.43	.15
High Mean	66	5.114	.0399	2.786	2717/13.2	.319	.75

April
MPA

Low	29	4.549	.1325	2.838	2577/57.4	.69	.49
Low Mean	47	4.933	.3979	2.886	2001/179	2.9	.00
High Mean	39	4.259	.0594	2.915	2819/22.5	.36	.72
High	40	3.892	-.2054	2.787	3045/-66	-1.3	.20

April
GPA

Low	29	4.589	-.0067	2.70	273/-.47	-.03	.97
Low Mean	47	4.933	-.0410	2.84	297/-2.7	-.28	.78
High Mean	39	4.259	-.0541	2.69	285/-3.6	-.33	.74
High	40	3.892	-.3155	2.67	329/-16	2.05	.04

3. Regression of locus of control on attrition using a grouping along commitment. Cutpoints are 4.5 and 6. Names associated with the cutpoints are low, mean, and high.

Month July	N	Mean LOC	Corr. Ret/LOC	Regress Int/Coef	t	p
Low	78	10.19	.1807	.791/-.201	-1.60	.113
Mean	178	8.37	.0879	.631/.0112	1.17	.240
High	95	6.76	.0267	.845/.0026	.26	.797

April

Low	71	10.82	.0291	.834/.0023	.242	.809
Mean	70	8.70	.1621	.855/.0101	1.355	.179
High	5	7.00	na			

4. Regression of locus of control on military or academic performance using a grouping along commitment. Cutpoints are 4.5 and 6. Names associated with the cutpoints are low, mean, and high.

Month	N	Mean LOC	Correlation LOC/Perf	Mean Perf.	Regres Int/Coef	t	p
July BCTMPA							
Low	51	10.14	.2443	2.707			
Mean	183	8.44	-.0354	2.798			
High	98	6.95	na	2.867			
April MPA							
Low	75	10.83	-.0831	2.768	290/-1.2	-.71	.47
Mean	75	8.84	-.2287	2.711	303/-3.7	-2.1	.05
High	5	7.00	-.1263	2.660	251/2.03	.221	.84
April GPA							
Low	75	10.83	-.0190	2.800	2818/-1.7	-.16	.87
Mean	75	8.84	-.1247	2.890	2999/-12.4	-1.07	.28
High	5	7.00	-.1015	2.540	3357/-10.2	-.177	.87

Regression Equations:

July
RET = .16652 + .09812(COM) - .03062(LOC) + .00654(LOC*COM)

April
RET = .78399 + .01825(COM) - .0005(LOC) + .001(LOC*COM)

July (BCTMPA)
PER = 2188.3 + 115.099(COM) - 30.50846(LOC) - 5.73509(LOC*COM)

April (MPA)
PER = 2113.6 + 193.907(COM) + 62.00376(LOC) - 16.6866(LOC*COM)

April (GPA)
PER = 278.13 + 5.30787(COM) + 3.64186(LOC) - 1.36589(LOC*COM)

Bibliography

1. Andrisani, Paul J. and Gilbert Nestel. "Internal-External Control as a Contributor and Outcome of Work Experience," Journal of Applied Psychology, 61: 156-165 (1976).

2. Angle, Harold L. and James L. Perry. "An Empirical Assessment of Organizational Commitment and Organizational Effectiveness," Administrative Science Quartly, 26: 687-690 (March 1981).

3. Bazerman, Max H. "Impact of Personal Control on Performance: Is Added Control Always Beneficial," Journal of Applied Psychology, 67: 472-479 (1982).

4. BMDP Statistical Software. University of California, UCLA, Berkely, California, 1983.

5. Broedling, L. A. "Relationships of Internal-External Control to Work Motivation and Performance in an Expectancy Model," Journal of Applied Psychology, 60: 65-70 (1975).

6. Butler, Richard P., Charles Lardent, and John B. Minor. "A Motivational Basis for Turnover in Military Officer Eduction and Training," Journal of Applied Psychology, 68: 496-506 (1983).

7. Clegg, Chris W. "Psychology of Employee Lateness, Absense, and Turnover: A Methodological Critique and an Empirical Study," Journal of Applied Psychology, 68: 88-101 (1983).

8. Hargett, Nancy T. "Potential Behavior Consequences of Attributions of Locus of Control," Journal of Applied Psychology, 66: 63-68 (1981).

9. Heisler, W. J. "A Performance Correlate of Personal Control Beliefs in an Organizational Context," Journal of Applied Psychology, 59: 504-506 (1968).

10. Hersch, P. D., and K. E. Scheibe. "Reiability and Validity of Internal-External Control as a Personality Dimension," Journal of Consulting Psychology, 31: 609-613 (1967).

11. Hom, Peter W. amd Charles L. Hulin. "A Comparative Test of the Prediction of Reenlistment by Several

Models," Journal of Applied Psychology, 66: 23-29 (1981).

12. Hom, P. W., R. Katerburg, and Charles L. Hulin. "Comparative Examination of Three Approaches to the Prediction of Turnover," Journal of Applied Psychology, 17: 280-290 (1979).

13. Joe, Victor Joe. "Review of the Internal-External Control Construct as a Personality Variable," Journal of Applied Psychology, 28: 619-640 (1971).

14. Koch, James L. and Richard M. Steers. "Job Attachment, Satisfaction, and Turnover among Public Sector Employees," Journal of Applied Psychology, 12: 119-128 (1978).

15. Lawler, E. E. "A Correlational-Causal Analysis of the Relationship Between Expectancy Attitudes and Job Performance," Journal of Applied Psychology, 52: 462-468 (1968).

16. Lied, T. R. "Relationship Between Personality Variables and Components of the Expectancy-Valence Model," Journal of Applied Psychology, 61: 463-467 (1976).

17. Majumder, E. K., A. P. MacDonald, and W. J. Greever. "A Study of Rehabilitation Counselors: Locus of Control and Attitudes Toward the Poor," Journal of Applied Psychology, 24: 137-141 (1977).

18. Michaels, Charles E. and Paul E. Spector. "Causes of Employee Turnover: A Test of the Mobley, Griffeth, Hand, and Meglino Model," Journal of Applied Psychology, 67: 53-59 (1983).

19. Mobley, W. H., Stanley O. Horner, and A. T. Hollingsworth. "An Evaluation of Precursors of Hospital Employee Turnover," Journal of Applied Psychology, 63: 408-414 (1978).

20. Mobley, W. H., R. W. Griffeth, H. H. Hand, and B. M. Meglino. "Review and Conceptual Analysis of the Employee Turnover Process," Psychological Bulletin, 86: 493-522 (1979).

21. Mowday, R. T., L. W. Porter, and R. Dubin. "Unit Performance, Situational Factors, and Employee Attitudes in Spatially Seperated Work Units," Organizational Behavior and Human Performance, 12:

231-248 (1974).

22. Mowday, R. T., R. H. Steers, and L. W. Porter. "The Measurement of Organizational Commitment," Journal of Applied Psychology,14: 224-227 (1979).

23. Office of Institutional Research, United States Air Force Academy. Research Plan for the Class of 1986. United States Air Force Academy, Colorado Springs, Colorado, 4 February 1985.

24. O'Reilly, Charles A., III and David F. Caldwell. "The Commitment and Job Tenure of New Employes: Some Evidence of Potential Justification," Administrative Science Quarterly, 26: 597-616 (1981).

25. Porter, Lyman W., Richard M. Steers, Richard T. Mowday, and Paul V. Boulin. "Organizational Commitment, Job Satisfaction, and Turnover Among Psychiatric Technicians," Journal of Aplied Psychology, 5: 603-609 (1974).

26. Porter, Lyman W., William J. Crampton, and Frank J. Smith. "Organizational Commitment and Managerial Turnover: A Longitudinal Study," Organizational Behavior and Human Performance, 15: 87-98 (1976).

27. Reichers, Aaron E. "A Review and Reconceptualization of Organizational Commitment," Academy of Management Review, 10: 465-476 (1985).

28. Rotter, Julian B. "External Control and Internal Control," Psychology Today, 37-39 (June 1971).

29. Rotter, Julian B. "Generalized Expectancy for Internal Versus External Control of Reinforcement," Psychological Monographs: General and Applied, 80: 1-28 (1966).

30. Spector, Paul E. "Behavior in Organizations as a Function of Employee's Locus of Control," Psychological Bulletin, 91: 482-497 (November 1969).

31. Steers, Richard M. "Antecedents and Outcomes of Organizational Commitment," Administrative Science Quarterly, 22: 46-56 (March 1977).

32. Valeecha, G. K. "Construct Validation of Internal-External Locus of Control and Reinforcement Related to Work-related Variables," Proceedings of the 80th American Convention of American

Psychological Association, 7: 455-460 (1972).

33. Van Maanen, J. "Police Socialization: A Longitudinal Examination of Job Attitudes in an Urban Police Department," Administrative Science Quarterly, 20: 207-228 (1975).

34. Werbel, James D. and Sam Gould. "A Comparison of the Relationship of Commitment to Turnover in Recent Hires and Tenured Employees," Journal of Applied Psychology, 69: 687-690 (1984).

35. Youngblood, Stuart A. and William H. Mobley. "A Longitudinal Analysis of the Turover Process," Journal of Applied Psychology, 68: 507-516 (1983).

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The research determined the effects of individual's locus of control and level of commitment on retention and performance at the United States Air Force Academy. The subjects studied were cadets who entered the Academy in 1982. A key hypothesis assessing the interactive effect of commitment and locus of control on attrition and performance was analyzed and found to be significant.

Data was collected using attitudinal surveys and cadet military and academic performance ratings. The analysis was accomplished by longitudinal analysis, analysis of variance, cross-lagged correlation analysis, and regression designs. The results indicate a significant negative correlation between commitment and attrition and between locus of control and performance. Further results indicate a significant difference in level of commitment between staying and leaving cadets. Those cadets with an internal locus of control perform at higher levels within the Academy. Finally, a trade-off between locus of control and commitment may exist in determining performance levels and retention