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Wright-Patterson Air Force Base, Ohio

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A STUDY OF MOTIVATION TO THE MANAGERIAL ROLE AND MACHIAVELLIANISM

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AFIT/GSM/SM/77S-14 Michael J. Oles
Major USAF

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Preface

I take this opportunity to gratefully acknowledge those who have been particularly helpful in this study. Without their assistance, this thesis would not be possible.

Special thanks are extended to Captain Michael J. Stahl of the Systems Management department, who provided invaluable guidance in all phases of this research. Particularly appreciated were his recommendations which provided the basic thrust of this research and his timely and constructive review of this manuscript.

I would also like to thank Dr. Ray Maize, Office of the Director of Instruction, Air War College (AWC), Maxwell Air Force Base, Alabama. Dr. Maize provided valuable assistance in establishing an opportune time for administering the questionnaires to the AWC officers, and furnished office facilities for distribution and retrieval of the AWC questionnaires.

I take this opportunity to thank Major Charles (Chuck) W. McNichols, Systems Management department, for his recommendations in the efficient use of several of the computer programming techniques used in this research.

It is a pleasure to report that someone other than myself is able to decipher my handwriting. Denise K. Miller took to the task of unscrambling the arrows, inserts, and scattered footnotes that were prevalent in the handwritten manuscript and typed the final copy.

Finally, I would like to thank my wife, Kathleen, who aloud, all of the sentences in the Miner Sentence

Completion Scale while I performed the grading process. This arduous task extended over a period of six weeks during which she always had time for words of encouragement in spite of reading and rereading many of the sentences as I attempted to grade them properly. It is my distinct pleasure to dedicate this research to my wife, Kathleen.

Michael J. Oles

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Abstract

One purpose of this research was to examine the relationship between motivation to managerial role prescriptions (using the Miner Sentence Completion Scale) and Machiavellianism (using the Mach V Scale). A second purpose of this research was to investigate managerial motivation and Machiavellianism of successful Air Force officers compared with other populations.

There is little evidence to support a relationship between Machiavellianism and specific managerial motives. In a comprehensive sense, there is no relationship between overall motivation to the managerial role and Machiavellianism.

The analysis indicates that Air Force officers are significantly less motivated to the managerial role than a previously established normative group of managers in a large corporation. This may indicate that managerial role prescriptions have changed since the time that the previous normative group was established or that there is a difference between managerial role prescriptions within profit-oriented corporations and the United States Air Force.

The analysis indicates that Air Force officers are less inclined to either pro- or anti-Machiavellian sentiments than other groups. However, there is evidence that the Mach V Scale is multi-dimensional. Further research is recommended to increase the reliability of Mach V, while retaining its present immunity from socially desirable response set.

A COMPARISON OF MOTIVATION TO THE MANAGERIAL ROLE AND MACHIAVELLIANISM USING THE MINER SENTENCE COMPLETION SCALE AND THE MACH V SCALE

I. THE PROBLEM

Definition

Many words in common use not only have a variety of meanings but may be associated with individuals in the form of stereotyped labels. An assortment which readily comes to mind includes: racist, hawk, dove, liberal, conservative, militant, radical, and feminist. The word Machiavellianism also has several meanings and, in various forms, is suitable for stereotyping individuals as implied by the following rather pointed definition:

> Machiavellianism. (noun): The political theory of Machiavelli, especially the view that politics is amoral and that any means however unscrupulous can justifiably be used in achieving political power (Webster's New Collegiate Dictionary, 1974:688).

As is the case with many technical terms, the dictionary definition is inadequate, and in this instance, is particularly value-laden. Therefore, it seems imperative to establish a working definition of Machiavellianism at the onset of this study.

Dr. Richard Christie, one of the principal investigators of Machiavellianism, hypothesizes that the Machiavellian is relatively unemotional in interpersonal relationships, is unconcerned with conventional morality, views others rationally, and has a low ideological commitment (Christie and Geis, 1970:3). This study is concerned with possible relationships

between motivation to the managerial role and Machiavellianism as described by Dr. Christie.

Introduction

A comprehensive review of available knowledge relative to the identification and enhancement of managerial effectiveness was published in 1970. Included in the work was a discussion of trends of behavior scientists' theories and research as well as a review of modern business and government techniques, practices, and clinical studies. As a result of the effort, a heuristic model was formulated wherein managerial effectiveness was hypothesized to be a function of complex interactions among ability, motivation, and opportunity variables coupled with feedback (incentive and reward) systems developed by organizational policies and practices (Campbell, Dunnette, Lawler, and Weick, 1970:16). In the final chapter of the study, the authors conclude that further research is necessary to understand the role of each of the variables and interactions in the managerial effectiveness model. In particular, the authors note that the relationship of motivation to managerial effectiveness is not clearly understood or considered in practice. Part of the dilemma stems from the difficulty in identifying similarities and differences among the various theoretical treatments. In addition, there are relatively few data bases which have focused on managerial motivation and behavior relationships (Campbell *et al.*, 1970:341,358,483).

Research focusing on value systems indicates that

managers tend to value esteem, autonomy, and achievement over security and social relationships (Campbell et al., 1970:301-302). Other studies, based on Miner's managerial role theory, indicate that successful managers are motivated by power, competition, the ability to perform administrative functions, and tend to assume a highly visible position within the group (Miner, 1963:218-222).

Recent research indicates that the power need is bipolar. The positive aspect of the power motive seems to be a driving force for the betterment of the organization while the negative aspect is manipulative or self-serving (McClelland, 1970:29-47, and McClelland and Burnham, 1976:100-110). Although a number of recent analyses indicate that individuals with a strong Machiavellian orientation exhibit interpersonal manipulation in a variety of situations, there is a reluctance among the principal investigators to hypothesize a relationship of Machiavellianism with the power motive (Christie and Geis, 1970:3).

The Problem

Although Miner's managerial role theory includes the power motive as an essential element, little or no research has explored the relationship between motivation to the managerial role and Machiavellianism. There is a similar lack of information regarding the difference between Machiavellianism among successful managers within hierarchically-structured organizations and the population-at-large.

In addition to these unexplored areas, the application

of the managerial role theory has been largely confined to profit-making corporations with relatively few data bases constructed in large, non-profit, bureaucratic organizations such as the United States Air Force. Therefore, the population considered in this research consisted of relatively successful Air Force officers in the six officer grades from Second Lieutenant (2/Lt) through Colonel (Col).

Two unique instruments which have been developed to provide measures of motivation to the managerial role and Machiavellianism, respectively, were utilized in this research.

One instrument, referred to as the Miner Sentence Completion Scale (MSCS), is a projective or indirect measure of managerial motivation. The scale contains 35 scorable items or stems which are designed to elicit motivations and attitudes which are manifest in the managerial role. The scale is composed of seven subscales classified as: Authority Figures, Competitive Games, Competitive Situations, Masculine or Assertive Role, Imposing Wishes, Standing Out from the Group, and Routine Administrative Functions. A high MSCS score indicates a strong motivation to the managerial role.

The second instrument used in this study, the so-called Mach V Scale, consists of 20 groups of three sentences (triads) which have been designed to measure Machiavellianism while minimizing the effects of social desirability. A high Mach V score (high Mach) indicates a relatively strong orientation toward the Machiavellian model.

Basic Objectives

The basic objectives of the research are:

1. Investigate the relationship between managerial motivation as projected in the MSCS and Machiavellianism as determined in the Mach V scale.

2. Investigate the relationships among managerial motivation and military grade (2/Lt through Col), managerial experience, or age.

3. Investigate the relationships among Machiavellianism, military grade, experience, and age.

4. Investigate the relationships among managerial motives elicited by Air Force officers and corporation managers.

Hypotheses

Based on prior research using the MSCS or Mach V scales, the following hypotheses were developed:

1. There is a positive correlation between the Mach V score and the "Imposing Wishes" subscale score on the MSCS.

2. There is a positive correlation between the Mach V score and the "Competitive Situations" subscale score on the MSCS.

3. There is a negative correlation between the Mach V score and the "Authority Figures" subscale score on the MSCS. This is based on the assumption that high Machs might tend to resent those in authority. The authority figure may represent an external threat or stumbling block to the high Mach's manipulative tendencies.

4. There is a positive correlation between Mach V score and the "Standing Out from the Group" subscale score on the MSCS.

5. There is no correlation between Mach V score and the "Competitive Games," "Masculine Role," or "Routine Administrative Functions" subscale scores.

6. There is a positive correlation between MSCS score and Air Force grade.

7. There is a positive correlation between score on the MSCS and number of years of direct supervisory experience.

8. There is a positive correlation between perceived autonomy on the job and Mach V score among senior Air Force officers. This is based on prior research which indicates that high Machs perform better in unstructured situations.

9. There is no correlation between total MSCS and Mach V scores.

Plan of Presentation

Chapter II is a review of the underlying rationale, development, and results of previous research utilizing the MSCS and Mach V scales.

Chapter III includes the methodology for data acquisition, interpretation and scoring procedures, and the statistical test methods used to test the hypotheses of this research.

Chapter IV includes a comparison of the results of this research with previous findings as well as the results of the tests of hypotheses.

Chapter V contains a summary, conclusions, and recommendations for further study.

II. LITERATURE REVIEW

This review is separated into two sections. The first section is devoted to a discussion of motivational elements which have been previously identified with effective managers. Several of the elements have been incorporated in the managerial role theory which lead to the development of the Miner Sentence Completion Scale.

The second section is devoted to a review of the origin of the term Machiavellianism, its relevance in modern organizational and management theories, and the synthesis of the essence of Machiavellianism which led to the development of the Mach V Scale.

Development of the Miner Sentence Completion Scale

Relationship of Individual Traits to Managerial Effectiveness. Classical theories of managerial effectiveness were developed along several broad lines of thinking. One approach has attempted to identify fundamental personality measures or traits common to effective managers and leaders.

A number of research studies have concluded that managerial effectiveness is only weakly related to measures of self-confidence, ambition, and certain motivational elements such as need for affiliation, and security needs. There is, however, increased evidence that the need for power and need for achievement are motivational factors of effective managers.

With regard to the power motive, Miner says:

> ...The manager must accept and perhaps even enjoy

> holding a position which yields power over other people. He is required by nature of his work to use sanction, both positive and negative, to control certain aspects of his subordinates' behavior. The man who cannot bring himself to influence others in such a way as to make them act in accordance with his wishes will have difficulty in any kind of supervisory work. Probably more than a mere willingness in this respect is needed. An actual enjoyment of the manipulation of power may well be desirable, although this should be coupled with a capacity to keep the pleasure from becoming too evident (Miner, 1963:216).

Miner goes on to say:

> The power requirement can, of course, easily be viewed in a negative sense. To derive satisfaction from manipulating others to achieve one's own ends is widely considered Machiavellian and undemocratic. Yet it is not unusual for a person to derive pleasure from being in a position of power--to look forward to making others behave in accordance with his wishes. Feelings such as this probably occur at one time or another in practically all of us. In the writer's experience, they are particularly prevalent among managers of outstanding competence (p. 218).

McClelland and Atkinson have developed a Thematic Apperception Test in which a subject relates his impressions of a series of very simple pictures. An experienced interpreter can determine the relative strength of the affiliation (n-Aff), achievement (n-Ach), and power (n-Pow) needs of the subject. As indicated in Figure 1, executives have a relatively strong need for power and achievement (Stevens and Krochmal, 1977:477).

Since 1944, Sears, Roebuck & Co. has conducted a continuing series of investigations related to the prediction of executive effectiveness in the Sears organizations. The investigations included a battery of psychological tests including: American Council on Education Test,

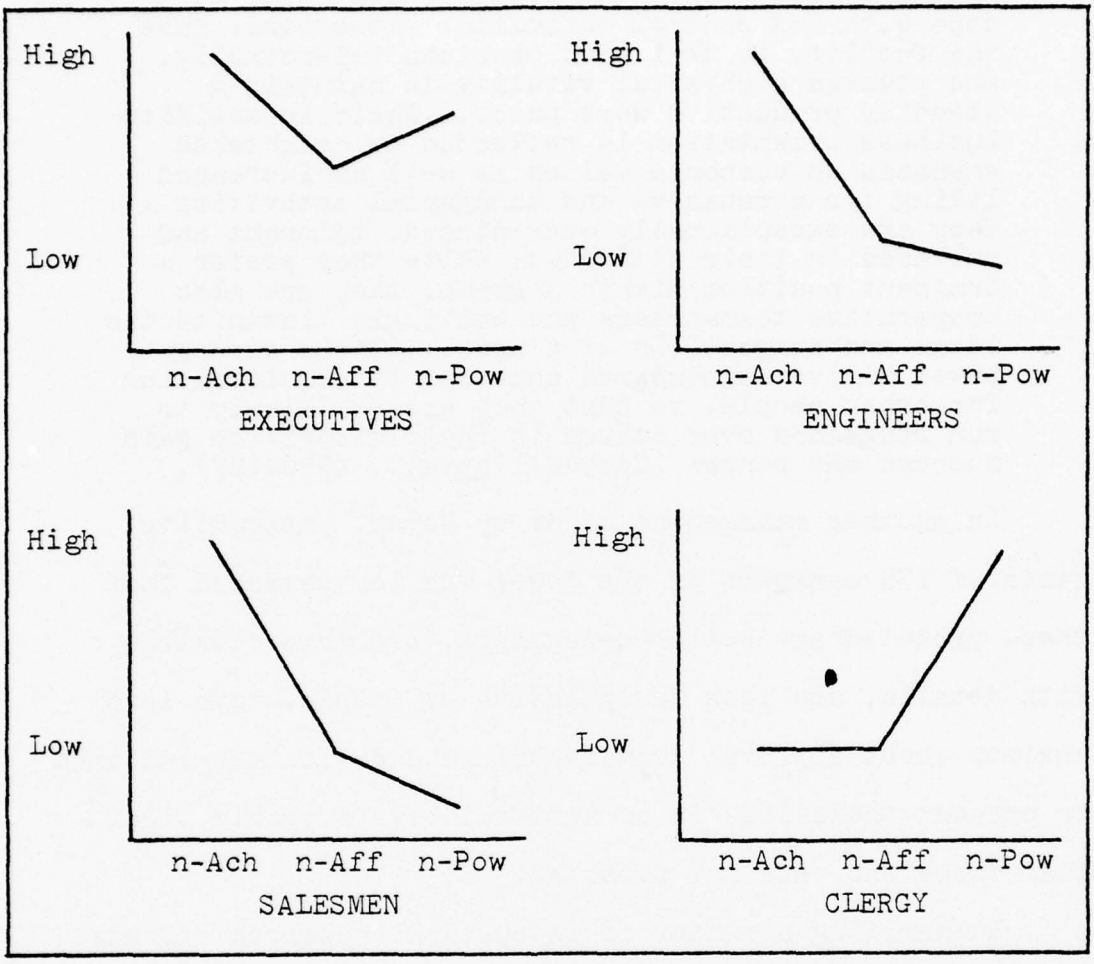


Figure 1. Relative Motive Profiles for Several Professions (Stevens and Krochmal, 1977:477)

Guilford-Martin Inventories, Allport-Vernon Survey of Values, and the Kuder Preference Record. Following is a summary of the results of those investigations:

> It would seem that powerful competitive drive for a position of eminence and authority provides a strong impetus for these men; the need to be recognized as men of influence and status, and ambition to govern, and the desire to excel appears to be of primary importance in enabling these men to utilize their talents fully and appropriately. Accomplishment of these goals appears...possible because (they) are superior...in intellectual endowment, social competence, and emotional stamina.

> They are fully confident of their abilities to cope with and control unfamiliar situations, have the facility to deal with problems impersonally, and possess a physical vitality to maintain a steadily productive work pace....Their intensified business orientation is reflected by heightened emphasis on economic values as well as increased liking for persuasive and managerial activities.... They are exceptionally open-minded, tolerant and unbiased in their attitudes; while they prefer a dominant position within a group, they are also cooperative teamworkers who willingly listen to the ideas and suggestions of others....Their strong power motive is tempered somewhat by consideration for other people, so that they are not likely to run roughshod over others in their efforts to gain success and renown (Campbell et al., 1970:187).

In another management study by Meyer, personality tests of 178 managers of the Jewel Tea Co. revealed that those promoted are better delegators, are more flexible with details, are less manipulative of people, have less anxiety about approval from superiors and are less inclined to present themselves in an artificially favorable light than those who are not promoted.

Summarizing a number of independent research efforts, Campbell, Dunnette, Lawler, and Weick conclude that individual traits of managers account for 30-50% of the variation in managerial effectiveness (Campbell et al., 1970:197).

Situational Characteristics and Managerial Effectiveness. Although individual traits and motivating needs have been shown to be related to managerial effectiveness measures, a number of management theories have attempted to identify fundamental situational characteristics which result in effective management by any individual who has an adequate understanding of the situation. A strong proponent of this theory was Stogdill, who concludes that situational

factors are significantly related to leadership performance (Stogdill, 1948:35-71).

One result of the theory that managerial traits and situational characteristics are both related to managerial effectiveness is Vroom and Yetton's normative model of leadership. The model prescribes five theoretically successful managerial styles based on ten organizational situations (Porter et al., 1975:425-428). However, the comprehensive theoretical model has not been subject to validation to date.

Managerial Role Prescription Theory. One theoretical construct which considers individual traits within a specified situational framework has been subjected to considerable validation. The so-called managerial role prescription theory was developed by Dr. John B. Miner during the late 1950's through early 1960's. The underlying hypothesis to the theory is that the situational characteristics of hierarchically organized bureaucratic organizations have sufficient commonality such that the manager within the organization must adhere to certain role prescriptions to be effective. The theory assumes that managerial effectiveness in an organization can be determined, to some extent, by motivation to perform the managerial role. After seven years of comprehensive research, Miner hypothesized six general categories of managerial role requirements:

1. A manager should have a positive relationship with his superiors.
2. A manager should compete actively with other managers at his own level.

3. A manager should behave in accordance with the prescriptions of the masculine role as defined in our society.
4. A manager should impose his wishes upon and direct his subordinates; he should exercise power.
5. A manager should stand out from the group and assume a unique position.
6. A manager should carry out such routine administrative duties as his job may require (Miner, 1965:12).

According to the role-motivation theory, then, the successful manager would be expected to possess strong motives in the following categories:

1. A favorable attitude toward authority.
2. A desire to compete.
3. A desire to follow basically masculine behavior patterns.
4. A desire to direct others and exercise power.
5. A desire to stand out and be at the center of attention.
6. A desire to carry out routine administrative tasks (Miner, 1965:12).

Miner has described, in detail, his theory of managerial performance which provided the basis for the construction of an instrument which elicits the motivation tendencies toward the managerial role (Miner, 1963:215-227, and Miner, 1965:41-55).

Construction of the MSCS. In order to measure the six motivational characteristics, Miner constructed a sentence completion instrument referred to as the Miner Sentence Completion Scale (MSCS). The MSCS is a projective measure of the motivation to manage, to behave in ways which are relevant insofar as the managerial role is concerned. The scale was not developed from an analysis of the basic types of motivation but from an analysis of role

requirements. Each of the managerial role prescriptions can be identified with one or more of the seven subscales within the MSCS.

The Authority Figures subscale is a measure of the need to meet the managerial role requirement in relations with supervisors. The Competitive Situations subscale focuses on occupational activities. The Competitive Games subscale also focuses on the competitive role but from the point of view of off-the-job peer relationships. The Masculine Role subscale focuses on activities primarily relevant to the traditional masculine stereotype. The Imposing Wishes subscale indicates the willingness or desire to exercise power. The Standing Out from the Group subscale is composed of stems where the respondent is in a relatively visible position. The seventh subscale, Routine Administrative Functions, reflects the motivation in the administrative duties role.

MSCS Reliability Tests. The MSCS has been subjected to various forms of reliability testing. Since an open-ended sentence completion instrument such as the MSCS might be considered susceptible to score interpretation, Miner has rescored MSCS records at four-month intervals. The average agreement between the initial and subsequent score of individual stems has been 95.4%. Evidence of repeat reliability was presented by subjecting four control groups ($n=30$ to $n=81$) to the MSCS at ten-week intervals. Correlations between the initial and subsequent MSCS comprehensive scores ranged from .68 to .84. However, a test

of the reliability of subscale scores was lower with correlations ranging from .44 to .63. Miner concludes that the lower reliability of the subscales is due to the fact that there are only five sentence stems per subscale (Miner, 1965:137-143).

It is Miner's contention that split-half methods of instrument reliability are inappropriate for scales such as the MSCS which have been developed to utilize so-called rare scores (Miner, 1965:138). The MSCS scoring procedure is summarized in Chapter III and Appendix B of this report.

MSCS Validity Tests. Miner has conducted several analyses of the power of the MSCS and has addressed the questions of concurrent and predictive validity. Specifically, these questions are: Is there an association between the MSCS score and various criteria for managerial success? And do those who score relatively high on the MSCS progress more rapidly to positions of power in business organizations?

In one test of concurrent validity, Miner tested 100 managers in the Research and Development (R & D) department of a large corporation and found correlations of 0.24 to 0.43 ($p < .05$) between various indices of success and the MSCS comprehensive scores. However, in the same test group, the subscale correlations with the various success indices were generally much lower and often statistically insignificant (Miner, 1965:56-59).

Miner also considered the possibility that success itself might result in motivational changes, thereby

contributing to the concurrent validity. In order to determine the predictive power of the MSCS, Miner tested a group and recorded their change in organizational position (per year) over a five-year posttest period. The correlation of position change per year and the MSCS comprehensive score was .39 ($\rho < .01$). Miner concludes that the data are consistent with the hypothesis that those who score relatively high on the MSCS progress more rapidly within the corporation (Miner, 1965:65).

Summarizing the validity tests based on analyses of eight groups, Miner concludes that the MSCS comprehensive score exhibits both concurrent and predictive validity. However, only three of the subscales have generally been validated--namely, Authority Figures, Competitive Situations, and Imposing Wishes. Those subscales produced reliable correlation coefficients with success criteria in 6, 7, and 6 groups, respectively. The Competitive Games, Routine Administrative Functions, Masculine Role, and Standing Out from the Group subscales produced reliable correlation coefficients in four, one, two and one analyses, respectively. Nevertheless, although the statistical evidence of the validity of several of the subscales was not conclusively established, the correlations were generally positive and, on that basis, Miner recommends that all of the subscales be retained (Miner, 1965:86-89).

Literature Review of Machiavellianism

Introduction. The rationale and underlying construction

of the Mach V scale are fundamentally based on the works of the historic figure, Nicolo Machiavelli. Therefore, a development of the Mach V scale necessarily begins with Machiavelli himself.

Who Was Nicolo Machiavelli? Nicolo Machiavelli (1469-1527) was born and raised in the Italian city-state of Florence. A foremost political philosopher of the Italian Renaissance, he was the first to perceive of a country as a completely sovereign and autonomous unit. Machiavelli considered that the ancient Roman Empire was a model for all future government (Burns, 1973:363-364). Beginning his career as a Secretary to the Second Chancery, he became what would be known today as a bureaucrat and a braintrust. The Florentine politicians began to rely on him as an excellent administrator, a man who could draw up correspondence, dispatch orders, and maintain records. During his career, Machiavelli was an unofficial emissary to every important city-state in Italy. He met and studied many of the powerful men of the period including Cesare Borgia and the Duke Valentino, men who approached the essence of shrewdness and power. In his book, The Prince, Machiavelli described the policies and practices of government. He perceived that the fundamental objectives of the leader should be to maintain the power and security of the country. In order to meet the objectives, the leader might be required to put aside considerations of mercy, justice, and written agreements. Machiavelli was cynical of human nature and maintained that men are motivated by self-interest,

personal power, and material prosperity. Therefore, the head of state or ruler should not expect loyalty or affection from his subjects. With the writing of The Prince and The Discourses, Machiavelli was immortalized as the first modern analyst of power and is known as "the Father of Power Politics" (Burns, 1973).

It is beyond the scope of this section to describe the contents of The Prince and The Discourses. However, the titles of chapters listed below might provide insight into the difficult and controversial topics addressed by Machiavelli.

The Prince

I	The various kinds of government and the ways by which they are established
XV	Of the things for which men, and especially princes, are praised or blamed
XVII	Of cruelty and clemency, and whether it is better to be loved or feared
XIX	That we must avoid being despised and hated
XXI	How a prince must act in order to gain reputation

The Discourses

First Book

IX	To found a new republic, or to reform entirely the old institutions of an existing one, must be the work of one man only
XXVII	Showing that men are very rarely either entirely good or entirely bad
XLIV	A multitude without a chief is useless; and it is not well to threaten before having the power to act
XLV	It is a bad example not to observe the laws, especially on the part of those who have made them; and it is dangerous for those who govern cities to harass the people with constant wrongs
XLVI	Men rise from one ambition to another; first, they seek to secure themselves

against attack, and then they attack others

LII There is no surer and less objectionable mode of repressing the insolence of an individual ambitious of power, who arises in a republic, than to forestall him in the ways by which he expects to arrive at that power

Second Book

XIII Cunning and deceit will serve a man better than force to rise from a base condition to great fortune

XIV Men often deceive themselves in believing that by humility they can overcome insolence

Third Book

II It may at times be the highest wisdom to simulate folly

IX Whoever desires constant success must change his conduct with the times

XV An army should have but one chief: A greater number is detrimental

XLIV Impetuosity and audacity often achieve what ordinary means fail to attain (Machiavelli, 1950:V-XLVI)

Relevance of Machiavelli to Modern Organizational Theory. At this point, one might well question the relevancy of Machiavelli today. A discussion of princes, city-states, armies, dictatorships, and the like certainly is not relevant to management in the twentieth century United States--or is it?

Antony Jay, in his descriptively titled book, Management and Machiavelli: An Inquiry Into the Politics of Corporate Life, attempts to provide a unifying thread for studying the machinations of modern-day corporations. From Jay's macroscopic point of view, the successful methods of governing corporations are methodically compared and are generally in agreement with the methods perceived

and advocated by Machiavelli. Jay begins by defining states (corporations) as follows:

> Institutions for the effective employment of resources and power through a government (board) to maintain or increase the wealth of the land-owning classes (shareholders) and provides safety and prosperity for their citizens (employees) (Jay, 1968:11).

Jay goes on to say:

> The trouble is that too much writing on management has been concerned not to examine it but to attack or defend it; and not on the legitimate grounds of whether it has been successful or unsuccessful, but is a fruitless quest to establish that its ultimate purpose and effects are moral or, alternatively, immoral. ...(This has discolored...those) who constantly seem to feel an obligation to prove that well-managed companies invariably operate in perfect harmony with the personal morality of the men who work for them and the general good of the community they belong to (Jay, 1968:26-27).

Characteristics of the Machiavellian. Having attempted to condense the essence of Machiavelli and the relevance of his writings to modern organizational theory, the next questions are: What is the Machiavellian person really like? Where does the Machiavellian fit into society?

In order to get a glimpse into the character of the Machiavellian it was necessary to encapsulate Machiavelli. But it is also timely to discuss the "label" problem. When one says a person is authoritative, Machiavellian, self-confident, or has a strong need for achievement, self-actualization or what-have-you, the characteristic not only varies in intensity, but is only one of many independent, or correlated and possibly conflicting factors which give a person "personality." How a person behaves in a given situation is a function of both the person and his environment.

Not only the person, but his environment, is composed of a complex of needs, motives, capabilities, goals, and the like (Porter, 1975). With the understanding that this is a microscopic examination of only one trait of a personality, the next step is to define what the characteristics of the Machiavellian are, as perceived by modern psychologists. Richard Christie and his associates have addressed the Machiavellian characteristic in numerous well-documented and well-founded studies, first in a negative sort of way and then in the framework of a model. Christie says the pure manipulator, or Machiavellian, has the following abstract characteristics:

> 1. A relative lack of affect in interpersonal relationships. In general, it seemed that success in getting others to do what one wishes them to do would be enhanced by viewing them as objects to be manipulated rather than as individuals with whom one has empathy. The greater the emotional involvement with others, the greater is the likelihood of identifying with their point of view. Once empathy occurs, it becomes more difficult to use psychological leverage to influence others to do things they may not want to do.
>
> 2. A lack of concern with conventional morality. Conventional morality is difficult to define, but we were thinking here in terms of the findings that most people think lying, cheating, and other forms of deceit are, although common, reprehensible. Whether manipulators are amoral or immoral is a moot problem, and one which probably concerns them less than those who are manipulated. The premise here is that those who manipulate have an utilitarian rather than a moral view of their interactions with others.
>
> 3. A lack of gross psychopathology. The manipulator was hypothesized as taking an instrumentalist or rational view of others. Such a person would make errors in evaluating other individuals and the situation if his emotional needs seriously distorted his perceptions. Presumably, most neurotics and psychotics show deficiencies in reality testing and, by and large, fail in crucial ways in relating to others.

> Note that we were not suggesting that manipulators are the epitome of mental health; we were proposing that their contact with at least the more objective aspects of reality would have to be, almost by definition, within the normal range.
>
> 4. Low ideological commitment. The essence of successful manipulation is a focus upon getting things done rather than a focus upon long-range ideological goals. Although manipulators might be found in organizations of diverse ideologies, they should be more involved in tactics for achieving possible ends than in an inflexible striving for an ultimate idealistic goal (Christie and Geis, 1970:3-4).

Over the span of several years, Christie and his associates developed and validated a questionnaire which tests a respondent for high or low Machiavellian tendencies. Christie developed the questionnaire from passages within Machiavelli's works. One of the 20 questions of the forced-choice, so-called, Mach V questionnaire is as follows:

> 9. A. The world would be a much better place to live in if people would let the future take care of itself and concern themselves only with enjoying the present.
> B. It is wise to flatter important people.
> C. Once a decision has been made, it is best to keep changing it as new circumstances arise (Christie and Geis, 1970:23).

Agreement with response "B" to this question would provide a positive indication of Machiavellianism. Christie has synthesized years of testing to develop the following Machiavellian model of interpersonal behavior.

Generally, persons with high Machiavellian tendencies (high Machs) tend to be cool, detached, and attack problems logically, disregard emotional involvement, and pursue self-defined goals. The low Machs tend to be more open to others, are more likely to become emotionally involved, act on the basis of noncognitive reactions to situations and tend to be

more engrossed in the content of conversation rather than in its ultimate purpose in terms of their individual goals. High Machs tend to "read" into situations, remaining detached from affective distraction. High Machs seem to be more accurate in their views of others' weaknesses. Low Machs permit themselves to be outmaneuvered while clinging to idealistic interpretations of how people should behave (Christie and Geis, 1970:350-358).

Christie and others have attempted to determine the relationship between Machiavellianism and measures of ability, personality, and opinion. Although this work is on-going and not necessarily conclusive, the following trends have been observed. In seven separate tests involving a total of 1831 persons, the correlation of IQ or sex and Mach factor was found to be insignificant. Political preference or ideology and Mach factor has been determined as generally unrelated. In other tests, degrees of correlation ranging from -.03 to +.29 have been determined between need for achievement and Machiavellianism (Christie and Geis, 1970: 35-52). Christie speculates that modern society is becoming increasingly more similar in structure to the kind of laboratory situation in which persons with Machiavellian characteristics tend to "win." Christie also suggests that individual orientations toward manipulation are increasing (Christie and Geis, 1970:358).

Guterman, (1970) in another study, attempts to determine whether the environment induces an individual to higher or lower degrees of Machiavellian tendencies. He concludes

that many modern settings provide conflicting moral issues which are likely to increase the personality trait of Machiavellianism.

The Machiavellian Within the Organization. A strong positive relationship has been observed between Machiavellianism and success at manipulation, especially in ill-defined organizational structures (Christie and Geis, 1970: 106-111). Similarly, in tests constructed where success depended on interpersonal manipulation in obtaining a position of power within an unstructured group, high Machs were consistently more successful (Christie and Geis, 1970:110-112).

Christie is guarded in his conclusions relative to the Machiavellian in society or within organizations, preferring to confine general comment to the laboratory situation. He does venture to postulate that loosely-structured situations give high Machs more opportunity for manipulation, high Machs tend to be better administrators in dynamic loosely-structured organizations, and low Machs tend to be better in stable tightly-structured organizations (Christie and Geis, 1970:357-358).

III. METHODOLOGY

Introduction

This chapter includes a discussion of the procedure for selecting the sample population, discussions of the scale construction and scoring procedures for each of the three sections of the questionnaire, the procedure for administering the questionnaire, and a discussion of the statistical procedure used to test the hypotheses of this research.

Sample Population

The questionnaire used in this study was administered to a survey population of 398 USAF officers who were students in attendance at the Air University during the Spring of 1977. One group consists of 198 officers in the grade of Lieutenant Colonel or Colonel who were in attendance at the Air War College, Maxwell Air Force Base (AFB), Alabama. The remaining 200 officers were pursuing advanced degree programs at the Air Force Institute of Technology (AFIT) School of Engineering, Wright-Patterson AFB, Ohio. The total eligible and survey populations of the two Air University groups are identified by grade in Table I. Those considered ineligible to participate in this study included civilians, non-USAF officers, and all officers who had first-hand knowledge of the objectives of this research.

Instrument

The instrument used in this research was a questionnaire which includes three parts: demographics (Part A), a slightly

Table I
Total Survey and Sample Population

School	Grade	Total Eligible Population	Survey* Population	Sample* Population
AWC	Colonel (Col)	7	7	24
	Lieutenant Colonel (Lt Col)	191	191	67
AFIT	Lt Col	3	0	0
	Major	14	11	5
	Captain (Capt)	176	124	74
	First Lieutenant (1/Lt)	28	27	13
	Second Lieutenant (2/Lt)	38	38	16

*Statistics for the AWC survey population were available for the class entry date of 3 August 1976. AWC questionnaires were distributed on 29 April 1977 and were returned by 15 June 1977. Based on the returned questionnaires, at least 17 of the 191 entering Lieutenant Colonels had assumed the grade of Colonel as of 15 June 1977.

modified form of the MSCS (Part B), and the Mach V scale (Part C).

All questionnaires used in this study were identical with one exception. The sixth question in the demographic section (Part A) dealing with autonomy was directed to only the AWC survey population. The rationale behind the decision to exclude this question from the AFIT sample was that many of those relatively junior officers have held few or no previous Air Force assignments.

The cover letter, privacy statement, and Parts A and C of the questionnaire are included in Appendix A. Part B, the MSCS, is not included but may be obtained for a nominal fee from the following source: Dr. John B. Miner; Department of Management, Georgia State University, Atlanta, Georgia, 30303.

The Scoring Guide for the MSCS is also contained in an appendix to the following reference (Miner, 1965).

Part A: Demographics. Demographic questions used in this study included: 1) age, 2) temporary grade, 3) Air Force Specialty Code (AFSC), 4) years of commissioned service, and 5) years of supervisory experience. In addition, the AWC sample was asked a sixth question relative to personal autonomy, which was adapted from Question 2, Section One, of the Job Diagnostic Survey (Hackman and Oldham, 1974: 44). The third question, AFSC, was included to attempt to determine the level of organizational structure. However, over 50 different AFSC's were included in the returns. The large number of AFSC's in the returns essentially precluded any statistical processing of that information.

Part B: The Miner Sentence Completion Scale (MSCS). The MSCS, developed in 1961, is a projective or indirect measure of motivation to the managerial role. The scale contains 35 scorable and 5 non-scorable items or stems, which are designed to elicit motivation and attitudes manifest in the managerial role. The scale is composed of seven subscales and two comprehensive scores. The subscales are classified as: Authority Figures, Competitive Games, Competitive Situations, Masculine Role, Imposing Wishes, Standing Out from the Group, and Routine Administrative Functions. The comprehensive scores are the Item Score and the Rare Score.

Each of the seven subscales is based on evaluation of five different stems. Table II indicates the sentence stems

which are used in each of the subscales.

The five non-scorable stems were included by Miner as a confounding element so that the respondent would have difficulty in assessing the objectives of the MSCS.

Table II
MSCS Stem Numbers and Corresponding Subscales

Subscale	Stem Numbers
Authority Figures	1, 14, 21, 30, 38
Competitive Games	7, 24, 28, 34, 39
Competitive Situations	4, 10, 15, 31, 37
Masculine Role	3, 8, 12, 26, 32
Imposing Wishes	5, 11, 13, 17, 29
Standing Out from the Group	18, 22, 27, 33, 36
Routine Administrative Functions	2, 9, 16, 23, 35
Non-Scorable Stems	6, 19, 20, 25, 40

Part C: The Mach V Scale. The Mach V scale evolved from earlier versions of Mach scales which had exhibited significant negative correlations with Edward's Scale of Social Desirability. The Mach V scale is an attempt to measure the Machiavellian orientation while minimizing the effect of social desirability. The scale consists of 20 groups of three sentences. Each of the groups contains a Machiavellian statement, a statement unrelated to, but matched with, the Machiavellian statement in terms of social desirability, and a third statement, referred to as a buffer, which is also unrelated to Machiavellianism and is far removed from the other two statements in terms of social desirability. To minimize the effect of response set, 11 of the Machiavellian statements are positively worded while the

remaining 9 are reversed (Christie and Geis, 1970).

Scoring Procedures

Part A of the questionnaire involves no computations. However, the MSCS scoring procedure is somewhat involved and the Mach V scoring procedure is rather unique. Accordingly, this section is devoted to the scoring procedures of the MSCS and Mach V Scale.

MSCS Scoring Procedure. The MSCS scoring procedure is complex and is comprehensively treated in two publications (Miner, 1964, and Miner, 1965). This subsection includes a brief summary of the scoring methodology in those publications.

The first task in scoring the MSCS is to grade the sentence completions relative to the projected motivation. There are three possible grades. The respondent may exhibit negative (-1), neutral (0), or positive (+1) expressions of emotion, opinion, reaction, or motivation to the stem. The criteria for grading positive, neutral, or negative are found in the comprehensive Scoring Guide for the MSCS (Miner, 1964). The grading criteria, which differ from subscale to subscale, are discussed in detail in the Scoring Guide, which also includes at least thirty typical responses of positive, neutral, and negative sentence completions to each stem. There are no provisions for grading the strength of motivation to the stems. Having accomplished the initial grading, the subscale scores are calculated by totaling the number of positive responses in the subscale and subtracting the

number of negative responses. Thus, the subscale item score can vary from +5 to -5, representing strong positive and strong negative motivation, respectively. The so-called Item Score is a sum of the subscale scores and can vary from +35 to -35. Although calculation of the Item Score presents no computational difficulties, another comprehensive measure, the Rare Score, has proven more reliable in prior research efforts.

The computation of Rare Scores requires the establishment of a normative group of at least 150 individuals. The assumption basic to the Rare Score is that only a pattern of responses which occurs five percent of the time or less in a group of which the subject is a member, is really indicative of the presence of a characteristic. Rare scores for each subscale are calculated by considering all the possible combinations of positive or negative item responses.

Each subscale yields 31 similarly keyed evaluative patterns--five derived from taking the items one at a time, 10 derived from pairs of items, 10 derived from sets of three, five derived from sets of four, and finally, one derived from the set of all five items.

In the calculation of positive rare scores, only positive scores as reflected in the five subscale stems are considered. Any or all of the five subscale stems may indicate positive scores. Table III displays all 31 possibilities. Similarly, in an analysis of negative rare scores, 31 combinations of negative responses are possible.

A rare value of +1 is assigned to any subscale in which

Table III
Patterns of Either Positive or Negative Indications of Motivation Within a Subscale (62 Total Patterns)

Combination	Pattern	Similarly Keyed Subscale Stem(s)	Combination	Pattern	Similarly Keyed Subscale Stem(s)
One at a time	1	1	Three at a time	16	1,2,3
	2	2		17	1,2,4
	3	3		18	1,2,5
	4	4		19	1,3,4
	5	5		20	1,3,5
				21	1,4,5
Two at a time	6	1,2		22	2,3,4
	7	1,3		23	2,3,5
	8	1,4		24	2,4,5
	9	1,5		25	3,4,5
	10	2,3	Four at a time	26	1,2,3,4
	11	2,4		27	1,2,3,5
	12	2,5		28	1,2,4,5
	13	3,4		29	1,3,4,5
	14	3,5		30	2,3,4,5
	15	4,5	Five at a time	31	1,2,3,4,5

at least one rare positive combination is revealed. A rare value of -1 is assigned to any subscale in which at least one rare negative combination is revealed. A rare value of zero is assigned to any subscale in which either no rare combination or both a positive and negative rare combination is revealed.

An eighth rare subscale, Managerial job, is based on the popularity of all 35 scorable stems. The Managerial

Job subscale requires establishment of a normative group and has no Item Score counterpart. There are five positive and five negative levels of popularity identified as: high, high-medium, medium, low-medium, and low.

High popularity positive is based on the most popular positive item in each of seven basic subscales in the normative group. High-medium popularity is based on the second most popular positive item in each of the seven basic subscales in the normative group, and so forth. For example, in the normative group, high-popularity positive stems might be (1, 34, 15, 12, 29, 22, and 2). In the ideal case, the high popularity positive stem equals seven, that is, the sum of the seven stem scores. However, the stem is rare if five percent or less of the normative group have, for example, at least six positive responses. Considering each of the popularity levels as a composite stem, there are 62 combinations of positive and negative patterns of motivation to the Managerial Job which must be considered. As with the seven basic subscales, the Managerial Job rare score can take on the values of +1, 0, or -1.

The Rare Score is the sum of the eight subscale rare scores and can vary from -8 to +8.

This study considered two separate normative groups. The rare scoring patterns of one group of 160 managers from a single corporation working in a variety of areas such as the physical sciences, engineering, industrial relations, sales, and accounting and finance, is discussed in the Scoring Guide for the MSCS (Miner, 1965:49). The rare

scoring patterns for the normative group consisting of the 196 AWC and AFIT respondents to this survey are discussed in Appendix B.

Mach V Scoring Procedures. The Mach V scale consists of 20 groups of three sentences each (triads). A respondent examines the three statements in each triad, then indicates which of the three he most agrees with and which of the three he least agrees with. There are six possible sets of combinations of responses to each triad. If the sentences are labeled a, b, and c, the combinations are as follows (the first element being (+), the second being (-): (a,b); (a,c); (b,a); (b,c); (c,a); and (c,b). Responses to the question result in a triad score of 1, 3, 5, or 7. Assume, for example, that statement a) has a positive Machiavellian wording, statement b) is the buffer, and statement c) is the socially desirable match of statement a). The score for the six possible combinations is as follows: (a,c):7; (a,b): 5; (b,c): 5; (c,b): 3; (b,a): 3; (c,a): 1. If the Machiavellian statement is worded in the anti-direction, the scoring procedure is reversed (Christie and Geis, 1970:28-32).

The Mach V score is the sum of the 20 group scores plus 20 points. With the 20-point bias, the mean Mach V score is comparable to the mean scores of previous Machiavellian instruments for large diverse populations. Therefore, the Mach V score can range from 40 to 160 with a mean of 100 (Christie and Geis, 1970:32).

Although a number of research studies have utilized the Mach V scale based on the above scoring procedure, at least

one variant in the scoring procedure has been developed as a result of differences between the mean scores of Machiavellian statements and the matched socially desirable statements in Mach V for United Kingdom subjects (Rogers and Semin, 1973). That scoring method has not been subjected to extensive validation on United States subjects and therefore was deemed inappropriate for this study.

Assumptions

This study was based on three assumptions relative to the MSCS and one assumption relative to the Mach V. The assumptions are discussed in the following subsections.

Assumptions Relative to the MSCS. The first assumption is that Stem 1 of the MSCS (My family doctor...) is irrelevant to many of the officers in the sample. Except in the unusual case where an installation has a family practice clinic, service personnel are not assigned under the care of a specific doctor. Frequent transfers of AF officers contribute to the irrelevancy of the stem. Stem 1 is directly used in the Authority Figures subscale and indirectly in the comprehensive scores. Other stems in the Authority Figures subscale are: Federal judges...; Top management...; My father...; and Policemen... . Rather than delete Stem 1, it seemed reasonable to revise it to: Medical doctors... . This revised stem is relevant to the sample population and seems consistent with the intent of the MSCS.

A second assumption is that the grading procedures of the MSCS Scoring Guide were correctly followed in assigning

positive, neutral, or negative motivation scores for each stem. The validity of this assumption is defended on two bases. First, the Scoring Guide for the MSCS provides a comprehensive treatment relative to the grading procedure for each subscale as well as providing at least 30 typical completions of each stem. Second, the grading of all responses was accomplished twice. The second round of grading was accomplished after all returns were in. Approximately 10% of the stem grades of the first 63 cases were changed on the second round. Approximately 5% of the stem grades of the remaining 133 cases were changed on the second round. The higher change rate on the first 63 cases indicates a learning curve situation. The 5% change rate for the remaining 133 cases inplies that a 95% rate of consistency, as a minimum, was achieved by the end of the first scoring round. Thus, the overall consistency rate was at least 95% which is entirely consistent with published findings in which there was 95.4% consistency in rescoring (Miner, 1965:52) In this research, the underlying grading rationale was the Scoring Guide for the MSCS (Miner, 1964).

The ideal basis of scoring the MSCS requires the establishment of a normative group to generate rare scoring patterns. Miner recommends establishment of a normative group consisting of at least 150 individuals. The sample population of this study consisted of 91 AWC and 109 AFIT officers. Neither group was adequate to yield a sample large enough to constitute a normative group of the recommended size. The third assumption relative to the MSCS in

this study is that the AWC and AFIT groups can be combined to form a normative group of 200 individuals. This assumption is defended on two bases. First, AF officers meet the broad definition of managers (Dunne, 1975:29). Second, using the term manager in a more limited sense as one who supervises the activities of others, 89 of the 91 AWC and 62 of the 109 AFIT respondents have already had direct supervisory experience at this point in their careers. In any case, the hypotheses of this research were also tested on the basis of a previously established normative group (Miner, 1973).

Mach V Scoring Assumptions. Triad scores in the Mach V can take on the value of 1, 3, 5, or 7. In some cases, respondents indicated a sentence with which they agreed the most, but did not indicate which of the three sentences they agreed with the least, or vice versa. Christie (1970) does not discuss the scoring procedure in this circumstance. However, once a respondent has indicated a sentence with which he agrees most or least, his group score can be determined to within plus or minus one point.

Table IV illustrates the idea by considering that sentences a, b, and c are the Machiavellian, buffer, and matched sentences, respectively.

Administrative Procedures

Survey Approval. Prior approval by the Air Force Military Personnel Center (AFMPC) is required to administer survey instruments to Air Force personnel. Request for approval of the questionnaire used in this research was directed

Table IV
Mach V Score Assignment of Incomplete Data Sets (Example)

Scoring Key[1]		Positive Response	OR	Negative Response	Range of Score	Assigned Score
Response	Score					
(a,c)	7	a		c	5 to 7	6
(a,b)	5					
(b,c)	5	b		b	3 to 5	4
(c,b)	3					
(b,a)	3	c		a	1 to 3	2
(c,a)	1					

[1](Christie and Geis, 1970:31,32)

to AFMPC on 31 March 1977. Official Air Force approval to administer the questionnaire to AFIT and AWC students was received on 10 April 1977 with the assignment of Survey Control Number 77-87.

Instructions. Instructions for completing the questionnaire were briefly stated. The objective of the survey was stated only in general terms as follows: "The questionnaire is structured so that you can express your personal feelings, perceptions, and attitudes in several ways." The rationale for this decision was based on the susceptibility of sentence completion instruments, such as the MSCS, to subjects consciously constructing a particular picture of their motivation with regard to the stated objectives (Miner, 1965:46-47). Similarly, if a subject were given advance information regarding the characteristics of Machiavellianism, and that the Mach V scale is a measure of these characteristics, prior research indicates that the Mach V scores may be biased (Christie and Geis, 1970:25). However, previous

efforts indicate that subjects taking either the MSCS or Mach V under normal instructions have generally been unable to determine the specific objectives of the instruments. Therefore, the opportunity for response modification on the basis of hypothesized objectives is minimal (Christie and Geis, 1970:25, and Miner, 1965:47).

Test Methods

Tests performed in the data analysis include: Determination of means and variances; frequency distributions to provide a normative AWC/AFIT group for determination of MSCS Rare Scores; Pearson zero-order correlation coefficients; tests between means using the Student's *t* statistic; coefficient alpha and split-half tests of the reliability of the Mach V scale; and factor analysis of the Mach V scale. The factor analysis consisted of a principal component analysis without iteration (PA1) and orthogonal factor rotation (VARIMAX). The minimum eigenvalue for which factors were extracted was 1.0. The minimum factor loading considered in labeling the factors was .4.

All of the tests were accomplished using Version 6.50 of the Statistical Package for the Social Sciences (SPSS), dated 1 April 1976, and the CYBER 74 computer facilities at Wright-Patterson AFB. A detailed treatment of the SPSS and summary treatment of the statistical test methods are available in the following reference (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975). The reliability tests are discussed in the following reference (Nunnally, 1967).

IV. ANALYSIS

Introduction

The specific hypotheses stated in Chapter I are primarily concerned with establishing the relationships among demographics, the MSCS, and the Mach V scales. Prior to examining those relationships it seems appropriate to compare the MSCS and Mach V scales, separately, with prior research findings in order to establish a frame of reference. The comparison is made by considering the entire sample population as well as the two subpopulations, AFIT and AWC, who differ significantly in terms of demographics, as shown in Table V.

As indicated in Table V, 199 respondents completed Part A of the questionnaire. The numbers completing Part B (MSCS) and Part C (Mach V) were 196 and 185 respondents, respectively. A total of 200 respondents completed the MSCS or Mach V or both scales.

Comparison of AU MSCS Scores with Prior Research

Item Scores. The MSCS Item Score is the sum of the 35 scorable stem scores. Table VI includes the mean and available standard deviations of Item Scores for several populations. As is apparent from one test of 68 department store managers, the mean Item Scores do not discriminate managers rated high, medium, or low in promotion potential. It is Miner's hypothesis that the MSCS is a measure of motivation to the managerial role, which is only one of several variables which determine managerial effectiveness and potential

Table V
AWC and AFIT Demographic Differences

Variable	Population	Number of Cases	Mean	Std. Dev.	t	Mean Difference
Age	AWC AFIT	91 108	41.2 28.4	2.2 3.6	30.7	12.8*
Grade[1]	AWC AFIT	91 108	5.26 2.63	0.44 0.79	29.5	2.63*
Years of Commissioned Service	AWC AFIT	91 108	18.4 5.7	2.0 3.0	35.8	12.7*
Years of Supervisory Experience	AWC AFIT	91 108	8.8 1.8	5.4 2.3	11.6	7.0*

*ρ(1-tail)<.001

[1]Coding for Grade is: (1 = 2/Lt, 2 = 1/Lt...6 = Col). All AWC officers are Lt/Col or Col. All AFIT officers are Major or lower.

(Miner, 1965:93). Therefore, a high Item Score does not, in and of itself, imply managerial potential or effectiveness.

The differences among the AU, AWC, AFIT officers and the 160 corporation managers (from Table VI) are shown in Table VII, which indicates that the mean Item Scores for AU, AWC, and AFIT are significantly lower than those of the corporation managers. That the AFIT mean scores are also significantly lower than the AWC scores is reasonable considering the fact that 184 of the 200 AFIT officers surveyed were pursuing advanced degrees in specialized scientific or engineering disciplines. The distributions of the Item Scores of various groups, shown in the histograms in Figure 2, indicate that the range of scores of the various populations is quite similar and that the distribution of AU

Table VI
Comparison of MSCS Item Scores for Several Populations

Population	Number of Cases	Mean Item Score	Std. Dev.
Corporation Managers[1]	160	5.53	5.43
Department Supervisors[2]	20	6.60	not available (n/a)
Assistant Department Supervisors[2]	17	4.76	(n/a)
Selling Supervisors[2]	33	3.03	(n/a)
R & D Supervisors[3]	27	4.56	(n/a)
R & D Non-Supervisors[3]	68	2.07	(n/a)
Graduate Business Students (Managerial Goal)[4]	41	7.71	(n/a)
Graduate Business Students (Teaching Goals)[4]	32	0.59	(n/a)
Graduate Business Students (Specialist Goals)[4]	33	1.27	(n/a)
Department Store Supervisors rated high in potential[5]	68 total	6.25	(n/a)
Department Store Supervisors rated medium in potential[5]		3.11	(n/a)
Department Store Supervisors rated low in potential[5]		4.55	(n/a)
AU	196	1.42	5.98
AFIT	108	-0.08	5.70
AWC	88	3.23	5.84

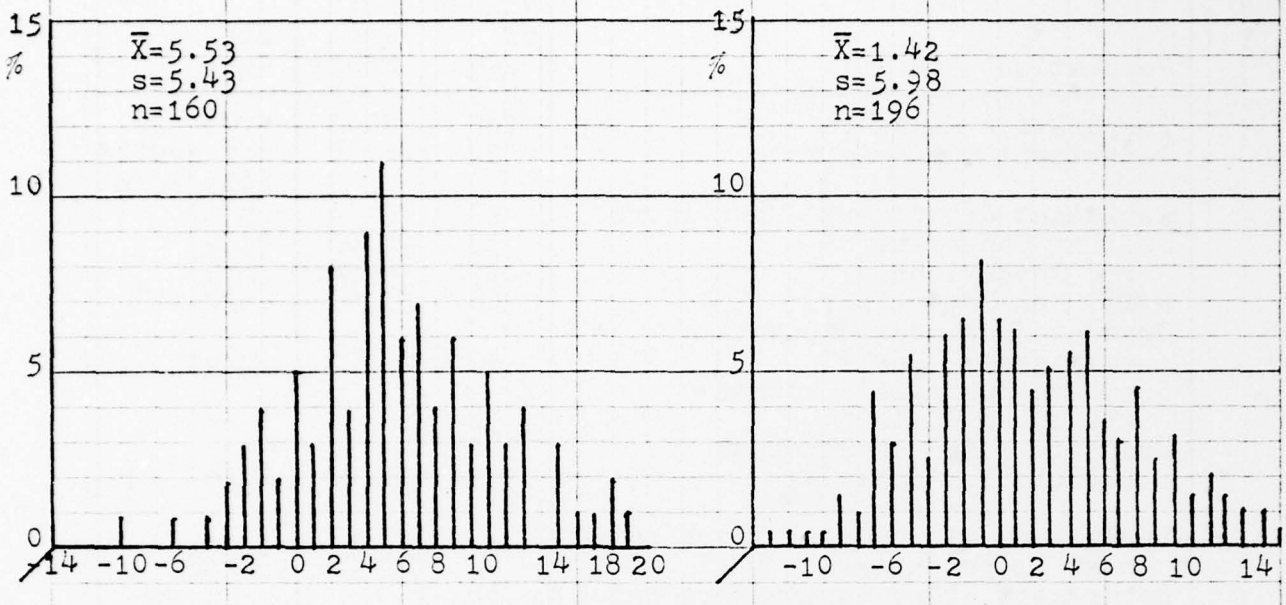
[1]Based on a histogram in the following reference: (Miner, 1964:60). This group constituted the normative group of corporation managers in determining MSCS Rare Scores.
[2](Miner, 1965:74).
[3](Lacey, 1974).
[4](Miner, 1968:590).
[5](Miner, 1965:79).

Table VII
Test of Mean MSCS Item Scores Between Various Groups

Group	t	Mean Difference
AU (Corporation Managers)	6.8	4.11*
AWC (Corporation Managers)	3.04	2.30**
AWC AFIT	3.98	3.31*

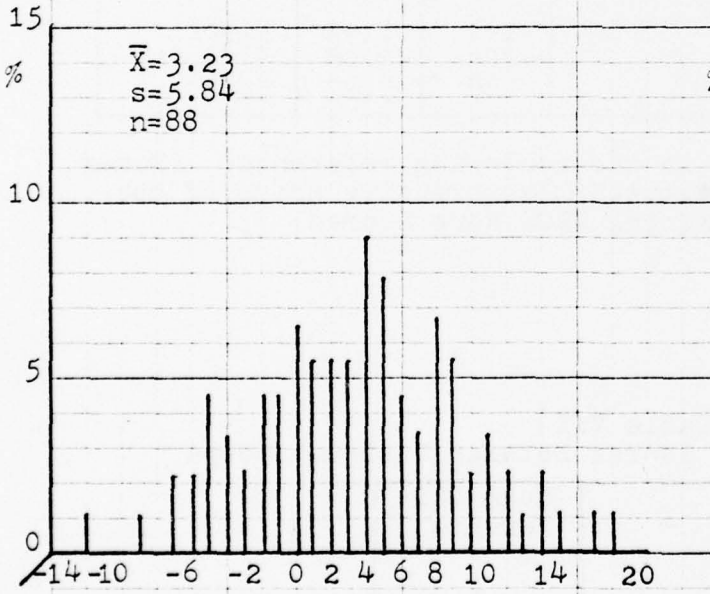
*p(1-tail)<.001 **p(1-tail)<.005

Figure 2. Histograms Showing Distributions of Item Scores

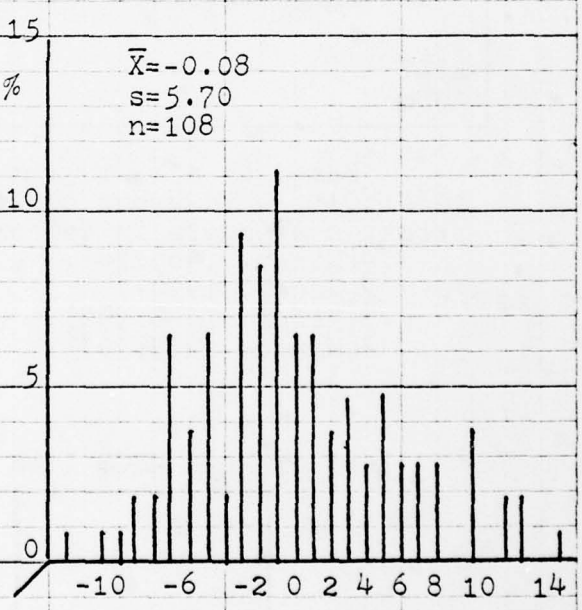


ITEM SCORES (Corporation Managers) (Miner, 1964:60)

ITEM SCORES (AU)



ITEM SCORES (AWC)



ITEM SCORES (AFIT)

scores above and below the mean is reasonably comparable with those of the corporation managers.

Rare Scores. In Table VIII, the mean Rare Scores of the AU, AWC, AFIT, and corporation managers are compared. In the upper section of the table, the normative group used to establish the rare scoring pattern consists of the 160 corporation managers (Miner, 1964). In the lower section of the table, the normative group consisted of 108 AFIT and 88 AWC officers. Appendix B describes the method for developing rare scoring patterns in the AU population. Table VIII indicates that the differences in mean Rare Scores among the AU, AWC, and AFIT groups are essentially the same regardless of whether the normative group consists of AU (AWC plus AFIT) officers or corporation managers.

Table VIII
Comparison of MSCS Rare Scores

Normative Group	Population	Number of Cases	Mean Rare Score	Std. Dev.
Corporation Managers[1]	Corporation Managers[1]	160	-0.02	2.00
	AU	196	-1.42	2.59
	AWC	88	-0.73	2.68
n=160	AFIT	108	-2.00	2.37
Normative Group	Population	Number of Cases	Mean Rare Score	Std. Dev.
Air University (AU)	AU	196	0.42	2.64
	AWC	88	1.18	2.67
n=196	AFIT	108	-0.20	2.47

[1](Miner, 1964:60).

In tests between the mean Rare Scores of the AWC and AFIT groups, the AWC officers score significantly higher ($p<.001$) than the AFIT officers, whether the corporation managers or AU is considered normative. A similar conclusion was reached in tests of the Item Score means. Assuming Miner's hypotheses are correct (see Chapter II), AWC officers are significantly more motivated to the managerial role than are AFIT officers, based upon both the Item and Rare Scores.

Although a comparison of the AU MSCS subscale scores with prior research findings might provide additional insight, it is irrelevant to the main focus of this research. A number of statistically-based studies which reveal some of the strengths and weaknesses of each subscale are collectively available in the following reference (Miner, 1965).

Comparison of Mach V Scores with Prior Research

Tests of Mean Mach V Scores. Table IX includes the mean Mach V scores and standard deviations for a number of studies. Mach V scores can theoretically range from 40 to 160 with a Scale mean of 100. The AU, AWC, and AFIT mean Mach V scores are essentially at the Mach V Scale mean. A *t*-test between the mean AU Mach V score (n=185) and the mean caucasian male college student score (n=764) indicates no significant difference. Similarly, there is no difference between AWC or AFIT scores and the 764 caucasian male college student Mach V scores. However, an F-test indicates that the variances of the AU, AFIT, and AWC scores are

Table IX
Comparison of Mach V Scores with Prior Research

Description	Number of Cases	Mean Mach V Score	Standard Deviation
Caucasian[1] Male College Students	764	99.27	11.17
Non-White[1] Male College Students	62	98.17	10.38
Male College Students[2]	77	111.46	14.16
Male College Students[3]	143	103.55	11.83
Male College Students[4]	74	106.00	11.21
Managers[5]	18	95.19	9.62
Graduate (MBA) Students[5]	73	106.21	12.12
AU	185	99.72	8.80
AWC	87	99.66	9.47
AFIT	98	99.78	8.20

[1]Christie and Geis, 1970:32.
[2]Christie and Geis, 1970:79.
[3]Christie and Geis, 1970:113.
[4]Christie and Geis, 1970:239.
[5]Siegel, 1973:407.

significantly lower ($p < .01$) than the variance of the Mach V scores of the 764 college students. Although the AU Mach V scores ranged from a low of 76 to a high of 126, there is an absence of any Mach V scores between 116-126, with only two AU respondents scoring 126. Referring back to Table IX, all AU high Mach scores, except two at 126, are within one standard deviation of the mean scores of several groups of college students. Even the two high AU Mach V scores are approximately one standard deviation from the scores of one sample of 77 male college students. The relatively low variance of the AU Mach V scores may be due to the relative homogeneity of Air Force officers who are selected on the basis of reasonably consistent criteria.

Mach V Response Set Analysis. In order to identify response set cases, instruments are often constructed so that some of the items are worded in a positive direction while others are worded in the negative. Such is the case with Mach V; eleven of the Machiavellian statements are worded in a positive Machiavellian sense while the remaining nine are reversals. However, due to the triadic nature of the Mach V and the fact that each triad contains a Machiavellian and socially desirable matched sentence, the usual methods for discarding a response set case are not clearly evident. In addition, there are no statistical tests known to this writer which can separate a randomly versus purposefully completed instrument. Therefore, approximately 54% of the AU questionnaires were randomly selected for visual screening to determine the presence of response set. Each of the 20 triads in the Mach V consists of three sentences labeled a, b, and c. The criteria used for selecting out a case were as follows: Reject if the respondent consistent agrees with one of the three sentences before disagreeing with another in the same group, or vice versa; reject if the respondent consistently agrees or disagrees with one of the labeled sentences (i.e., a, b, or c); reject if the respondent consistently neglects to agree or disagree with one of the labeled sentences. With these criteria, no evidence was found to support the response set hypothesis. On the contrary, there is evidence to support the hypothesis that the respondents considered the relative agreement of the three sentences in each group before indicating their preferences. This is

indicated by the fact that several of the respondents commented about the difficulty in selecting the most agreeable or least agreeable sentence in each group. AU respondents' comments relative to the difficulty in completing the Mach V are as follows:

> I feel the multiple choice (Mach V) questions are loaded questions and gave me little choice to choose from, like how many times do you beat your wife?
>
> I found several questions in the last part (c) (Mach V) for which I felt absolutely no preference or at least no desire to choose among the alternatives. However, I assumed a forced choice and marked an answer. Questions 16 and 18 are examples, and even 14.
>
> I had a difficult time restricting myself to mark the sentences as per the instructions.
>
> ...(T)here seemed to be a definite statement that I agreed or disagreed with, and then a judgement call between two other statements in most cases. Numbers 13, 14, and 15 were especially difficult because I either basically agreed or disageed with all choices of a given set. I get the impression you are evaluating the moral character of the AF officers.
>
> I doubt that 20 questions can give a fair enough profile of individuals in what I see as five main continuums: good vs. bad; society vs. individual; truth vs. deception; activity vs. inactivity; hedonistic vs. futuristic. Good luck anyhow. My basic philosophy is Eastern.
>
> In many of the questions in section 3 (Mach V) I had agreed or disagreed with all of a, b, c so I was grasping at which I agreed the most with.
>
> Tough to separate some groups (of the Mach V) with a plus or minus (agree or disagree).
>
> Kind of like a self psycho-analysis. One-third of the questions didn't have an immediate response.
>
> Part C (Mach V) is tough! I think my answers would be different tomorrow night. I wanted to put a "+" on 11B, but I ran out of them on that question.

Most choices (in the Mach V) seemed to be apples vs. oranges rather than good apples vs. bad apples. Question 9, for example, I could not find a single response to the the "+". Whereas on 11, it was difficult to "-" any one.

I am sure that the above 20 questions (Mach V) were carefully designed so that some had 3 "bad" statements and some had 3 "good" statements thereby forcing a perhaps disagreeable choice. In spite of said "careful design," I do not believe that a lot of useful conclusions can be drawn from these questions because nowhere is the relative intensity (forcefulness of belief) of a particular + or - evident. Several times I strongly agreed or disagreed, other times I did not, yet I was allowed only a + or - response. I think it is an over-simplification which may very well color the results and perhaps adversely affect your conclusions.

Asking someone if they like child beaters or rapist(s) better seems a fruitless exercise. Many questions (in the Mach V) have multiple "best" or "worst" statements making discriminating judgments difficult, if not, impossible.

Sorry to deviate from your instructions...but could not in good conscience choose a most agreed-to answer.

I didn't agree with <u>any</u> of the choices for some of the questions of part C. Would have liked to use (-) and (--) instead of (+) and (-).

There is no provision for the possibility that all three sentences (in each Mach V group) have no meaning for me in a "for or against" or "agree, disagree" sense. An example, #10, (of) all of these seem to be very bad generalizations, so I couldn't agree with or disagree with any of them.

This last section (Mach V) should have been 60 answers to 60 "questions."

I did not enjoy filling this out at all.

In some cases I strongly disagreed with all options making the choices difficult.

One may not agree with any of the statements. What then?

I could not answer certain of the multiple choice questions (Mach V), since I felt equally about all choices; or felt the question unfair.

Twenty of the 200 respondents to this survey commented specifically on the difficulty in completing the Mach V. That 10% of the respondents found time and the desire to comment about the Mach V is striking considering the fact that 196 of the 200 completed the 40-sentence MSCS. The comments relative to the difficulty in completing the Mach V attests to the effectiveness of the match between the Machiavellian and socially desirable sentence in each triad. This observation has also been noted in previous studies (Christie and Geis, 1970:19,20).

Tests of Mach V Reliability. Reliability tests provide an indication of the randomness of measurement errors of an instrument. The more reliable the instrument, the less random measurement error. Reliability provides a measure of repeatability which is a necessary condition to the validity of an instrument (Nunnally, 1967:172,173).

Two tests of Mach V reliability were accomplished: coefficient alpha and the split-half test. These tests provide an indication of the internal consistency of an instrument based on the number of items and average correlation of items in the instrument (Nunnally, 1967:210).

A previously published figure of Mach V reliability is .22 (Christie and Geis, 1970:79). In this study, the two estimates of the Mach V reliability were considerably higher. The first estimate, based on coefficient alpha, was .4024. The second estimate, based on split-half samples, was .395. The magnitude of these coefficients is low relative to the ideal reliability of 1.0 and indicates an

inherent deficiency in one or both of the following areas. Either the average correlation among the items is extremely low or there are an insufficient number of items (triads) in the scale (Nunnally, 1967:210). With reference to the first possibility, the average zero-order correlation between the Mach V triads, based on 185 AU respondents, was only +.036, with the individual coefficients ranging between -.183 (triads 4 and 12) and +.239 (triads 2 and 17). In order to achieve a reliability of .8, the Mach V would have to consist of approximately 120 triads, assuming that the average correlation among those triads remained +.036.

Factor Analysis of the Mach V Scale. The extremely low average zero-order correlation coefficients and scale reliability coefficients resulted in additional tests to infer the latent variable being measured in the Mach V scale. Based on the assumptions of those researchers who developed the Mach V, the scale provides a measure of Machiavellianism in perhaps as many as three dimensions, namely: interpersonal tactics, views concerning the nature of man, and the value of morality (Christie and Geis, 1970). A summary of the factor analysis based on the AU responses is shown in Table X. At least 9 significant factors (eigenvalues greater than 1.0) resulted. None of the eigenvalues exceeded 2.01, indicating there is no single strong identifiable factor being measured.

As indicated by the communality, the nine factors account for a maximum of 77% of the variance in triad 14 (MA14) with the average variance being approximately 62%. In an

Table X
Summary of Factor Analysis Based on AU Responses

Factor	Eigenvalue	Pct of Var	Cum Pct
1	2.01	10.0	10.0
2	1.53	7.7	17.7
3	1.49	7.4	25.1
4	1.36	6.8	32.0
5	1.34	6.7	38.7
6	1.24	6.2	44.9
7	1.15	5.8	50.7
8	1.07	5.3	56.0
9	1.02	5.1	61.1
10	0.96	4.8	65.9
11	0.87	4.4	70.3
12	0.81	4.1	74.4
13	0.79	3.9	78.3
14	0.78	3.9	82.2
15	0.73	3.6	85.9
16	0.68	3.4	89.3
17	0.59	2.9	92.2
18	0.56	2.8	95.0
19	0.52	2.6	97.6
20	0.47	2.4	100.0

Variable	Communality
MA1	.76
MA2	.64
MA3	.60
MA4	.61
MA5	.56
MA6	.58
MA7	.63
MA8	.62
MA9	.71
MA10	.68
MA11	.63
MA12	.62
MA13	.62
MA14	.77
MA15	.59
MA16	.54
MA17	.54
MA18	.58
MA19	.60
MA20	.36

attempt to identify the latent variables, the factor matrix was rotated to orient the factor loadings orthogonally by the VARIMAX method. The orthogonal method of rotation was chosen so that the variance of a variable accounted for by all the factors is given by the sum of the squares of the respective factor loadings (Nie et al., 1975:475). The VARIMAX method of rotation maximizes the variance of the squared loadings in each column of the factor matrix and was chosen since this method is most widely used (Nie et al., 1975:485). The resultant factor loadings, greater than 0.4, are shown in Table XI. Due to the basic construction of the Mach V scale, in which only one of the three statements in each triad is Machiavellian, there is some danger in assuming that the latent variables are necessarily related to Machiavellianism, especially in light of the relatively low eigenvalues. Nevertheless, the factors have been tentatively titled based on the premise that the latent variables represent elemental aspects of Machiavellianism.

Results of Tests of Hypotheses

Relationships Between the MSCS and Mach V Scales. Although the Mach V reliability is rather low, the Mach V scale has had considerable power in tests of concurrent and predictive validity (Christie and Geis, 1970). The MSCS has not been subject to reliability testing, but has also demonstrated concurrent and predictive validity (Miner, 1965). The AU sample produced a broad range of MSCS scores, similar to those ranges previously published, but AU Mach V scores

Table XI
Mach V Rotated Factor Loadings
(Based on AU Population, n=185)

Factor 1: Success Methods (Duplicity and Amorality)		Factor 2: Hierarchy of Values (Property first, then family)	
Triad	Loading	Triad	Loading
6	.466	1	.850
8	.523	2	.493
12	.716		
16	.552		
Factor 3: Utility of Dishonesty (Therefore Distrust others)		**Factor 4: Dim View of Man's Nature**	
Triad	Loading	Triad	Loading
11	.722	5	.559
17	.608	15	.570
20	.548	19	.715
Factor 5: Man is Cowardly (But not necessarily foolish)		**Factor 6: Interpersonal Manipulation**	
Triad	Loading	Triad	Loading
14	.862	4	.525
18	-.402	7	.537
		9	.727
Factor 7: Limits of Deceit		**Factor 8: Criminal Nature of Man**	
Triad	Loading	Triad	Loading
3	.743	8	.456
18	-.479	10	.784
Factor 9: Man's Laziness			
Triad	Loading		
13	.741		

were over a comparatively limited range. The limited range of the Mach V scores, coupled with a low Mach V scale reliability, provides a clue that the strength of the relationships may not become apparent except near the high and low limits of the Mach V scores for the AU population. As can be seen in Table XII, the correlation between the MSCS and Mach V scales, when the entire AU population who had completed both

Table XII
Correlation of Mach V and MSCS Subscale
and Comprehensive Scores Considering Total AU Sample
Who Completed Both Scales (n=182)

Test Description: Correlation of Mach V with	r
Imposing Wishes	.02
Competitive Situations	-.09*
Authority Figures	-.10*
Standing Out From The Group	.02
Competitive Games	-.14**
Masculine Role	.03
Routine Administrative Functions	-.03
MSCS Comprehensive Score	
Rare (AU Normative)	-.10*
Rare (Corporation Normative)	.01
Item Score	-.08

*p(1-tail)<.1 **p(1-tail)<.05

the scales was considered, is very weak.

Even if one assumes that the Mach V discriminates Machiavellianism only at the high end or low end of the scale, a similar picture emerges. For this run, only those cases were selected wherein the Mach V score was greater than 112 (n=15) or less than 88 (n=14). This sample includes only those cases in excess of 1.6 standard deviations above or below the mean AU Mach V scores referred to in Table IX. The results of a t-test of the differences between the mean MSCS scores of the high and low Machs is shown in Table XIII.

Even considering only the relatively high or low Mach V

Table XIII
t-Test of Differences in Mean MSCS Subscale and Comprehensive Scores Between High Machs (n_1=15) and Low Machs (n_2=14)

Scale	Population	Mean	Std. Dev.	t	Mean Difference
Authority Figures	Low Machs High Machs	0.50 -0.07	1.23 1.10	1.31	0.57
Competitive Games	Low Machs High Machs	1.43 0.60	1.45 1.60	1.46	0.83*
Competitive Situations	Low Machs High Machs	-0.71 -1.33	1.68 1.04	1.18	0.62
Masculine Role	Low Machs High Machs	-0.50 -0.47	2.28 1.96	-0.04	0.03
Imposing Wishes	Low Machs High Machs	0.43 1.20	1.28 1.42	-1.53	0.77*
Standing Out from the Group	Low Machs High Machs	1.64 1.67	1.15 1.68	-0.04	0.03
Routine Administrative Functions	Low Machs High Machs	0.07 0.47	2.43 1.73	-0.50	0.40
Item Score	Low Machs High Machs	2.86 2.07	4.35 5.19	0.45	0.79
Rare Score (AU Normative)	Low Machs High Machs	1.29 0.33	1.33 2.85	1.17	0.96

*p(1-tail)<.1

scores there is little evidence to support a relationship between Mach V and the MSCS subscale or comprehensive scores.

Relationship of Mach V with Demographics and Perceived Autonomy. There was no significant relationship of Mach V score with age, grade, years of commissioned service, years of supervisory experience, or autonomy, as shown in Table XIV. Even when only Mach V scores greater

than 112 or less than 88 were considered, there was no significant difference in the mean demographics of High and Low Machs. The lack of correlation between Mach V and age is in agreement with previous findings (Christie and Geis, 1970:323).

The lack of a significant relationship between Mach V and perceived autonomy, contrary to one of the hypotheses in this research, may be due to the possibility that perceived autonomy may not be a surrogate measure of unstructured situations.

Table XIV
Correlation of Mach V with Demographics and Perceived Autonomy

Description: Correlation of Mach V with:	r
Age (n=184)	-.015
Grade (n=184)	.015
Years of Commissioned Service (n=184)	.009
Years of Supervisory Experience (n=184)	.084
Autonomy (only AWC considered) (n=88)	.089

Relationship of the MSCS and Demographics. Table XV indicates a significant correlation between the MSCS

Table XV
Correlation of Demographics
with MSCS Subscale and Comprehensive Scores (n=195)[1]

MSCS Subscale or Comprehensive Score	Age	Grade	Years of Commissioned Service	Years of Supervisory Experience
Authority Figures	.053	.029	.011	-.019
Competitive Games	.046	.020	.026	.063
Competitive Situations	.041	.079	.034	.021
Masculine Role	.040	.027	.053	.060
Imposing Wishes	.105****	.143***	.130***	.103****
Standing Out from the Group	.374*	.350*	.386*	.216*
Routine Administrative Functions	.149***	.151***	.149***	.049
Item Score	.222*	.218*	.221*	.134***
Rare Score (AU normative)	.203**	.200**	.199**	.082
Rare Score (Corporation normative)	.213*	.208**	.220*	.107****

*p(1-tail)<.001
**p(1-tail)<.005
***p(1-tail)<.05
****p(1-tail)<.1

[1]Although 196 AU officers completed the MSCS, one AFIT officer who completed the MSCS did not complete the demographics in Section A of the questionnaire.

Comprehensive Scores and the AU demographics. In particular, the demographic, age, correlated with the scores, contrary to prior research findings (Miner, 1965). However, the construct of the AU population is such that the AWC group is significantly older than the AFIT group. In addition, there are marked differences in the short-term goals of the AWC

and AFIT groups. Of the 200 AFIT officers in the survey population, 184 were pursuing M.S. or Ph.D. degrees in scientific and engineering disciplines at the time this survey was administered. Therefore, it seems reasonable to consider the AFIT subpopulation relatively homogenous relative to motivation to the managerial role. Similarly, the AWC officers can be considered homogenous relative to the criterion that they have been identified as the potential future leaders and managers in the Air Force. With these assumptions, it seems reasonable to determine the correlations of the demographics and MSCS scores within the two groups, AFIT and AWC. Tables XVI and XVII show the correlations of the demographics and MSCS scores for the AWC and AFIT populations, respectively.

Clearly, Tables XVI and XVII indicate no significant correlation of the MSCS Rare Scores with age, a finding which is consistent with prior research (Miner, 1965:92). A comparison of Tables XV, XVI, and XVII clearly indicate that the correlation between AU demographics and MSCS subscale and comprehensive scores is generally more significant than the correlations between AWC or AFIT demographics and MSCS scores. These findings substantiate the premise that there is a greater difference between the AWC and AFIT groups than there is within the groups. Based on these findings, it seemed appropriate to test the mean MSCS scores of the AFIT versus AWC respondents. Table XVIII shows the results of those tests which indicate that the AWC MSCS subscale and comprehensive mean scores are consistently higher than those of

Table XVI
Correlation of MSCS Scores and AWC Demographics (n=88)

MSCS Subscale or Comprehensive Score	Age	Grade	Years of Commissioned Service	Years of Supervisory Experience
Authority Figures	.154**	.103	-.081	-.074
Competitive Games	.100	.008	-.045	.021
Competitive Situations	.086	.223*	-.011	.012
Masculine Role	.077	.091	.070	.088
Imposing Wishes	-.018	.1267	.018	-.051
Standing Out from the Group	.082	-.061	.028	-.057
Routine Administrative Functions	-.091	-.001	.011	-.093
Item Score	.109	.142**	.000	-.038
Rare Score (AU normative)	.075	.141**	-.025	-.153**
Rare Score (Corporation Normative)	.012	.081	-.010	-.108

*p(1-tail)<.05
**p(1-tail)<.1

AFIT, although not always significantly. The AWC mean scores are significantly higher than the AFIT scores in three subscales (Imposing Wishes, Standing Out from the Group, and Routine Administrative Functions) and on the Comprehensive Scores.

The results in Table XVIII substantiate the significant correlations in Table XV. The AWC officers scored significantly higher in three MSCS subscales as well as the

Table XVII
Correlation of MSCS Scores and AFIT Demographics (n=107)

MSCS Subscale or Comprehensive Score	Age	Grade	Years of Commissioned Service	Years of Supervisory Experience
Authority Figures	-.112	-.165*	-.179*	-.121
Competitive Games	-.094	-.134**	-.121	.041
Competitive Situations	-.097	-.022	-.096	-.104
Masculine Role	-.030	-.081	.023	-.041
Imposing Wishes	-.160**	-.087	-.119	.069
Standing Out from the Group	-.066	-.017	.031	-.114
Routine Administrative Functions	-.087	-.118	-.127**	-.182*
Item Score	-.168*	-.181*	-.170*	-.137**
Rare Score (AU normative)	-.158**	-.186*	-.171*	-.077
Rare Score (Corporation Normative)	-.035	-.085	-.028	-.012

*ρ(1-tail)<.05
**ρ(1-tail)<.1

Comprehensive Scores. Those significant differences seem reasonable. However, a discussion of those subscale scores wherein the differences were not statistically significant seems in order.

The Authority Figures subscale scores are not statistically different. This may be due to the relative homogeneity of Air Force officers in relation to respect or admiration of Authority Figures referenced in the MSCS

Table XVIII
Mean MSCS Scores of AFIT versus AWC Respondents

Variable	Group	N of Cases	Mean	S.D.	Mean Difference
Authority Figures	AWC AFIT	88 108	0.01 -0.20	1.67 1.51	0.21
Competitive Games	AWC AFIT	88 108	1.10 0.85	1.72 1.80	0.25
Competitive Situations	AWC AFIT	88 108	-0.81 -1.04	1.65 1.86	0.23
Masculine Role	AWC AFIT	88 108	-0.31 -0.48	2.08 1.86	0.17
Imposing Wishes	AWC AFIT	88 108	0.92 0.45	1.40 1.32	.47***
Standing Out from the Group	AWC AFIT	88 108	1.93 0.69	1.42 1.43	1.24*
Routine Administrative Functions	AWC AFIT	88 108	0.42 -0.37	1.99 1.80	0.79**
Item Score	AWC AFIT	88 108	3.27 -0.09	5.86 5.68	3.36*
Rare Score (AU normative)	AWC AFIT	88 108	1.18 -0.20	2.67 2.47	1.38*
Rare Score (Corporation Normative)	AWC AFIT	88 108	-0.73 -1.99	2.69 2.36	1.26*

*p(2-tail)<.001
**p(2-tail)<.005
***p(2-tail)<.05

sentence stems. The lack of significant difference in the Competitive Games subscale score may be due to the nature of the stems in which only one is related to a strenuous activity. The lack of significant difference in the Competitive Situations subscale scores may be indicative of the fact that both the AFIT and AWC officers are selected on the basis of

competitive criteria. Furthermore, Air Force promotion criteria at all grade levels are based on competitive as well as performance criteria. Officers not selected to the next higher grade at the appropriate career point are involuntarily separated from the Air Force. The lack of significant difference in the mean Masculine Role subscale scores deserves little comment since previous research has indicated that the subscale is relatively insignificant in discriminating motivation to the managerial role (Miner, 1965:89).

V. CONCLUSIONS AND RECOMMENDATIONS

Conclusions Based on MSCS and Mach V Scale Analyses

This research was designed to determine the relationship among demographics, the Miner Sentence Completion Scale (MSCS), and the Mach V Scale based on a sample population of 200 Air Force officers. The AU officers were drawn from two groups. One group consisted of 91 officers in the grades of Lieutenant Colonel (Lt Col) or Colonel (Col) assigned to the Air War College (AWC), Maxwell Air Force Base (AFB), Alabama. The second group consisted of 109 officers in the grades ranging from Second Lieutenant (2/Lt) through Major pursuing advanced technical degrees at the Air Force Institute of Technology (AFIT), Wright-Patterson AFB, Ohio.

Conclusions Based on MSCS Analysis. Based on the MSCS test results, AWC and AFIT officers are significantly less motivated to the managerial role than a previously established normative group of managers in a large Research and Development (R & D) corporation (Miner, 1964). This may indicate that managerial role prescriptions have changed since 1964 or that there is a difference between the managerial role prescriptions within profit-oriented corporations and the United States Air Force. The MSCS Comprehensive Scores of Air Force officers are more closely aligned to those of managers in a government agency (Lacey, 1974) than to those of Miner's (1964) normative group. However, Lacey's managerial group was rather small (n=27), and his report does not include sufficient information to perform a statistical

test of the significance of the mean MSCS scores between the managerial group he surveyed and the AWC officers.

A comparison between the mean MSCS Comprehensive Scores of the AWC and AFIT groups indicates that the AWC sample is significantly more motivated to the managerial role than the AFIT sample. Particularly noteworthy is the fact that the mean differences in Rare Scores between the AWC and AFIT groups was essentially the same regardless of whether the normative group consists of AU officers or the previously established normative group of corporation managers (Miner, 1964). Therefore, the utility of establishing the AU normative group may lie in a direct comparison of AU Rare Scores to those of other Air Force sample populations.

The analysis of the mean MSCS subscale Item Scores indicates that the AWC officers scored significantly higher than the AFIT officers in the Imposing Wishes, Standing Out from the Group, and Routine Administrative Functions subscales. Of these three subscales, only the Imposing Wishes subscale has generally differentiated those motivated to the managerial role and those who are not (Miner, 1965, and Lacey, 1974). This may indicate that there is a shift of emphasis among Miner's (1965) hypothesized managerial role prescriptions between managers in profit-oriented corporations and commissioned officers in the Air Force. Other than the Imposing Wishes subscale, two other subscales have previously and consistently differentiated managers on the basis of managerial role prescriptions, namely the Authority Figures and Competitive Situations subscale. The Authority

Figures subscale stems primarily relate to generalized figures normally considered to be in positions of authority. There is no obvious reason why Air Force officers in various grades might perceive the generalized Authority Figures differently. With regard to the lack of significant differences between the AWC and AFIT mean scores in the Competitive Situations subscale, the underlying rationale may lie within the Armed Services promotion policies. Those policies are concisely captured in the phrase "up or out." Generally speaking, if a commissioned officer is not promoted to the next higher grade level at a specific point in his or her career, the officer is involuntarily separated from the service. Therefore, all officers who have intentions of remaining in the service regardless of grade, are continually subject to the competitive situation of vying for limited promotions to the next higher grade.

Conclusions Based on the Mach V Analysis. The AU, AWC, and AFIT mean Mach V scores are statistically identical with one another and with previously published figures for large samples of college students. However, the variance in the Mach V scores of the Air Force officers is significantly lower than those reported in previous studies. The reason for the lower variance of scores in the AU sample may indicate a relative homogeneity of Air Force officers when compared with demographically different populations. The initial selection of Air Force officers and subsequent promotions are based on broad but somewhat standardized criteria which may, inadvertently or by design, account for the lack

of radically pro- or anti-Machiavellian scores.

Split-half and coefficient alpha tests of the Mach V reliability indicate that the internal consistency of the scale is considerably lower than standards set in psychometric theory. The relatively low reliability coefficients lead to a factor analysis of the Mach V scale, which yielded 9 significant latent variables. Based on the multi-dimensional characteristics of the scale, there is little justification for an unweighted addition of the triad scores in calculating the Mach V score, as if the scale measured one construct (Guilford, 1954:403).

However, in spite of its theoretical weaknesses, the Mach V score has been effective in differentiating Machiavellian behavior in a number of experimental studies (Christie and Geis, 1970). Based on those results, it was hypothesized that the Mach V scale may provide a measure of Machiavellianism in only those respondents who score considerably above or below the mean score of large diverse populations. Therefore, the basic hypotheses of this study were tested on the basis of both all respondents who completed the Mach V and only those respondents who scored relatively high and low on the Mach V.

Conclusions Drawn from the Tests of Hypotheses

Conclusions Drawn from Tests of MSCS and Demographics. Since the mean age of the AWC officers is significantly higher than the AFIT mean age, several of the subscale scores and Comprehensive Scores were positively correlated with age,

contrary to previous findings (Miner, 1965). In order to determine whether age was a confounding variable, two correlation analyses examining the relationship between the mean demographic, age, and MSCS mean scores were accomplished in the AWC and AFIT subpopulations, respectively. The test results indicate that there is no significant correlation between the MSCS scores and the demographic, age, within each subpopulation.

The MSCS and demographic test results clearly indicate that AWC officers are more motivated to the managerial role than AFIT officers. This conclusion seems reasonable in light of differences in the goals of AWC and AFIT officers. The AWC officers have been identified on the basis of potential to fulfill senior staff and command level positions within the Air Force. On the other hand, the AFIT officers in this survey are pursuing advanced specialized degrees in the scientific or engineering disciplines.

Conclusions Drawn from Tests of Mach V and Demographics. There was no significant correlation between the Mach V scale and any of the demographics even when the Mach V scores were restricted to relatively high and low scores. Similarly, there was no significant difference between the mean demographics of those who scored high or low on the scale. Therefore, it is reasonable to state that the relatively junior officers (AFIT) are not markedly different from the relatively senior officers (AWC) in terms of orientation to the Machiavellian model.

Conclusions Drawn from Tests of Relationships Between the MSCS and Mach V Scales. There is little evidence to support a reasonable relationship between the MSCS

Comprehensive or subscale scores and the Mach V when all Mach V scores are considered. In addition, there is no relationship between the MSCS subscale or Comprehensive Scores and the Mach V when only relatively high and low Mach V scores are considered.

Recommendations for Further Research

In contrast to this effort, further research might explore the relationship between Machiavellianism and motivation to the managerial role among relatively unsuccessful Air Force officers. Another fruitful endeavor is to examine the relationship between Machiavellianism and McClelland's (1970) so-called negative face of power. More fundamentally, however, is the need to redesign the Mach V scale to provide a more reliable measure of Machiavellianism while retaining the present scale's immunity to socially desirable response set.

It is appropriate to advise future researchers that the initial grading of the MSCS is a rewarding, but time-consuming and frustrating task. In this study, the respondents' completions to the various sentence stems were often entertaining, philosophical, humorous, educational, diverse, brilliant, and candid. Based on the MSCS, this researcher has come to a deeper level of appreciation of the diversity of opinion within the Air Force officer structure. It is somewhat pleasant to state that this researcher extends best wishes and condolences toward those who feel inclined to stereotype the opinions of the "typical" Air Force officer.

Aside from the personally rewarding aspects of the MSCS, the grading of the sentence completions is an extremely laborious task. With a sample population of 196 respondents to the MSCS section of the questionnaire, over 6800 sentences were graded on the bases of seven separate subscale criteria developed by Miner (1964). To verify consistency in the grading, the 6800 sentences were regraded. According to Miner (1965), the optimal method of scoring the MSCS requires the establishment of a normative group, a task outlined in Appendix B for the AU normative group. Alternatively, the researcher can compute the MSCS Rare Scores on the basis of a previously established normative group. The results of this study indicate that the re-establishment of normative groups may not be necessary if the researcher intends solely to explore MSCS differences within subsets of a given sample population.

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APPENDICES

APPENDIX A

Questionnaire

This appendix includes the cover letter, privacy statement, Part A, and Part C (Mach V) of the questionnaire distributed to the AWC and AFIT officers. Part B (MSCS) of the questionnaire is not included herein since it contains copyright material available only on a rental basis. The identical form of the MSCS was distributed to the entire survey population. With the exception of stem 1 of the MSCS, no changes were made to either the MSCS or Mach V, and no errors, omissions, or deletions were detected. The instructions at the beginning of the MSCS are:

> Please complete these sentences to express your real feelings. Try to do every one. Be sure you make a complete sentence.

The researcher is not aware of any standard set of instructions for use with the Mach V. The following instructions were developed for Part C (Mach V):

> INSTRUCTIONS: Each of the following 20 groups contains three sentences (a, b, and c). Within each group, indicate with a (+) the sentence with which you agree the most. Indicate with a (-) the sentence with which you agree the least. The one remaining sentence within each group receives no indication.

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

REPLY TO ATTN OF: ENS

22 Apr 77

SUBJECT: Perceptions and Attitudes Questionnaire (USAF SCN 77-87)

TO: Air War College Students

1. The attached questionnaire, approved by the Air Force Military Personnel Center, is being distributed to 400 officers in Air University (200 at the Air War College and 200 at the Air Force Institute of Technology). The questionnaire is structured so that you can express your personal feelings, perceptions and attitudes in several ways. The resulting information will be statistically processed and used to satisfy the requirements of my AFIT Master's thesis.

2. Because of time constraints in completing the research, I am querying only a minimum number of officers. Accordingly, meaningful results of this effort depend very strongly on your personal participation.

3. The entire questionnaire can be completed in approximately 30 minutes. Please drop the completed questionnaire in the box provided as you leave the room. If you were not able to remain at the session, deposit your completed questionnaire in the evaluation box in the mailroom, Building 1401.

4. Your cooperation in completing and returning the questionnaire is very important to me and appreciated. Thank you very much.

Michael J Oles

MICHAEL J. OLES, Major, USAF
GSM-77S, Student

1 Atch
Questionnaire

(This part of the questionnaire was distributed to AWC officers only.)

PERCEPTIONS AND ATTITUDES QUESTIONNAIRE

Part A

INSTRUCTIONS: Please complete the following:

1. Age _____

2. Current Temporary Grade _____

3. Most recent fully-qualified Primary Air Force Specialty Code (number or title) _____

4. Total number of years of active commissioned service _____

5. Years of direct supervisory experience (i.e. wrote OER's, APR's, or civil service ratings) _____

6. In an overall assessment of the jobs you held during the five year period preceding your arrival at AWC, how much autonomy was there in your work? That is, to what extent did your jobs permit you to decide on your own how to go about doing the work? (Instruction: Circle the most appropriate number on the following scale.)

1.....2.....3.....4.....5.....6.....7

Very little; the jobs gave me almost no personal "say" about how and when the work was to be done.	Moderate autonomy; many things were standardized and not under my control, but I could make some decisions about the work.	Very much; the jobs gave me almost complete responsibility for deciding how and when the work was to be done.

FROM: AFIT/ENS 22 Apr 77

SUBJECT: Perceptions and Attitudes Questionnaire (USAF SCN 77-87)

TO: AFIT Students

1. The attached questionnaire, approved by the Air Force Military Personnel Center, is being distributed to 400 officers in Air University (200 at the Air War College and 200 at the Air Force Institute of Technology). The questionnaire is structured so that you can express your personal feelings, perceptions and attitudes in several ways. The resulting information will be statistically processed and used to satisfy the requirements of my AFIT master's thesis.

2. Because of time constraints in completing the research I am querying only a minimum number of officers. Accordingly, meaningful results of this effort depend very strongly on your personal participation. Your anonymity in this effort is guaranteed.

3. The attached questionnaire can be completed in approximately 30 minutes. Please insert your completed questionnaire in the attached envelope, and place it in the letter slot below the counter in the mailroom of Building 640.

4. Your cooperation in completing and returning the questionnaire is very important to me and appreciated. Thank you very much.

MICHAEL J. OLES, Major, USAF
GSM-77S Student

1 Atch
Questionnaire

(This part of the questionnaire was distributed to AFIT officers only.)

PERCEPTIONS AND ATTITUDES QUESTIONNAIRE

USAF SCN 77-87

Part A

INSTRUCTIONS: Please complete the following:

1. Age _____

2. Current Temporary Grade _____

3. Most recent fully-qualified Primary Air Force Specialty Code (number or title) _____

4. Total number of years of active commissioned service _____

5. Years of direct supervisory experience (i.e. wrote OER's, APR's, or civil service ratings) _____

(The following statement was included in all questionnaires.)

PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority

(1) 5 U.S.C. 301, Departmental Regulations: and/or

(2) 10 U.S.C. 80-12, Secretary of the Air Force, Powers and Duties, Delegation by.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research based on the data provided, will be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or orally presented, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

(Part C of the questionnaire was distributed to AWC and AFIT officers.)

PART C *

KEY
($M^{\pm}$)Machiavellian Sentence, positively or negatively worded;
(MS)Matched Sentence;(B)Buffer.

INSTRUCTIONS: Each of the following 20 groups contains three sentences (a, b, and c). Within each group, indicate with a (+) the sentence with which you agree the most. Indicate with a (-) the sentence with which you agree the least. The one remaining sentence within each group receives no indication.

1. MS a. It takes more imagination to be a successful criminal than a successful business man,

   B b. The phrase, "the road to hell is paved with good intentions" contains a lot of truth.

   M+ c. Most men forget more easily the death of their father than the loss of their property.

2. MS a. Men are more concerned with the car they drive than with the clothes their wives wear.

   B b. It is very important that imagination and creativity in children be cultivated.

   M+ c. People suffering from incurable diseases should have the choice of being put painlessly to death.

3. M+ a. Never tell anyone the real reason you did something unless it is useful to do so.

   B b. The well-being of the individual is the goal that should be worked for before anything else.

   MS c. Since most people don't know what they want, it is only reasonable for ambitious people to talk them into doing things.

4. MS a. People are getting so lazy and self-indulgent that it is bad for our country.

   M+ b. The best way to handle people is to tell them what they want to hear.

   B c. It would be a good thing if people were kinder to others less fortunate than themselves.

5. M- a. Most people are basically good and kind.

   B b. The best criteria for a wife or husband is compatibility--other characteristics are nice but not essential.

   MS c. Only after a man has gotten what he wants from life should he concern himself with the injustices in the world.

*(Reproduced with permission from Richard Christie and Florence L. Geis. Studies in Machiavellianism. New York: Academic Press, 1970.)

6. M- a. Most people who get ahead in the world lead clean, moral lives.

B b. Any man worth his salt shouldn't be blamed for putting his career above his family.

MS c. People would be better off if they were concerned less with how to do things and more with what to do.

7. MS a. A good teacher is one who points out unanswered questions rather than gives explicit answers.

M- b. When you ask someone to do something, it is best to give the real reasons for wanting it rather than giving reasons which might carry more weight.

B c. A person's job is the best single guide as to the sort of person he is.

8. B a. The construction of such monumental works as the Egyptian pyramids was worth the enslavement of the workers who built them.

MS b. Once a way of handling problems has been worked out it is best to stick to it.

M- c. One should take action only when sure it is morally right.

9. B a. The world would be a much better place to live in if people would let the future take care of itself and concern themselves only with enjoying the present.

M+ b. It is wise to flatter important people.

MS c. Once a decision has been made, it is best to keep changing it as new circumstances arise.

10. MS a. It is good policy to act as if you are doing the things you do because you have no other choice.

M+ b. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.

B c. Even the most hardened and vicious criminal has a spark of decency somewhere within him.

11. M- a. All in all, it is better to be humble and honest than to be important and dishonest.

MS b. A man who is able and willing to work hard has a good chance of succeeding in whatever he wants to do.

B c. If a thing does not help us in our daily lives, it isn't very important.

12. B a. A person shouldn't be punished for breaking a law that he thinks is unreasonable.

MS b. Too many criminals are not punished for their crimes.

M- c. There is no excuse for lying to someone else.

13. M+ a. Generally speaking, men won't work hard unless they are forced to do so.

B b. Every person is entitled to a second chance, even after he commits a serious mistake.

MS c. People who can't make up their minds are not worth bothering about.

14. B a. A man's first responbility is to his wife, not his mother.

M- b. Most men are brave.

MS c. It's best to pick friends that are intellectually stimulating rather than ones it is comfortable to be around.

15. B a. There are very few people in the world worth concerning oneself about.

M+ b. It is hard to get ahead without cutting corners here and there.

MS c. A capable person motivated for his own gain is more useful to society than a well-meaning but ineffective one.

16. B a. It is best to give others the impression that you can change your mind easily.

MS b. It is a good working policy to keep on good terms with everyone.

M- c. Honesty is the best policy in all cases.

17. M- a. It is possible to be good in all respects.

B b. To help oneself is good; to help others even better.

MS c. War and threats of war are unchangeable facts of human life.

18. M+ a. Barnum was probably right when he said that there's at least one sucker born every minute.

B b. Life is pretty dull unless one deliberately stirs up some excitement.

MS c. Most people would be better off if they control their emotions.

19. B a. Sensitivity to the feelings of others is worth more than poise in social situations.

MS b. The ideal society is one where everybody knows his place and accepts it.

M+ c. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.

20. MS a. People who talk about abstract problems usually don't know what they are talking about.

M+ b. Anyone who completely trusts anyone else is asking for trouble.

B c. It is essential for the functioning of a democracy that everyone vote.

Your cooperation in completing and returning this questionnaire is greatly appreciated. The remaining space is provided for your comments regarding the questionnaire (scope, length, difficulties encountered in completing, etc.).

APPENDIX B

Determination of MSCS Rare Scoring Patterns for the Air University Normative Group

Rare Score Computation

A Rare scoring pattern was developed for the Air University (AU) population consisting of the 108 AFIT and 88 AWC officers who had completed the MSCS, a total of 196 officers. The Rare scoring pattern was developed by initially using the SPSS subprogram, FREQUENCIES, to determine the combinations of the seven basic subscale scores which occurred in 5% or less of the AU group. The computer code used to generate those frequencies is in Table XIX. The Rare scoring patterns for the seven basic MSCS subscales which resulted are shown in Table XX. Those patterns occurred in 5% or less of the AU group. All combinatorial patterns which include those stems are also considered rare.

Table XIX
Code for Determining the Frequencies
of MSCS Subscale Combinatorial Patterns

```
RUN NAME         THIS RUN OUTPUTS THE FREQUENCIES OF ALL 31 COMBINATIONS OF
                 POSITIVE SCORES IN EACH OF THE SEVEN MSCS SUBSCALES
VARIABLE LIST    AGE,GRADE,COMM,SUPER,AUTO,M1 TO M40,MA1 TO MA20
INPUT FORMAT     FIXED(F2.0,F1.0,4X,2F2.0,61F1.0)
N OF CASES       200
MISSING VALUES   AGE(99)/GRADE(9)/COMM(99)/SUPER(99)/AUTO(0)/M1 TO M40(9)/MA1 TO
                 MA20(9)
INPUT MEDIUM     CARD
RECODE           M1 TO M40 (1=0)(2=0)(3=1)
COMPUTE          FAUTH=M1*10000+M14*1000+M21*100+M30*10+M38
COMPUTE          FGAME=M7*10000+M24*1000+M28*100+M34*10+M39
COMPUTE          FSITU=M4*10000+M10*1000+M15*100+M31*10+M37
COMPUTE          FMASC=M3*10000+M8*1000+M12*100+M26*10+M32
COMPUTE          FIMPO=M5*10000+M11*1000+M13*100+M17*10+M29
COMPUTE          FSTND=M18*10000+M22*1000+M27*100+M33*10+M36
COMPUTE          FROUT=M2*10000+M9*1000+M16*100+M23*10+M35
ASSIGN MISSING   FAUTH,FGAME,FSITU,FMASC,FIMPO,FSTND,FROUT(999)
FREQUENCIES      GENERAL=FAUTH,FGAME,FSITU,FMASC,FIMPO,FSTND,FROUT
STATISTICS       ALL
READ INPUT DATA
```

AD-A047 003 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCH--ETC F/G 5/1
A STUDY OF MOTIVATION TO THE MANAGERIAL ROLE AND MACHIAVELLIANI--ETC(U)
SEP 77 M J OLES

UNCLASSIFIED AFIT/GSM/SM/77S-14 NL

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Table XX
Rare Patterns for the Seven Basic MSCS Subscales

Subscale	Positive Rare Patterns	Negative Rare Patterns
Authority Figures	(14) (21) (1,30) (1,38)	(30) (38) (1,21)
Competitive Games	(7) (24) (39)	(7) (34, 39) (28,39) (28,34) (24,34) (24,28)
Competitive Situations	(10) (37) (4,15)	(4) (15) (31)
Masculine Role	(26) (12,32) (8,32) (8,12) (3,32) (3,8)	(3) (12) (26) (32)
Imposing Wishes	(5) (13) (17) (29)	(11) (13) (17,29) (5,29) (5,17)
Standing Out from the Group	(18) (33)(36)	(18) (22) (27) (33,36)
Routine Administrative Functions	(23,35) (16,23) (9,35) (9,23) (9,16) (2,35) (2,16) (2,9)	(9) (16) (23,35)

The output frequencies were also used to determine the popularity levels of each of the stem scores, which is a prerequisite to developing the Rare scoring pattern for the Supervisory Job subscale. The output of the program in Table XIX was also used to develop the five popularity levels of positive and negative stem scores. Those results are shown in Table XXI. For example, High Popularity Positive stems include the one stem from each of the seven basic subscales which was scored positively more times than any of the other four stems in the subscale.

Table XXI
Popularity Level of MSCS Stems

Level of Popularity	Stems (one from each subscale)
High Positive	30, 34, 31, 3, 11, 22, 35
High-Medium Positive	38, 28, 15, 12, 13, 27, 23
Medium Positive	1, 24, 4, 26, 29, 18, 9
Low-Medium Positive	14, 39, 10, 32, 5, 33, 16
Low Positive	21, 7, 37, 8, 17, 36, 2
High Negative	14, 24, 10, 8, 17, 36, 2
High-Medium Negative	21, 39, 37, 12, 5, 33, 35
Medium Negative	1, 34, 4, 3, 29, 18, 23
Low-Medium Negative	38, 28, 31, 26, 13, 22, 16
Low Negative	30, 7, 15, 32, 11, 27, 9

In order to determine the levels of popularity and popularity combinatorial sums which occurred in 5% of the AU group, another FREQUENCIES run was made. Coding is shown in Table XXII. As a result, the minimum levels of popularity considered rare for the Managerial Job subscale are shown in Table XXIII for each of the possible combinatorial sums. To simplify the table, the popularity levels are coded. For example, 123 is the sum of the high popularity plus the high-medium popularity plus the medium popularity stems.

Table XXIV is a description of the variables used in programs for determining the Rare scoring patterns.

Table XXII
Coding for Determining Popularity Levels

```
RUN NAME        THIS RUN OUTPUTS THE FREQUENCIES OF ALL 31 COMBINATIONS OF MSCS
                POSITIVE POPULARITY LEVELS
VARIABLE LIST   AGE,GRADE,COMM,SUPER,AUTO,M1 TO M40,MA1 TO MA20
INPUT FORMAT    FIXED(F2.0,F1.0,4X,2F2.0,61F1.0)
N OF CASES      200
MISSING VALUES  AGE(99)/GRADE(9)/COMM(99)/SUPER(99)/AUTO(0)/M1 TO M40(9)/MA1 TO
                MA20(9)
INPUT MEDIUM    CARD
RECODE          M1 TO M40 (1=0)(2=0)(3=1)
COMPUTE         S1=M14+M24+M10+M8+M17+M36+M2
COMPUTE         S2=M21+M39+M37+M12+M5+M33+M35
COMPUTE         S3=M1+M34+M4+M3+M29+M18+M23
COMPUTE         S4=M38+M28+M31+M26+M13+M22+M16
COMPUTE         S5=M30+M7+M15+M32+M11+M27+M9
COMPUTE         S12=S1+S2
COMPUTE         S13=S1+S3
COMPUTE         S14=S1+S4
COMPUTE         S15=S1+S5
COMPUTE         S23=S2+S3
COMPUTE         S24=S2+S4
COMPUTE         S25=S2+S5
COMPUTE         S34=S3+S4
COMPUTE         S35=S3+S5
COMPUTE         S45=S4+S5
COMPUTE         S123=S1+S2+S3
COMPUTE         S124=S1+S2+S4
COMPUTE         S125=S1+S2+S5
COMPUTE         S134=S1+S3+S4
COMPUTE         S135=S1+S3+S5
COMPUTE         S145=S1+S4+S5
COMPUTE         S234=S2+S3+S4
COMPUTE         S235=S2+S3+S5
COMPUTE         S245=S2+S4+S5
COMPUTE         S345=S3+S4+S5
COMPUTE         S1234=S1+S2+S3+S4
COMPUTE         S1235=S1+S2+S3+S5
COMPUTE         S1245=S1+S2+S4+S5
COMPUTE         S1345=S1+S3+S4+S5
COMPUTE         S2345=S2+S3+S4+S5
COMPUTE         S12345=S1+S2+S3+S4+S5
ASSIGN MISSING          S1,S2,S3,S4,S5,S12,S13,S14,S15,S23,S24,S25,S34,S35,S45,
                S123,S124,S125,S134,S135,S145,S234,S235,S245,S345,
                S1234,S1235,S1245,S1345,S2345,S12345(999)
FREQUENCIES     GENERAL=S1,S2,S3,S4,S5,S12,S13,S14,S15,S23,S24,S25,S34,S35,S45,
                S123,S124,S125,S134,S135,S145,S234,S235,S245,S345,
                S1234,S1235,S1245,S1345,S2345,S12345
STATISTICS      ALL
READ INPUT DATA
```

Table XXIII
Minimum Number of Positive or Negative Combinatorial Sums
Necessary to Qualify as Rare
on the MSCS Supervisory Job Subscale

Popularity Level	Number of Positives Necessary to be Rare	Number of Negatives Necessary to be Rare
(High) 1	7	6
(High-Medium) 2	6	6
(Medium) 3	5	5
(Low-Medium) 4	4	4
(Low) 5	4	3
12	10	10
13	10	9
14	9	8
15	9	7
23	9	9
24	8	8
25	7	7
34	8	7
35	7	6
45	6	5
123	13	13
124	13	12
125	12	11
134	13	11
135	11	10
145	11	10
234	11	11
235	11	10
245	10	9
345	9	8
1234	16	15
1235	14	14
1245	14	13
1345	14	13
2345	13	12
12345	17	16

Table XXIV
Description of Variables Unique to the Identification of Rare Scoring Patterns

Variable Name	Description
M1 to M40 (Input)	MSCS stem score: Input as (negative = 1; neutral = 2; positive = 3). In the Rare Score pattern identification programs, the scores were recoded. If the objective was to identify positive rare pattern, the negative and neutral scores were recoded as 0; to identify negative patterns, the neutral and positive scores were recoded as 0.
FAUTH...FROUT	Variables in which the frequencies of all combinations of the 7 basic MSCS subscale scores were identified.*
S1...S12345	Variables in which the frequencies of all combinatorial sums of popularity were identified.*

*The author gratefully acknowledges the assistance of Major Chuck McNichols who designed the efficient COMPUTE statement by which all 62 possuble combinations are succinctly identified in SPSS subprogram FREQUENCIES.

Having established the basic combinatorial patterns which occur 5% or less of the time for a normative group, the Rare Score for each respondent is easily computed. Table XXV includes the code for determining the Rare Score of the respondents based on the AU normative group. A similar coding was generated to determine the Rare Score of the respondents based on the corporation managers considered normative by Miner (1964). Also included in Table XXV are the coding for the MSCS subscale, MSCS Item and Mach V scores, and the SPSS subprogram which generates zero-order correlation coefficients. Table XXVI includes a description of the variables used in Table XXV.

Table XXV
Coding to Determine Typical Zero-Order Correlations
Among Demographics, Mach V and the MSCS (AU Normative)

```
RUN NAME        TYPICAL RUN WHICH IN THIS CASE CALCULATES MSCS RARE SCORES ON THE
                BASIS OF THE AU NORMATIVE GROUP.  THIS PARTICULAR RUN IS TO
                DETERMINE THE CORRELATION BETWEEN MSCS SCORES AND MACH V SCORE.
VARIABLE LIST   AGE,GRADE,COMM,SUPER,AUTO, M1 TO M40, MA1 TO MA20
INPUT FORMAT    FIXED(F2.0,F1.0,4X,2F2.0,61F1.0)
N OF CASES      200
MISSING VALUES  AGE(99)/GRADE(9)/COMM(99)/SUPER(99)/AUTO(0)/M1 TO M40(9)/MA1 TO
                MA20(9)
INPUT MEDIUM    CARD
RECODE          M1 TO M40 (1=-1)(2=0)(3=1)
COMPUTE         MACHV=MA1+MA2+MA3+MA4+MA5+MA6+MA7+MA8+MA9+MA10+MA11+MA12+MA13+
                MA14+MA15+MA16+MA17+MA18+MA19+MA20+20
COMPUTE         HHP=0
COMPUTE         HMP=0
COMPUTE         HLP=0
COMPUTE         LMP=0
COMPUTE         LLP=0
COMPUTE         HHN=0
COMPUTE         HMN=0
COMPUTE         HLN=0
COMPUTE         LMN=0
COMPUTE         LLN=0
COMPUTE         RPAUTH=0
COMPUTE         RPGAMES=0
COMPUTE         RPSITUA=0
COMPUTE         RPMASCUL=0
COMPUTE         RPIMPOS=0
COMPUTE         RPSTNDOT=0
COMPUTE         RPROUTIN=0
COMPUTE         RPSUPER=0
COMPUTE         RNAUTH=0
COMPUTE         RNGAMES=0
COMPUTE         RNSITUA=0
COMPUTE         RNMASCUL=0
COMPUTE         RNIMPOS=0
COMPUTE         RNSTNDOT=0
COMPUTE         RNROUTIN=0
COMPUTE         RNSUPER=0
COMPUTE         RPSUM=0
COMPUTE         RNSUM=0
COMPUTE         RTSCORE=0
IF              (M30 GT 0)HHP=HHP+1
IF              (M34 GT 0)HHP=HHP+1
IF              (M31 GT 0)HHP=HHP+1
IF              (M3  GT 0)HHP=HHP+1
IF              (M11 GT 0)HHP=HHP+1
IF              (M22 GT 0)HHP=HHP+1
IF              (M35 GT 0)HHP=HHP+1
IF              (M38 GT 0)HMP=HMP+1
IF              (M28 GT 0)HMP=HMP+1
```

Table XXV (continued)

```
IF          (M15 GT 0)HMP=HMP+1
IF          (M12 GT 0)HMP=HMP+1
IF          (M13 GT 0)HMP=HMP+1
IF          (M27 GT 0)HMP=HMP+1
IF          (M23 GT 0)HMP=HMP+1
IF          (M1  GT 0)MMP=MMP+1
IF          (M24 GT 0)MMP=MMP+1
IF          (M4  GT 0)MMP=MMP+1
IF          (M26 GT 0)MMP=MMP+1
IF          (M29 GT 0)MMP=MMP+1
IF          (M18 GT 0)MMP=MMP+1
IF          (M3  GT 0)MMP=MMP+1
IF          (M14 GT 0)LMP=LMP+1
IF          (M39 GT 0)LMP=LMP+1
IF          (M10 GT 0)LMP=LMP+1
IF          (M32 GT 0)LMP=LMP+1
IF          (M5  GT 0)LMP=LMP+1
IF          (M33 GT 0)LMP=LMP+1
IF          (M16 GT 0)LMP=LMP+1
IF          (M21 GT 0)LLP=LLP+1
IF          (M7  GT 0)LLP=LLP+1
IF          (M37 GT 0)LLP=LLP+1
IF          (M8  GT 0)LLP=LLP+1
IF          (M17 GT 0)LLP=LLP+1
IF          (M36 GT 0)LLP=LLP+1
IF          (M2  GT 0)LLP=LLP+1
IF          (M14 LT 0)HHN=HHN+1
IF          (M24 LT 0)HHN=HHN+1
IF          (M10 LT 0)HHN=HHN+1
IF          (M8  LT 0)HHN=HHN+1
IF          (M17 LT 0)HHN=HHN+1
IF          (M36 LT 0)HHN=HHN+1
IF          (M2  LT 0)HHN=HHN+1
IF          (M21 LT 0)HMN=HMN+1
IF          (M39 LT 0)HMN=HMN+1
IF          (M37 LT 0)HMN=HMN+1
IF          (M12 LT 0)HMN=HMN+1
IF          (M5  LT 0)HMN=HMN+1
IF          (M33 LT 0)HMN=HMN+1
IF          (M35 LT 0)HMN=HMN+1
IF          (M1  LT 0)MMN=MMN+1
IF          (M34 LT 0)MMN=MMN+1
IF          (M4  LT 0)MMN=MMN+1
IF          (M3  LT 0)MMN=MMN+1
IF          (M29 LT 0)MMN=MMN+1
IF          (M18 LT 0)MMN=MMN+1
IF          (M23 LT 0)MMN=MMN+1
IF          (M38 LT 0)LMN=LMN+1
IF          (M28 LT 0)LMN=LMN+1
IF          (M31 LT 0)LMN=LMN+1
IF          (M26 LT 0)LMN=LMN+1
IF          (M13 LT 0)LMN=LMN+1
```

Table XXV (continued)

```
IF              (M22 LT 0)LMN=LMN+1
IF              (M16 LT 0)LMN=LMN+1
IF              (M30 LT 0)LLN=LLN+1
IF              (M7  LT 0)LLN=LLN+1
IF              (M15 LT 0)LLN=LLN+1
IF              (M32 LT 0)LLN=LLN+1
IF              (M11 LT 0)LLN=LLN+1
IF              (M27 LT 0)LLN=LLN+1
IF              (M9  LT 0)LLN=LLN+1
IF              (HHP GE 7)RPSUPER=1
IF              (HMP GE 6)RPSUPER=1
IF              (MMP GE 5)RPSUPER=1
IF              (LMP GE 4)RPSUPER=1
IF              (LLP GE 4)RPSUPER=1
IF              (HHP+HMP GE 10)RPSUPER=1
IF              (HHP+MMP GE 10)RPSUPER=1
IF              (HHP+LMP GE  9)RPSUPER=1
IF              (HHP+LLP GE  9)RPSUPER=1
IF              (HMP+MMP GE  9)RPSUPER=1
IF              (HMP+LMP GE  8)RPSUPER=1
IF              (HMP+LLP GE  7)RPSUPER=1
IF              (MMP+LMP GE  8)RPSUPER=1
IF              (MMP+LLP GE  7)RPSUPER=1
IF              (LMP+LLP GE  6)RPSUPER=1
IF              (HHP+HMP+MMP GE 13)RPSUPER=1
IF              (HHP+HMP+LMP GE 13)RPSUPER=1
IF              (HHP+HMP+LLP GE 12)RPSUPER=1
IF              (HHP+MMP+LMP GE 13)RPSUPER=1
IF              (HHP+MMP+LLP GE 11)RPSUPER=1
IF              (HHP+LMP+LLP GE 11)RPSUPER=1
IF              (HMP+MMP+LMP GE 11)RPSUPER=1
IF              (HMP+MMP+LLP GE 11)RPSUPER=1
IF              (HMP+LMP+LLP GE 10)RPSUPER=1
IF              (MMP+LMP+LLP GE  9)RPSUPER=1
IF              (HHP+HMP+MMP+LMP GE 16)RPSUPER=1
IF              (HHP+HMP+MMP+LLP GE 14)RPSUPER=1
IF              (HHP+HMP+LMP+LLP GE 14)RPSUPER=1
IF              (HHP+MMP+LMP+LLP GE 14)RPSUPER=1
IF              (HMP+MMP+LMP+LLP GE 13)RPSUPER=1
IF              (HHP+HMP+MMP+LMP+LLP GE 17)RPSUPER=1
IF              (HHN GE 6)RNSUPER=-1
IF              (HMN GE 6)RNSUPER=-1
IF              (MMN GE  5)RNSUPER=-1
IF              (LMN GE  4)RNSUPER=-1
IF              (LLN GE  3)RNSUPER=-1
IF              (HHN+HMN GE 10)RNSUPER=-1
IF              (HHN+MMN GE  9)RNSUPER=-1
IF              (HHN+LMN GE 8)RNSUPER=-1
IF              (HHN+LLN GE 7)RNSUPER=-1
IF              (HMN+MMN GE 9)RNSUPER=-1
IF              (HMN+LMN GE 8)RNSUPER=-1
```

Table XXV (continued)

```
IF (HMN+LLN GE 7)RNSUPER=-1
IF (MMN+LMN GE 7)RNSUPER=-1
IF (MMN+LLN GE 6)RNSUPER=-1
IF (LMN+LLN GE 5)RNSUPER=-1
IF (HHN+HMN+MMN GE 13)RNSUPER=-1
IF (HHN+HMN+LMN GE 12)RNSUPER=-1
IF (HHN+HMN+LLN GE 11)RNSUPER=-1
IF (HHN+MMN+LMN GE 11)RNSUPER=-1
IF (HHN+MMN+LLN GE 10)RNSUPER =-1
IF (HHN+LMN+LLN GE 10)RNSUPER=-1
IF (HMN+MMN+LMN GE 11)RNSUPER =-1
IF (HMN+MMN+LLN GE 10)RNSUPER=-1
IF (HMN+LMN+LLN GE 9)RNSUPER=-1
IF (MMN+LMN+LLN GE 8)RNSUPER =-1
IF (HHN+HMN+MMN+LMN GE 15)RNSUPER=-1
IF (HHN+HMN+MMN+LLN GE 14)RNSUPER=-1
IF (HHN+HMN+LMN+LLN GE 13)RNSUPER=-1
IF (HHN+MMN+LMN+LLN GE 13)RNSUPER=-1
IF (HMN+MMN+LMN+LLN GE 12)RNSUPER=-1
IF (HHN+HMN+MMN+LMN+LLN GE 16)RNSUPER=-1
IF (0 LT M14)RPAUTH=1
IF (0 LT M21)RPAUTH=1
IF (0 LT M1 AND M30)RPAUTH=1
IF (0 LT M1 AND M38)RPAUTH=1
IF (0 LT M7 )RPGAMES=1
IF (0 LT M24)RPGAMES=1
IF (0 LT M39)RPGAMES=1
IF (0 LT M10)RPSITUA=1
IF (0 LT M37)RPSITUA=1
IF (0 LT M4 AND M15)RPSITUA=1
IF (0 LT M26)RPMASCUL=1
IF (0 LT M12 AND M32)RPMASCUL=1
IF (0 LT M8 AND M32)RPMASCUL=1
IF (0 LT M8 AND M12)RPMASCUL=1
IF (0 LT M3 AND M32)RPMASCUL=1
IF (0 LT M3 AND M8 )RPMASCUL=1
IF (0 LT M5 )RPIMPOS=1
IF (0 LT M13)RPIMPOS=1
IF (0 LT M17)RPIMPOS=1
IF (0 LT M29)RPIMPOS=1
IF (0 LT M18)RPSTNDOT=1
IF (0 LT M33)RPSTNDOT=1
IF (0 LT M36)RPSTNDOT=1
IF (0 LT M23 AND M35)RPROUTIN=1
IF (0 LT M16 AND M35)RPROUTIN=1
IF (0 LT M16 AND M23)RPROUTIN=1
IF (0 LT M9 AND M35)RPROUTIN=1
IF (0 LT M9 AND M23)RPROUTIN=1
IF (0 LT M9 AND M16)RPROUTIN=1
IF (0 LT M2 AND M35)RPROUTIN=1
IF (0 LT M2 AND M16)RPROUTIN=1
```

Table XXV (continued)

```
IF              (0 LT M2  AND M9 )RPROUTIN=1
IF              (0 GT M30)RNAUTH=-1
IF              (0 GT M38)RNAUTH=-1
IF              (0 GT M1  AND M21)RNAUTH=-1
IF              (0 GT M7 )RNGAMES=-1
IF              (0 GT M34 AND M39)RNGAMES=-1
IF              (0 GT M28 AND M39)RNGAMES=-1
IF              (0 GT M28 AND M34)RNGAMES=-1
IF              (0 GT M24 AND M34)RNGAMES=-1
IF              (0 GT M24 AND M28)RNGAMES=-1
IF              (0 GT M4 )RNSITUA=-1
IF              (0 GT M15)RNSITUA=-1
IF              (0 GT M31)RNSITUA=-1
IF              (0 GT M3 )RNMASCUL=-1
IF              (0 GT M12)RNMASCUL=-1
IF              (0 GT M26)RNMASCUL=-1
IF              (0 GT M32)RNMASCUL=-1
IF              (0 GT M11)RNIMPOS=-1
IF              (0 GT M13)RNIMPOS=-1
IF              (0 GT M17 AND M29)RNIMPOS=-1
IF              (0 GT M5  AND M29)RNIMPOS=-1
IF              (0 GT M5  AND M17)RNIMPOS=-1
IF              (0 GT M18)RNSTNDOT=-1
IF              (0 GT M22)RNSTNDOT=-1
IF              (0 GT M27)RNSTNDOT=-1
IF              (0 GT M33 AND M36)RNSTNDOT=-1
IF              (0 GT M9 )RNROUTIN=-1
IF              (0 GT M16)RNROUTIN=-1
IF              (0 GT M23 AND M35)RNROUTIN=-1
COMPUTE         RTAUTH=RPAUTH+RNAUTH
COMPUTE         RTGAMES=RPGAMES+RNGAMES
COMPUTE         RTSITUA=RPSITUA+RNSITUA
COMPUTE         RTMASCUL=RPMASCUL+RNMASCUL
COMPUTE         RTIMPOS=RPIMPOS+RNIMPOS
COMPUTE         RTSTNDOT=RPSTNDOT+RNSTNDOT
COMPUTE         RTROUTIN=RPROUTIN+RNROUTIN
COMPUTE         RTSUPER=RPSUPER+RNSUPER
COMPUTE         RPSUM=RPAUTH+RPGAMES+RPSITUA+RPMASCUL+RPIMPOS+RPSTNDOT+
                RPROUTIN+RPSUPER
COMPUTE         RNSUM=RNAUTH+RNGAMES+RNSITUA+RNMASCUL+RNIMPOS+RNSTNDOT+
                RNROUTIN+RNSUPER
COMPUTE         RTSCORE=RPSUM+RNSUM
COMPUTE         TAUTHOR = M1+M14+M21+M30+M38
COMPUTE         IGAMES=M7+M24+M28+M34+M39
COMPUTE         TSITUA=M4+M10+M15+M31+M37
COMPUTE         TMASCUL=M3+M8+M12+M26+M32
COMPUTE         TIMPOS=M5+M11+M13+M17+M29
COMPUTE         TSTNDOT=M18+M22+M27+M33+M36
COMPUTE         TROUTIN=M2+M9+M16+M23+M35
```

Table XXV (continued)

```
COMPUTE         ISCORE=IAUTHOR+IGAMES+ISITUA+IMASCUL+IIMPOS+ISTNDOT+IROUTIN
ASSIGN MISSING          IAUTHOR,IGAMES,ISITUA,IMASCUL,IIMPOS,ISTNDOT,IROUTIN,
                ISCORE(99)
ASSIGN MISSING        RPAUTH,RPGAMES,RPSITUA,RPMASCUL,RPIMPOS,RPSTNDOT,RPROUTIN,
                RPSUPER,RNAUTH,RNGAMES,RNSITUA,RNMASCUL,RNIMPOS,RNSTNDOT,
                RNROUTIN,RNSUPER,RPSUM,RNSUM,RTSCORE,HHP,HMP,MMP,LMP,LLP,HHN,HMN,
                MMN,LMN,LLN,RTAUTH,RTGAMES,RTSITUA,RTMASCUL,RTIMPOS,RTSTNDOT,
                RTROUTIN,RTSUPER(99)
ASSIGN MISSING MACHV(999)
PEARSON CORR    AGE,GRADE,COMM,SUPER,IAUTHOR,IGAMES,ISITUA,IMASCUL,IIMPOS,
                ISTNDOT,IROUTIN,ISCORE,RTSCORE,MACHV
STATISTICS      ALL
READ INPUT DATA
```

Table XXVI
Description of Variables Used in Table XXV

Variable Name	Description
AGE, GRADE, COMM, SUPER, AUTO	Input variables from Part A of the questionnaire.
M1 TO M40	Input variables from Part B of the questionnaire. MSCS sentence completions. Note: M6, M19, M20, M25, and M40 are not scorable or used in the analysis.
MA1 TO MA20	Input variables from Part C of the questionnaire. Mach V triad scores.
MACHV	Mach V score.
HHP...LLN	Popularity Levels ranging from High Positive (HHP) to Low Negative (LLN) used in determining the MSCS Supervisory Job rare subscale score.
RPAUTH...RNSUPER	MSCS rare subscale scores used only for clerical purposes in determining the MSCS Rare Score. RPAUTH represents the rare positive Authority Figures subscale score. RNSUPER represents the rare negative Supervisory Job subscale score.
RPSUM, RNSUM	Sum of the positive or negative MSCS Rare subscale scores: Used only for clerical purposes.
RTSCORE	MSCS Rare Score.
IAUTHOR...IROUTIN	MSCS Subscale Item Scores. IAUTHOR represents the Authority Figures subscale score.
ISCORE	MSCS Item Score.

Vita

Michael J. Oles was born on 29 January 1943 in Torrington, Connecticut. He graduated from Torrington High School in 1960 and received a Bachelor of Science degree in Physics from Fairfield University, Fairfield, Connecticut, in 1964. He received his commission in the United States Air Force on 10 November 1964 at the Officer Training School, Lackland Air Force Base (AFB). He was initially assigned as a Minuteman Launch Officer at Malmstrom AFB (Strategic Air Command) in December 1964. From August 1965 to October 1967 he was stationed at the National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas. During that assignment, he had the good fortune of providing assistance in the development of navigational error equations for a number of Gemini programs as well as those of the first Apollo lunar landing mission. From there he was assigned to the Range Measurements Laboratory, Patrick AFB, Florida. During that four-year tour, he was involved with the development of several efforts sponsored by the Advanced Research Projects Agency including project manager of an electro-optics development for a remote piloted helicopter. In June 1972, he was assigned to the Aeronautical Systems Division, Wright-Patterson AFB, Ohio, and was responsible for the technical development of an electro-optical system designed for a Strategic Air Command aircraft. During the latter phase of that program, he was stationed at the principal contractor's facility in order to provide technical

direction and liaison for the numerous contractor and Air Force participating organizations. From there, he was assigned in June 1976 to the Air Force Institute of Technology to study for a Master of Science degree in Systems Management.

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

One purpose of this research was to examine the relationship between motivation to managerial role prescriptions (using the Miner Sentence Completion Scale) and Machiavellianism (using the Mach V Scale). A second purpose of this research was to investigate managerial motivation and Machiavellianism of successful Air Force officers compared with other populations.

There is little evidence to support a relationship between Machiavellianism and specific managerial motives. In a comprehensive sense, there is no

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relationship between overall motivation to the managerial role and Machiavellianism.

The analysis indicates that Air Force officers are significantly less motivated to the managerial role than a previously established normative group of managers in a large corporation. This may indicate that managerial role prescriptions have changed since the time that the previous normative group was established or that there is a difference between managerial role prescriptions within profit-oriented corporations and the United States Air Force.

The analysis indicates that Air Force officers are less inclined to either pro- or anti-Machiavellian sentiments than other groups. However, there is evidence that the Mach V Scale is multi-dimensional. Further research is recommended to increase the reliability of Mach V, while retaining its present immunity from socially desirable response set.