THE APPLICABILITY OF THE TURKISH ARMED FORCES' PERSONALITY TEST BATTERY TO THE SELECTION OF THE TURKISH AIR FORCE CADETS

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ABSTRACT

THE APPLICABILITY OF THE TURKISH ARMED FORCES' PERSONALITY TEST BATTERY TO THE SELECTION OF THE TURKISH AIR FORCE CADETS

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This study was conducted to estabilish the validity of the Turkish Armed Forces Personality Battery (TAFPB) in selecting Turkish Air Force Academy (TAFA) cadets. Before the data collection some items of TAFPB were made suitable for the TAFA cadets by SME's. Data were collected from first, second and third year students on TAFPB, 16 PF, psychomotor scores and objective and subjective performance measures. The data of 647 TAFA cadets were evaluated. The correlation matrixes, means and SD'S of this study is found consistent with the TAFPB applications of Sumer et al. (2000) and Kale (2004) in military settings. TAFPB is face valid because of the common aims of TAFA and TAFPB, selecting ideal officer. TAFPB is content valid because all traits are determined by using job analysis and the relevance and importance of the traits are scored by SME's. Criterion-related validity was measured by analysing the correlations of TAFPB with objective (academic and sport score) and subjective (commander evaluation, flight, military score) performance. Correlations, and a series of regressions pointed out that TAFPB predicts significantly objective performance. TAFPB has incremental validity over 16 PF and BSI in explaining objective performance. The source and class variances were compared by ANOVA. Cadets from military source had significantly higher scores on 11 factors of TAFPB and on performance factors. Moreover they got significantly low scores on BSI. Military high school graduates seems more preferable by selecting cadets. To conclude, TAFPB is a valid test for TAFA.

Keywords: Personnel selection, personality, performance, Turkish Armed Forces Personality Battery, validity

ÖZ

TÜRK SİLAHLI KUVVETLERİ KİŞİLİK ENVANTERİNİN TÜRK HAVA HARP OKULU ÖĞRENCİ SEÇİMİNDE UYGULANABİLİRLİĞİ

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Bu çalışma, Türk Silahlı Kuvvetleri Kişilik Envanteri (TSKKE)'nin Türk Hava Harp Okulu (HHO) öğrenci seçiminde geçerliliğini belirlemek için yapılmıştır. Veri toplanılmadan önce konu uzmanlarınca (SME) TSKKE'nin bazı maddeleri HHO öğrencileri için uygun hale getirilmiştir. Birinci, ikinci ve üçüncü sınıf öğrencilerinden, TSKKE, 16 PF, Kısa Semptom Envanteri (KSE), psikomotor sonuçları ve objektif ve subjektif performans ölçümleri verileri toplanmıştır. 647 HHO öğrencisinin verisi değerlendirilmiştir. Bu çalışmanın korelasyon matriksleri, ortalamaları ve standart sapmaları ile Sümer ve arkadaşları (2000)'nın ve Kale (2004)'nin askeri alandaki uygulamaları ile tutarlı olduğu bulunmuştur. TSKKE'nin ve HHO'nun ortak amaçları ideal subayı seçmek olmasından dolayı TSKKE yüzeysel geçerlidir. TSKKE'nin ölçtüğü bütün karakter özellikleri iş analiziyle belirlendiğinden ve konu uzmanları (SME) bu karakter özelliklerinin ilgili olup olmadığını ve önemini değerlendirdiğinden içerik geçerliliği vardır. Kriter geçerliliği, TSKKE ile objektif (akademik ve spor notları) ve subjektif (komutan kanaati, uçuş ve askeri notları) arasındaki korelasyonların analizi edilmesi ile ölçülmüştür. Korelasyon ve bir seri regresyon analizleri TSKKE'nin anlamlı bir şekilde objektif performansı yordadığını göstermektedir. TSKKE'nin objektif performansı açıklamada 16 PF ve KSE üzerine artşsal geçerliliği vardır. Kaynak ve sınıf varyansları, varyans analizi (ANOVA) ile karşılaştırılmıştır. Askeri lise kaynaklı öğrencilerin, TSKKE' nin 11 faktörü ve performans faktörleri anlamlı bir şekilde daha yüksektir. Dahası KSE'den daha düşük puanlar almışlardır. Askeri lise mezunları, HHO öğrenci seçiminde daha tercih edilir görünmektedir. Sonuç olarak, TSKKE HHO için geçerli bir testtir.

Anahtar Kelimeler: Personel seçimi, kişilik, performans, Türk Silahlı Kuvvetleri Kişilik Envanteri, geçerlilik

To my family and friends

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ABBREVIATIONS

ABLE	:Assessment of Background and Life Experiences
ACT	: American College Test
AFOQT	: Air Force Officer Qualifying Test
AFQT	: Air Force Qualifying Test
AGFI	: Adjusted Goodness-of-Fit Index
ANOVA	: Analysis of Variance
AP	: Academic Performance
ARI	: Army Research Institute
ASA	: Attraction-Selection-Attrition
ASVAB	: Armed Services Vocational Aptitude Battery
BAI	: Beliefs About Intelligence
BAT	: Basic Attributes Tests
BOTC	: Basic Officer Training Course
BSI	: Brief Symptom Inventory
CE	: Commander Evaluation
CFA	: Confirmatory Factor Analysis
CFI	: Comparative Fit Index
CSR	: Civilian Sourced
DV	: Dependent Variable
EPI	: Eynseck Personality Inventory
FFM	: Five Factor Model
FP	: Flight Performance
GFI	: Goodness-of-Fit Index
GPA	: Grade Point Average
HR	: Human Resources
HRESS	: Human Resources Evaluation and Selection Seminar
ID	: Identification

IV	: Independent Variable
LMP	: Leader Motive Pattern
LP	: Leadership Performance
M factor	: Military factor
MPG	: Military Performance Grades
MPS	: Map Score
MS	: Military Scores
MSR	: Military Sourced
MTS	: Mathematic Score
NFI	: Normed Fit Index
NNFI	: Non-Normed Fit Index and
OCS	: Officer Candidate School
OSU	: Experimental Flight Training
P-O	: Person-Organization
PS	: Personnel Selection
RJP	: Realistic Job Preview
RMR	: Standardized Root Mean Square Residuals
ROTC	: Reserve Office Training Corps
SAT	: Scholastic Achievement Test
SD	: Standard Deviation
SEG	: Statistic Examination Grades
SME	: Subject Matter Expert
SP	: Seminar Performance
SP	: Sport Performance
TAF	: Turkish Armed Force
TAFA	: Turkish Air Force Academy
TAFPB	: Turkish Armed Forces Personality Battery
U.S.A	: United States of America
U.S.	: United States
UEE	: University Entrance Examination
USAFA	: United States Air Force Academy

WAB	: Weighted Application Blanks
WW I	: World War I
WWI	: World War II
χ^2	: Chi Square

CHAPTER I

INTRODUCTION

The Applicability of the Turkish Armed Forces' Personality Test Battery to the Selection of the Turkish Air Force Cadets

1.1 Overview

Personality test plays an important role in the personnel selection systems. Due to the fact that it is proved that personality which pursues a consistent path during one's life predicts job performance. In recent years the employers who are aware of the significance of the personality tests in the selection began to give the personality tests their deserved place. In military with the technological improvement the requirement of qualified personnel is also increased. There is a need for more elaborated selection tests which include personality tests. For this purpose Sümer,Sümer, Sahin, Sahin, Demirutku and Eroglu (2000) developed a Personnel Battery for Turkish Armed Forces. In this study first the performance and personality measurement and their relationship in personnel selection and personnel selection methods are analyzed. Then, the interdependence of Psychology and military is evaluated with a historical perspective. After that, the military personnel selection systems of United States Air Force and Turkish Air Force Academy are examined. Finally the development stages of Personality Test Battery of Turkish Armed Forces are explained in order to clarify its applicability to the Turkish Air Force Academy's cadet's selection.

1.2 The Importance of Personel Selection (PS)

There are differences between people in terms of contribution that they add to the organization or performing a task. Clark Hull (1928), an animal theorist, firstly analyzed the differences in productivity and proposed the principle: “The best is twice as good as the worst.”(reported by Cook, 2004).

The aim of the personnel selection is selecting better employees. A good selection system helps organizations to decide effectively while finding the right job to the right person in the rapidly changing environment. The values of employees are different and normally distributed. The poor is at the level of 15% and the good is at the level of 85% depending on one standard deviation of the mean (SD) by using rational estimate technique. Moreover, it is not ethical and legitimate to reject people without giving any valid reasons (Hough & Oswald, 2000) (Robertson & Smith, 2001).

However there are many questions in mind while selecting the better employees. First question is “Which selection methods could be used?”. The selection techniques will be briefly explained. Second question, “How much differences are between employees?”, is related to the concepts of performance and utility analysis. Last question is “Which factors are important in order to achieve higher performance?”. The job descriptions and job analysis guide the selectors and determine what they should look for while selecting employees.

Organizations start with recruitment to fulfil organizational needs from HR perspective. Chapman and Webster (2003) defined four main recruitment steps as advertising positions, receiving applications, initial screening and final selection. The sources of recruitment could be internal or external. The advantages of internal sources are motivation and good socialization. Although fresh and creative workforce is positive side of external sources, it should not be forgotten that external sources may decrease current employee’s motivation .

Realistic Job Previews (RJP), which is a recruitment issue, effects performance, attrition, expectations and turnover. RJP also gives information about the positive and negative aspects of the jop. The major aim of RJP is retention. Phillips (1998) found that "medium, timing and setting" are moderators of RJP in his meta-analysis. The variance explained by setting, medium and time were respectively, 1%, 2%, 11% in the recruitment process. Turnover and job satisfaction could be predicted better in the field studies. Verbal RJP was determined the most effective format of RJP in predicting job satisfaction, turnover and organizational commitment, compared by audiovisional and written formats of RJP. Moreover, attitudes were effected more strongly by verbal RJP. Performance could be increased by audiovisional models, serving as a role model. Additionally, information given in two ways was more effective than given in one way. Timing was found partially related to turnover. RJP given before the job lower the expectations and thus prevent dissatisfaction and entry the job. RJP, given after hiring was effective at reducing turnover and increasing performance although self-selection could not be occur.

Interview is one of the most widely used selection method. A great deal of information could be obtained during the interview, including personality characteristics, job knowledge, communication skills, social skills, organizational citizenship, verbal fluency, mental ability, values, interests and preferences (Burnett & Motowidlo, 1998). Well-structured interviews are valid predictors. However most interviews are unstructured and have low validity coefficient. Hufcutt and Arthur (1994) analyzed interviews from unstructured to structured at four level and found the mean validities respectively, .20, .35, .56, .57. Guion (1998) suggested that interviewer should be selected carefully, because the experience and habits of the interviewers differ and the interviewee could use impression management techniques.

Biodata, Weighted Application Blanks (WAB) and references are other used selection devices, based on the idea that "The best predictor of the future performance is the past performance" (Guion, 1998). WAB supplemented by biodata later used for selection. Hartley (1970) explained that the data weights are

given depending on their relationships with criterion or success in order to discriminate poor and good candidates in his study of improving retail selection by using WAB. The aim of the study is to select longer tenure employees. The study results indicate that certain personality items are significantly correlated with high and low tenure employee and WAB differentiates desired and undesired candidates. Allworth (1999) defined bio data as a standardized method of assessing personnel history using biographical information. Biodata has high validity. Biodata as a selection instrument assess personality, interests, values and abilities (Stokes, 1999).

Assesment Centers are also used in personnel selection based on the principle of measuring various traits with various methods, in other words multi-trait, multi-method assesments (Krause & Gebert, 2003). Group, individual and written exercises could be used in order to determine the candidates ability, knowledge, skill or personality. The validity of assessment center is like interviews, claiming that it is good at general evaluation. However assesment centers are not successful in measuring specific evaluation.

1.2.1. The Importance of Personality Measurement in PS

The personality is one of the key factors in understanding the individual differences and their effects on the work behavior. In personnel selection the selection of intelligent and hard working people is one of the core objectives. A personnel selection system, which disregards the personality measurement, weakens its predictive capacity that may cause the selection of a wrong person. And this mis-selection generates long-term costs at both individual and organizational levels. Russell and Marrero (2000) compared wartime and peacetime personality styles of effective soldiers. By using American Psychiatric Assossions' diagnostic manual, they clustered people into 3 different style. Cluster A represents odd or unusual people. Cluster B people direct outside the external world. Cluster C people are sensitive to anxiety and avoid making decisions, risk, and harm. Extroverts are more likely to be in Cluster C and introverts are generally in Cluster C. The personality needed for being hero is related to Cluster

B. Nevertheless, Cluster C people are required for the security of military system. Cluster C people are favored by wartime. On the other hand Cluster C people favored in peacetime.They found that the inconsistency between military needs and personality characteristics of soldiers may lead to suffering greater initial losses at war than necessary.

1.2.1.1. The Definition of Personality

There is no one definite answer of what personality is. By examining the etymology of the word personality, it is found that it comes from Latin root, `persona` meaning the mask (Vanasse, 2004). Psychologists do not agree on a single definition of personality. There are generally five main approaches explaining personality, namely, psychoanalytic approach, trait approach, humanistic approach, behavioral-social learning approach and cognitive approach. Burger (1990) mentioned the reasons of many theories of personality. He associated this issue with five blind men explaining what an elephant is. Although each of theories is partly correct, they do not provide a complete definition. Moreover, combining these approaches is not possible because of their incompatible characteristics. He recommended choosing one approach in order to explain the consistent behavioral patterns of peoples.

The major purpose of psychoanalytic theories is the unconscious directs behavior and the differences in behavioral patterns depend on unconscious mind (Burger, 1990). While explaining the individual differences, trait approach is interested in inherited dispositions, relatively enduring descriptive characteristics of peoples, while explaining the individual differences (Eynseck, 1971). Humanistic approach gives importance to the personal responsibility and feelings of self-acceptance. This theory based on the present experience and the essential worth of whole person (Burger, 1990). Behavioral-Social Learning approach is related to the importance of environment and interprets different behavioral patterns as a result of habits which are acquired in different environments (Krasner & Ullman, 1973). Finally, cognitive approach defines the behavioral differences of people by processing information.

The trait theory is the most reasonable one in terms of personality assessment and selection perspectives. The properties of trait approach underlie the definition of itself. Eynseck (1995) defined traits as distinguishable and relatively enduring descriptive characteristics of a person. Kelly (1967) cited the advantages of traits. Traits may be either unipolar or bipolar and are identifiable and stable. It is assumed that an individual exhibits consistent personality traits under varying circumstances. For example, as a result of a 45 year lasted study, depending on the individuals' feedbacks and observers' evaluations, found out that the personality pursues a consistent path (Kelly, 1955, reported by Hogan, Hogan & Robert, 1996). Finally, traits are measurable. Science begins with measurement and expressing in numbers. Trait approach permits scientific selection procures (Eynseck, 1995).

Little (2004) pointed out that traits were overlooked until the past two decades in PS. The main reason for this is the low behavior-trait correlations, .30, 40 found by Michel in 1968. Michel criticized the overinterpretation of psychological tests. He claimed that they are not as important as they were once. Psychological tests explain .10 of the variance in behavior, indicating that only trait scores do not explain the large amaunt of the behavior. Nonetheless these criticisms brought significant improvement in the field of personality. Criticisms enriched and broadened the trait approach. Moreover the validation of personality tests became more important than before. Also, new personality tests were developed to measure normal work related personality (Hough & Oswald, 2000).

Burger (1990) added that the reasons for failure of trait measures are the fact that they are measuring wrong traits. Other reasons may be that there is little evidence that behavior is consistent across situations. Kelly (1967) was aware of this issue. His core idea was that behavior is a function of both the person and the situation to which someone responses. Behaviors could be inferred from traits, assuming situations are standardized called 'person by situation approach'. Therefore, the traits showing situational consistency should be carefully selected. Consequently, traits and behaviors, having significant relationship between them, should be measured correctly.

The first attempt of deciding which trait should be selected by using developed typology systems is to decide how many types of people there are. Type is the group of correlated traits and trait is a group of correlated behavioral acts. It is similar to factor analytic approach (Eynseck, 1995). Gordon Allport (1921) made the first comprehensive research about personality. He collected 4000 adjectives from English language and developed common traits. Then, to determine how many different personality traits there are, Raymond Cattell, who believes that traits constitute personality, found 16 personality factors, using factor analysis. After that, Eynseck diminished 16 factors into three main personality factor, extraversion, psychotism and neurotism. Murray is interested in needs and defined personality in the hierarchy of needs. He defined tree main needs, Need for Achievement, Need for Power and Need for Affiliation. Aditionally as another taxomony, Normans Big Five, which is the most popular approach in science and application, is developed explaining behavior- trait relationship. (Mount & Barrick, 1991).

1.2.1.2. Person-Organization Fit and ASA Model

Personality, which follows a consistent path, has a key role in the prediction of performance at work. Employers want to hire workers who have appropriate personality characteristics related to the organizational needs. As such personality measurement plays a crucial role in personnel selection. The aim of the personality measurement is selecting employees having personality characteristic that is in accordance with the job and organization. Moreover selecting employers who have inappropriate personality may lead to unbearable costs; job accidents, turnover, low motivation and satisfaction, etc. (O`Reilly, Chatman & Coldwell, 1991).

How personal attributes are related to the outcomesmay be explained by Person-Organization (P-O) Fit Theory. The match between person and organization is named congruence, resulting in a more effective environment. Chatman (1991) pointed out two factors indicating the necessity of P-O Fit Theory. First, values are determinants of behaviors that are consistent. Second, P-O Fit theory permits the comparison of the values of organization and the people. Many study results

demonstrated that P-O Fit predicts job satisfaction, organizational commitment, turnover and performance (O`Reilly, Chatman & Coldwell, 1991) (Tziner, 1987).

Schneider (1987) proposed the person oriented model explaining organizational behavior, ASA (Attraction-Selection-Attrition) cycle. ASA theory brought the homogeneity hypothesis that organizations become homogeneous over time depending on the types of people in that. Individual, who has low fit is expected to leave the organization. According to the Schneider's theory, people with similar attitudes, values and personality define the culture, climate, structure and the work characteristics and patterns (Denton, 1999).

Day and Bedeian (1995) investigated the FFM based on personal similarities and the job satisfaction, job performance and organization's tenure. Only conscientiousness and organization's tenure were found to be related. Denton (1999) made a study about personality variability across tenure groups that cocnsist of female retail store managers. He confirms Schneider's findings-personality and tenure relationships.

To conclude, the fit of personality to the organization is as important as the importance of personality, in personnel selection. In other words the employees are required to have a personality that will meet the demands and the goals of the organization and the person simultaneously. If they are not prepared in accordance with the job requirements and organizational goals, this may also harm the efficiency of selection process and the organization itself. So the validity and the reliability of the personality tests should be measured before their being applied.

1.2.1.3. The Fakability of Personality Tests

Although personality measures may be evaluated as valuable predictors of job performance, many researchers explored that personality measures are sensitive and may be faked by the respondents (Stecher, Rose & Levin, 1998; Viswesvaran & Ones, 1999; Ellingson, Sackett & Hough, 1999). Viswesvaran and Ones (1999) investigated whether the personality inventories can be faked or not and whether

there is a difference between the big five personality dimensions about the fakability by using meta-analysis. It is found that all the big five factors are equally fakable and the social desirability scale is the most faked scale. Also it is found that participants can fake good in order to make a favorable impression, if instructed to do so. Ellingson, Sackett and Hough (1999) studied about whether there could be a correction on the social desirability scale score. Moreover they explored whether these corrections would be effective on the avoidance of the intentional distortion. At the end of their study, they revealed that corrections of the social desirability is ineffective and cannot be achieved to remove the distortion. Rosse, Stecher and Levin (1998), also examined the role of the fakability in personality testing and selection decisions. In their study, they found that job applicants are more inclined to fake than the job incumbents. So they advocate that researchers should focus on the impact of response distortion on the construct validity and hiring decisions. Researchers and practitioners should be aware of the threat of response distortion during the selection process and should pay attention to this issue.

1.2.2. The Importance of Performance in PS

Employers always want to take an employee that may show a better performance in their organizations, because performance is one of the key factors, which has a determinant role in the effectiveness of the organization. Performance appraisals are used for administrative decisions, supplying feedback to employees and for other purposes. The multiple usages of performance appraisals may vary, such as: 1. Criteria for validation studies, 2. Determining organizational training needs, 3. Reinforcing the authority structure, 4. Manpower planning. In Personnel Selection, performance is mostly used in the determination of manpower planning and in the validation of selection techniques (Murphy & Cleveland, 1995). Performance is accepted as a dependent variable in personnel selection. The validity and the effectiveness of the personnel selection system are evaluated by its being compared to performance of the selected individuals. The usage of performance in personnel selection with inadequate knowledge or unsatisfactory definition of

performance may lead to taking wrong even hazardous decisions in personnel selection, depending on the type of the job.

1.2.2.1. The Multivariate Nature of Performance

Campbell, McCloy, Oppler and Sager (1993) define performance as a synonym of behavior. In other words, performance is the observable actions of people that are both related to and can directly contribute to the goals of organization. "Performance is what the organization hires one to do and, do well. Performance is not the consequence or result of action, it is the action itself." (Campbell et al., 1993). Campbell (1990) suggested that performance is more than one thing and proposed an Eight Factor Latent Structure Model while defining the criteria of Project A which is a long-term study of selection and classification practices for entry-level jobs in the U.S. Army. These factors are;

1. Job-specific task proficiency: It is defined as the degree to which the individual can perform the core substantive or technical tasks that are central to a job and distinguish one job from another.
2. Non-job specific task proficiency: It is used to refer to tasks not specific to a particular job but it is expected of all members of the organization.
3. Demonstrating effort: It is explained as the consistency or perseverance and intensity of the individuals to complete the task.
4. Maintenance of personal discipline: It refers to the avoidance of negative behaviors at work.
5. Supervision and leadership: The performance behaviors directed at managing the organization that are related to the supervisory and leadership roles
6. Management or administration: The performance behaviors directed at managing the organization that are related to the management and administration roles.
7. Written and oral communication: It reflects the component of the job performance that refers to the proficiency of the incumbent who has the ability to communicate independent of the correctness of the subject matter.

8. Facilitating team and peer performance: The degree, to which the individual supports his/her peers, helps them with job problems and acts as a defacto trainer.

Further elaborations of the factors can be found in the study of Campbell et al. (1993).

Borman and Motowidlo (1993) stressed the importance of the individuals' contribution to the social and psychological structure of the organization. They argued that the task activities are not sufficient for the selection criteria, and added that the contextual activities should be taken into account in the selection studies. Moreover they emphasized that task performance and contextual performance are different from each other. Task performance is defined as the proficiency with which incumbents perform activities that are formally recognized as part of their jobs. Contextual activities are; volunteering to fulfil the task activities that are not formally prescribed, persisting with extra enthusiasm or effort while completing the task activities successfully, helping and cooperating with others, obeying the organizational procedures and rules even they contrast to personal interests, endorsing, supporting and defending the organizational objectives. Task activities do contribute to the technical core; on the other hand the contextual activities are related to the voluntary activities of incumbents. Furthermore contextual activities are common to nearly all jobs, whereas task activities may differ from job to job. Motowidlo and Scotter (1994), made a study with U.S. Air Force mechanics about the distinction between task performance and contextual performance. In this study they found that personality variables are more highly correlated with contextual performance than with task performance. So they argued that task performance should be distinguished from contextual performance basing on the results of the study, which also confirms the multidimensional structure of performance. Also Borman and Motowidlo (1993) proposed that ability variables predict the task performance more strongly than individual differences in personality.

In addition to the Eight Factor Latent Structure Model of performance, there are also other models (Viswesvaran & Ones, 2000). These models involve the cooperation of individuals in the organization. Some examples of the models are;

Organizational Citizenship (Organ, 1988), Prosocial Organizational Behavior (Brief & Motowidlo, 1986) and Organizational Spontaneity (George & Brief, 1992), Soldier Effectiveness Model (Campbell, Mc Henry & Wise, 1990). Soldier Effectiveness Model is developed by depending on the Campbell's five performance dimensions which were developed from the data of Project A. These dimensions are; core technical proficiency, general soldiering proficiency, effort and leadership, personal discipline and physical fitness and military bearing. The model is also developed with the idea that solely performing the assigned job duties effectively is not sufficient for the effectiveness of a soldier. In addition to the assigned tasks, the organizational commitment, organizational socialization and military model are regarded as the common soldier performance elements. Starting with this point, *determination, teamwork* and *allegiance* are determined as the general categories of soldier effectiveness. Determination is regarded as a motivational and effective category that reflects the spirit, strength of character or 'will do' aspects of good soldiering. Teamwork reflects the effective relationship with peers and unit. Allegiance is the soldier's acceptance of army norms and his obedience to military rules such as respect to authority, military bearing and adjustment to the army.

1.2.2.2. The Job Analysis Method in Determining the Performance Factors

From the perspective of personnel selection, the job analysis is used for human resource requirements and specifications. According to Brannick and Levine, (2002), the basic job analysis methods are work oriented and worker oriented. Work oriented methods focus on the things that workers do including tasks, tools, machines and work context. Worker oriented methods analyze the attributes of the workers which are necessary for the accomplishment of the work. These attributes may be classified as strength, mental completion or the knowledge of real estate law. The main objectives of the worker oriented job are: 1. Finding out the factors that will provide the success in job, 2. The ways of reaching a skilled human performance. So hiring qualified people may be accepted as one of the main reasons for using worker oriented methods.

As mentioned before, the task performance is inadequate without contextual performance in determining the overall performance. Contextual factors are determined by the individual differences and personality traits, which may be evaluated by worker, oriented methods. The Army Selection and Classification Project (Project A) is one of the best examples of the studies that show the importance of job analysis in the personnel selection. Multiple methods of job analysis and criterion measurement were used to determine performance indicators. Also Arvey and Murphy (1998) advocated that the more performance predictors exist in the job context, the better guess about the performance can be achieved. And these predictors can effectively be determined by job analysis. In an organization narrower and more jobs specific measures of performance are needed for practical purposes.

Raymark, Schmith and Guion (1997) hypothesized that most job analyses can clearly determine the abilities and aptitudes which are good predictors of performance. However the personality variables related with these features were generally overlooked by job analysis and this may cause the missing of the personality in personnel selection. Although some job analysis techniques include some aspects of personality related with the position requirements such as Position Analysis Questionnaire, PAQ, (McCormick, Mecham & Jeanneret, 1977), they are evaluated as unsystematic and incomplete determining relevant personality variables. Therefore Raymark, Schmith and Guion (1997) developed a Personality-Related Position Requirements Form (PPRF), a job analysis form that can define the necessary personality variables of job performance. They determined 12-personality sub dimensions under the Big Five factors. These sub dimensions are; general leadership, interest in negotiation, achievement striving under the factor of *surgency*, friendly disposition, sensitivity to interest of others and cooperative or collaborative work tendency under *agreeableness*, general trustworthiness, adherence to work ethic, thoroughness and attentiveness to details under *conscientiousness*, desire to generate ideas and tendency to think things through under *intellectance and emotional stability*. At the end of their study the PPRF is proved to be useful and reliable instrument in distinguishing jobs based on personality traits. It supports the hypotheses about predicting performance criteria

by personality predictors and improvement using in true decisions for personnel selection. However they added that it could not be used for a professional judgment because future refinements of PPRF are needed.

1.2.3. The Predictive Value of Personality in Personnel Selection

Until recently, personality traits were overlooked in personnel selection, because general abilities, knowledge and skill were given more importance and the criterion validity of them were not high; but in recent years it is understood that the personality factors are important for the comprehending and predicting the organizational performance and behaviors (Sümer, 2000).

In the literature for predicting the job performance, various personality traits were defined. Among the defined traits, Norman's Five-Factor Model of Personality (Big Five) is accepted as a significant model. The five factors are; 1. Extraversion, 2. Emotional Stability, 3. Agreeableness, 4. Conscientiousness, 5. Openness to Experience. Burger (1990) defined the characteristics of these factors with adjectives." Extraversion: sociable-calm, insecure-secure and affectionate-versus reserved, Emotional stability: worried-calm, insecure-secure, self-pitying - self-satisfied, Agreeableness: soft-hearted-ruthless, trusting-suspicious, helpful-uncooperative, Conscientiousness: well organized-disorganized, trusting-suspicious, helpful-uncooperative, Openness to Experience: imaginative-down to earth, preference for variety-preference for routine, independent-confirming".

Hogan and his colleagues (1996) pointed out that the jobs in which the personality cannot predict the performance are the ones that are structured to minimize the effect of the personality. But in most other jobs the personality can be used to predict the performance. Personality is measured by observation and tests, but it should be kept in mind that observations are not independent from personal bias. Because the observations in personality measurement, which require many observers and time, may include biased evaluations, testing seems to be the best method of measuring personality (Hogan, Hogan & Robert, 1996).

In U.S. and Canada, Mount and Barrick (1991), by using meta-analysis, investigated the relationship of "Big Five" personality dimensions to three job performance criteria (job proficiency, training proficiency, personnel data) for five occupational groups (professionals, police, managers, skilled, semi-skilled). Conscientiousness was correlated with all job performance criteria for all occupational groups. The rest of the personality dimensions' correlations with occupational groups and criterion type varied. Extraversion predicted performance for two occupations (managers and sales) that involve social interaction. Openness to experience and extraversion predict training proficiency criterion. Other personality dimensions were found to be valid predictors for some occupations and some criterion types. But their correlations were small. These results leads to the conclusion that Five Factor Model is beneficial for personnel selection. It is suggested that the combined usage of cognitive ability measures and personality traits measures such as conscientiousness will more increase the validity of predicting performance more the usage of ability measures alone.

Tett, Jackson and Rothstein (1991) focused on personality-performance links in their meta-analysis,by taking moderators into account covering 494 studies with a sample of 13.521 people. Corrected mean validity of personality scale was found to be .29. Some validities of that study were twice as high as Mount and Barrick's meta-analysis(1991). Corrected mean validities of neurotism was -.22, extraversion .16, openness to experience .27, agreeableness .35 and conscientiousness .18. Measurement interval, as a moderator, was not related to the validity indicating that in personnel selection process, personality scores could be used whenever wanted because of the stability of the traits over time confirming the trait approach. Contrary to the previous findings claiming incumbents fake less than recruits, this meta-analysis indicates that the validity of recruits found higher than incumbents. In military, personality predicts performance better than civilian. To conclude, they proved that personality predicts performance.

Similarly, Salgado (1997) investigated the relationship between the Big Five Factors of Personality and Job Criteria in Europe. His studies were done in European Community, and in this sense they are different from the ones that were

previously done in U.S. and Canada. According to his studies, conscientiousness and emotional stability were found to be valid predictors of all job criteria and occupational groups. In that study extraversion was a valid predictor for managers and polices, openness was a valid predictor for police and skilled labour, and agreeableness was a valid predictor for professionals, skilled labour and managers. Openness and agreeableness were valid predictors for training proficiency. Contrary to Barrick and Mount (1991), extraversion was not a valid predictor for training proficiency. His other findings were cocsistent with those of Barrick and Mount (1991).

Barrick and Mount (1998), evaluated their meta-analyses about the Big Five and concluded that there are two dispositional predictors to generalize the validity, the general mental ability and the conscientiousness. Their results indicate that in order to hire good performing people, the ones who work smarter and harder should be selected.

Furnham and Chamorro-Premuzic (2003) examined the relationships between personality, cognitive ability, Beliefs About Intelligence (BAI) and both of Academic Performance (AP) and Seminar Performance (SP). He found similar results. NEO-PI-R was applied to 93 undergraduate students, measuring Big Five traits. The results strengthen the evidence that personality predicts academic performance. Conscientiousness was positively and extraversion was negatively correlated with AP. The hierarchical regression results show that personality predicts AP, while explaining 20% of the variance in it, better than cognitive ability, BAI, and gender. Psychometric intelligence and BAI were not significantly correlated with AP. Secondly, gender, personality traits and cognitive ability were regressed on to BAI. Conscientiousness, extraversion and openness to experience significantly predicted BAI. The students having conscientiousness, introvert and openness to experience traits, believe that intelligence could be improved during the life. The BAI was correlated with AP. Finally, seminar performance, including behavior in class, absenteeism overall essay grades could be predicted more robust with personality. Of the big five, conscientiousness was found the most powerful predictor. Additionally, neurotism was one of the significant predictor of

absenteeism. To sum up, only conscientiousness predicts AP better than intelligence and introverts are more likely to get high grades.

Bunce and West (1995), however, examined whether conscientiousness is always positively correlated with job performance. Innovation in health services is found negatively and highly correlated with task orientation (-.37) and intrinsic job motivation which are related concepts to conscientiousness. Hough (2000) confirms the results of Bunce and West(1995) that the predictive value of conscientiousness is related to the criterion construct and the definition of conscientiousness. If conscientiousness is defined as conformity and socially prescribed impulse control, it cannot predict job performance across jobs and organizations in which creativity is needed.

In spite of these results, Salgado (2003) suggests choosing the FFM-oriented personality inventories. The personality inventories developed depending on Five Factor Model (FFM) have higher criterion related validities than others. Salgado, Moscoso and Lado (2003) measured the convergent and discriminant validity, using two personality inventories based on FFM, Hogan Personality Inventory (HPI) and Inventrio de Personalidad de Cinco Factores (Five factors Personality Inventory, IP/5F). The corrected converged correlations was between two tests, .51 for agreeableness and .85 for openness and the average corrected discriminant correlations is .30 which indicates high convergent and discriminant validity for two FFM based personality inventory.

Beside Five Factor Model, Roland and Fruyt (2003) analyzed the relationship between the maladaptive traits derived from DSM Axis II to predict negative emotions (anger, fear, sadness and shame) experienced at work in military personnel. They studied the validity of adaptive and maladaptive traits to predict four negative effects. However they found that the emotional stability of Five Factor Model better predicts the negative effects when it is compared to the maladaptive traits derived from DSM Axis II (i.e. borderline and avoidant).

1.2.4. The Importance of Ability Tests in PS

Some occupations or jobs require not only specific personality factors but some ability factors especially for pilots. General mental ability, cognitive ability, intelligence and aptitudes are related concepts (Cook, 2004). Because of the correlation between general cognitive ability and job and training performance (Brannick & Levine, 2002), cognitive ability measures are used in selection. They are categorized in three main areas: *Achievement tests,* assessing knowledge, *aptitude tests*, assessing knowledge acquirement ability and *general mental ability tests,* assessing the ability of understanding and using information (Caretta & Ree,1996).

Caretta, Rodgers and Hansen (1996) studied the characteristics that a successful pilot should have. They pointed out that in addition to personality, ability is needed for the success of a pilot. The personality characteristics of a pilot includes achievement motivation, aggressiveness, stress tolerance, risk taking, cooperativeness, assertiveness, leadership and decisiveness. Additionally, the ability factors are, situational awareness, memorization, reasoning, perceptual speed, time sharing selective attention, response orientation, spatial orientation, divided attention, psychomotor coordination, control precision and visualization. Caretta and Ree (2000) pointed out that the predictors of pilot performance are psychomotor ability, general cognitive ability and personality.

Siem (1992) mentioned that the pilot composite and the navigator composite of Air Force Officer Qualifying Test (AFOQT) includes measuring aptitudes for pilot training. Basic Attributes Test (BAT) is also used for measuring psychomotor coordination and information processing skills, time sharing abilities and personality traits. In the next part, AFOQT and BAT will be looked at more closely.

Olea and Ree (1994) made a comparison between the validity of psychometric g and specific ability or knowledge, s, by using different aptitude batteries (16 tests of AFOQT). The criteria was pass-fail scores of the flight training. The validity

coefficient of g was found .332 whereas the validity coefficient of s was .068, meaning g predicts pilot performance better. Caretta and Ree (1994) explained the correlation of psychomotor scores and flight training performance by the high correlation between psychomotor ability and general cognitive ability.

1.3. Psychology and the Military Personnel Selection

There is a mutually profitable relationship between psychology and military (Driskell 1989). When the historical development of psychology is analyzed its relationship to the military is not surprising. Military benefites psychology, and psychology in turn uses military as a laboratory in which many people can easily be reached. As a result of this interrelation between military and psychology, some areas such as aviation psychology, human factors and instructional technology were developed. Selection and classification, training and human factors are the main areas in which the psychology makes researches for military.

Wars have always been won by the combination of wisdom, power and faith not by the superiority of arms. The words of Sun-Tzu supports this idea; “if you do not know yourself and your enemy you are obliged to lose the war, if you know yourself but do not know your enemy you may win the war, if you know both yourself and your enemy you can win all the wars”. Psychology is the key for the one who tries to know himself and his foe. In 1600s, Gustav Adolpus emphasized the importance of the military tactics, planning and the coordination of the human resources, rather than the number of the soldiers. During and after the World War I, the application of psychological knowledge in the military accelerated. For example, in 1916 National Research Council (NRC) under the presidency of Robert Yerkes was established in order to render the scientific support to the war (Driskell, 1989). Yerkes is one of the most influential psychologists who rendered psychology into the military and with his colleagues he developed some methods in order to screen the recruits for mental deficiency and to assign selected recruits to army jobs. For this purpose the Army Alpha and Army Beta tests were developed (Aamodt, 1999). Army Alpha is for the literate soldiers and the Army Beta is for the illiterate ones. Also Walter Dill Scott who is regarded as the father

of I/O psychology studied the appropriate placement of soldiers in the army. With the end of the WW I, the psychologists began to leave military area and returned to the academia. But with the eruption of the World War II the inclusion of psychology into the military re-accelerated. And in the early 1940s, the Army General Classification Test was developed in place of Army Alpha Test. This newly formed test was applied to 12 million people during WW II. In 1950 the Air Force Qualifying Test (AFQT), which measures the personnel's acquiring capacity of military skills or ability to perform specific tasks, was applied (Krueger, 2003). And since 1976 Armed Services Vocational Aptitude Battery (ASVAB) has been used. This test consists of ten different sub-tests measuring various characteristics of candidates. The details of the subtests are given in **Table 1.1**. Until the study related to Project A, military used cognitive ability test to select the entry-level personnel.

The Army Research Institute (ARI) developed the Project A that is about the selection and the classification of personnel (Shields & Hanser, 1990). The Project A was conducted between 1981 and 1991 with a cost of $220 million but with a saving of $273 million for U.S. Army. By this project the U.S. Military Personnel Selection System has become better. When the military personnel selection systems of different countries (U.S.A, England, France, Germany, Israel, South Korea and Pakistan) are evaluated, among these systems, the system of U.S.A may be regarded as having a more advantageous position with respect to it's having a complete selection system. Since, a complete selection system, which originates from the industrial and organizational psychology, can measure the job appropriateness of a candidate from all aspects. These aspects are determined under two main factors; can do factor and will do factor. Can do factor measures the capacity and the ability of the candidate.

The sub-dimensions of can do factor are; knowledge, cognitive ability, psychomotor ability and physical fitness. Will do factor measures the willingness of the candidate about doing the job. Its sub-dimensions are: personality, job interest, attitude, values and mental health.

Table 1.1
ASVAB Subtests

ASVAB SUBTESTS	NUMBER OF ITEMS	DEFINITION
General Science	25	Knowledge of or about physical, chemical and life properties
Arithmetic Reasoning	30	Reasoning required to perform arithmetic processes
Paragraph Comprehension	15	Understanding of written material from brief paragraphs
Word Knowledge	35	The meaning of selected words
Numerical Operations	50	Knowledge of simple addition, subtraction, multiplication and division
Coding Speed	84	Ability to identify and match sets of numbers with words
Auto and Shop Information	25	Knowledge of familiarity with tools and shop practices
Mathematical Knowledge	25	Application of learned mathematics principles
Mechanical Comprehension	25	Understanding and application of various mechanical principles
Electronics Information	20	Identification or application of simple electric or electronics knowledge

1.4. Military Personnel Selection Systems

1.4.1. The Application of Military Personnel Selection System in United States Air Force Academy (USAFA)

The officer sources of United States Air Force are: Air Force Academy, Reserve Office Training Corps (ROTC), and Officer Candidate School (OCS), (Arabian, 1999). In addition to these sources, the Air Force also applies direct appointment system while taking officers. The Air Force Academy accepts students between the ages of 17-22 and gives opportunity to develop the knowledge, character, and motivation essential to the leadership, which is required to be successful in the military career. Air Force Academy offers four years of college education leading to a Bachelor of Science degree. After graduation, those commissioned are obliged to have active duty period of at least five years. The Reserve Officer Training Corps (ROTC) is a program which consists of nearly 475 Army, Navy, and Air Force units at public and private colleges and nationwide universities. ROTC is a traditionally four-year program. ROTC training consists of two to five hours of weekly military instruction and some summer training programs in addition to the regular college program. Upon graduation from college, the students will be commissioned as a second lieutenant or ensign in their respective service and incur an eight-year service obligation. Officer Training Schools are for college graduates. The percentages of officer accession by source and aptitude test and criteria used to screen officer candidates by program and service are presented in the **Table 1.2.**

Air Force Academy uses the whole person concept. The whole person concept is consisted of academics (Scholastic Achievement Test-SAT, American College Test-ACT, High School class rank) (60%), extracurricular activities (20%), admission panel rating (20%), interview, and physical fitness test.

Table 1.2
Officer Source Percentage

SOURCE	AIR FORCE	CRITERIA
Academy	19 %	SAT/ACT H/S/Rank
ROTC	42%	SAT/ACT H/S/Rank H.S. and College GPA AFOQT
OTS	10%	SAT/ACT College GPA AFOQT
Direct Appointment	19%	
Other	10%	

Reserve Office Training Corps uses a selection system that consists of high school grade point average, high school class standing, SAT or ACT score, Air Force Officer Qualifying Test (AFOQT).

The Officer Candidate School requires an achievement of a minimum score in the AFOQT. Then the qualified individuals are taken to the selection procedure. The selection committee considers these factors; college grade point average, AFOQT scores, college measure, work or military experience, and leadership potential. The factors do not have a weight formula. AFOQT is generally used in the selection and the classification of officers through ROTC and OTS. This test classifies the candidates under pilot and navigator jobs. The test includes 16 subtests an 5 composites. The composites are; verbal, quantitative, academic aptitude, pilot, and navigator-technical. The relationship between subtests and the composites is shown in **Table 1.3.**

In AFOQT the verbal and mathematical subtests measures the general cognitive ability (g). The reliability of the AFOQT is generally high (.69-.92) (Caretta & Ree, 1996). Ree and Sperl (1992) made a comparison between ASVAB and AFOQT. They suggested that the common point of these two tests is the measurement of g. In ASVAB all the subtests and in AFOQT the verbal and mathematical tests were found to measure the g factor. In AFOQT the explained variance by g was less than that of the ASVAB, the percentage is 41% and 64% respectively. But on the other hand AFOQT consists of a greater number of factors. And in order to increase the validity of the AFOQT, they suggested increasing the reliability of the test. The other suggestions were about the increment of the g saturation, the inclusion of job knowledge test and valid factors. They proposed that combining the psychomotor skills and temperament/personality with AFOQT would improve the validity (Caretta & Ree, 1996).

The Basic Attributes Test (BAT) is used for measuring psychomotor coordination, time-sharing abilities and personality traits in USAF (Siem, 1992). BAT consist of 6 experimental tests, namely Item Recognition, Encoding Speed, Mental Rotation, Time Sharing, Activities Interest Inventory and Self Crediting Work Knowledge. By using these tests, speed, accuracy of information processing, self-confidence, risk-taking propensity and the ability to perform two tasks simultaneously. The number of tests were increased afterwards (Ataman, 2000). Kantor and Caretta (1986) made a cross-validation study of BAT and found .18 correlation between pass-fail criteria of the flight training. Ataman (2000) listed the subtests of BAT which is presented in **Table 1.4.**

Table 1.3
Composition of AFOQT

	COMPOSITES				
SUBTEST	**Verbal**	**Quantitative**	**Academic Aptitude**	**Pilot**	**Navigator-Technical**
Verbal Analogies	X		X	X	
Arithmetic Reasoning		X	X		X
Reading Comprehension	X		X		
Data Interpretation		X	X		X
Word Knowledge	X		X		
Math Knowledge		X	X		X
Mechanical Comprehension				X	X
Electrical Maze				X	X
Scale Reading				X	X
Instrument Comprehension				X	
Bloc Counting				X	X
Table Reading				X	X
Aviation Information				X	
Rotated Blocs					X
General Science					X
Hidden Figures					X

Table 1.4
The Subtests of BAT (Ataman, 2000)

TEST NAME	ATTRIBUTES MEASURED	TYPES OF SCORE
1. Test Battery Introduction	Biographical information.	Age, gender: Previous flying Experience,
2. Two-Hand Coordination	Psychomotor coordination (rotary pursuit)	Tracking error
3. Complex Coordination	Time sharing-psychomotor coordination .(compensatory Tracking)	Tracking error
4. Encoding Speed	Reasoning (verbal)	Response time, response accuracy
5. Mental Rotation	Visualization	Response time, response accuracy
6. Item Recognition	Memorization (short term)	Response time, response accuracy
7. Time Sharing	Time Sharing	Tracking difficulty, response time
8. Self Crediting Word Knowledge	Verbal ability self confidence, self-assessment	Response time, response accuracy, bet
9.Activities Interest Inventory	Attitudes toward risk-taking	Response time, number of high risk choice
10. Aircrew Personality Profiler .	Extraversion, agreeableness, neuroticism, openness response	Response time response choice
11. ABCD Working	Memorization (working memory), reasoning (verbal), self- confidence.	Response time, response accuracy, confidence rating.
12. Anticipation	Visualization (dynamic spatial ability)	Tracking error
13. Pattern Recognition	Perceptual speed	Response time, response accuracy
14. Scanning and Allocating	Situational awareness, time sharing, divided attention, control precision	Tracking error number of control switches made

The NEO-PI and Assessment of Background and Life Experiences (ABLE) are used as personality tests in the selection of military cadets in US. ABLE, as a Temperament Inventory, is a product of Project A, which is developed for the US Armed Forces. (See **Table 1.5**) (Peterson, Hough, Dunnette, Rosse, Houston, Toquam & Wing, 1990).

Table 1.5
The Temperament/Bio data Scales in ABLE (Peterson, Hough, Dunnette, Rosse, Houston, Toquam & Wing, 1990)

Construct	Scale	Definition
Adjustment	Emotional Stability	Emotional stability and stress tolerance
Dependability	Nondeliquency Traditional Values Conscientiousness	Conscientiousness, disciplined, accepting of authority
Achievement	Self-esteem Work-orientation	Hard working, endorsing the work ethic, expect to succeed in future
Physical Condition	Physical Condition	Frequency and degree of participation in sports, exercise etc.
Leadership(Potency)	Dominance Energy level	The degree of impact, influence and energy one
Locus of Control	Internal control	The belief in the amount of control over rewards and punishments
Agreeableness/Likability	Cooperativeness	The degree of pleasantness versus unpleasantness in personal relationships
Response Validity Scales	Non-random Response Social desirability Poor impression, Self knowledge	For careless completion For fake good For fake bad For self-awareness

Hough, Eaton, Dunnette, Kamp and McCloy (1990) measured six temperament constructs, namely, surgency, adjustment, agreeableness, dependability, intellectance and affiliation with 205 items of ABLE in order to evaluate the background life experiences of the cadets. The results were controlled in terms of accuracy with the scales of social desirability, poor impression, self-knowledge and random responding. The relationship of all these scales with performance criterion, namely, core technical proficiency, general soldiering proficiency, effort and leadership, personnel discipline, physical fitness and military bearing were explored. The results indicated that temperament constructs and performance

criterion were significantly correlated. The surgency and achievement scales were associated with effort, leadership, physical fitness and military bearing. Dependability and agreeableness were related to personal discipline. Physical condition scale was correlated with physical fitness and military bearing criterion. ABLE does not predict technical proficiency criteria. Additionally, of the Response validity scales, only poor impression scale predicts several performance criteria. However they detected inaccurate self- descriptions well. To conclude, adding ABLE into the analyses as independent variable improves the criterion-related validity.

Pulakos, White and Oppler (1991) made a Path Model of Supervisory Job Performance Ratings by using ABLE (achievement orientation and dependability), ASVAB, awards, job knowledge, task proficiency, disciplinary actions and supervisor ratings. Trying to do the job better, having high standards and working hard represent achievement orientation factor of ABLE. Accepting authority, making plans, being well organized and disciplined refer to dependability factor of ABLE. Achievement orientation is directly related to Mental Ability (.11), supervisory ratings (.12), awards (.20), and dependability (.63). Dependability is directly related to disciplinary actions (-.22) and supervisor ratings (.15). Compared to a previous model, proposed by Hunter in 1983, which includes only job knowledge, ability, task proficiency and supervisor ratings, Borman et al. (1991)'s expanded model, in which ABLE, awards received and problem behaviours are added, explained more than twice the variance in ratings than Hunter's model.

1.4.2. The Importance of the Military Personnel Selection System in Turkish Air Force Academy (TAFA)

In Turkey the military is the largest employment area in the public sector. Today the military concept is the achievement of the establishment of a more functional military with small number of personnel. Therefore the importance of the selection of the qualified personnel is more important than ever before. In order to fulfil this

aim qualifications of the Turkish Armed Forces' (TAF) personnel should be determined. For this reason, TAF give special importance to the quality measurement of the personnel. Therefore, it is obliged to evaluate the intelligence and the physical capabilities of the military candidates using psychological tests. The validity and the reliability of these tests become important. If the measurement is not made properly, this may jeopardize the fulfilment of the aims of the Turkish Armed Forces, may waste the training resources, and may lead to the negative impacts in the personnel's future job performance.

TAF consist of five different Forces, namely Army, Navy, Air Force and Gendarmarie and Special Forces. The importance of the personality and the personnel selection in Turkish Air Force(TUAF) is both related with cost and human life. According to the Turkish Air Force Cost Analysis Book 1997, the cost of one F-16 fighter aircraft is 22,5$ million. And when the last 40 years' flight accidents are considered, it is seen that 80% of the accidents is resulted from human factor (Aircraft Accidents, 1998). Turkish Air Force, having in mind the importance of human factor, developed a complex and multi-staged selection system for Turkish Air Force Academy (TAFA).

1.4.2.1. The Application of Personnel Selection System in Turkish Air Force Academy

TAFA personnel selection system is designated to select the candidates who have desired cadet profiles. The main objective of the Academy is to train regular officers who have undergraduate level education according to the Service Academies Law and the Law of National Education. According to these laws, general profile of a regular officer is as follows:

- A morally, physically and mentally, developed personality and character
- Having leadership qualities,
- Knowledge about military science, technical and social sciences,
- Having the capability of being a leader who can meet the requirements of age in the Armed Forces.

- The ability of following the postgraduate education and of analyzing the national and international problems in the path of Atatürk's principles.

There are two basic candidate sources for TAFA: civil and military high schools' graduates. The civil candidates are expected to pass the national University Entrance Examination cut off points announced by TAFA. The selection system also consists of medical check-up, physical fitness test, various ability and personality tests, and three different interviews. The candidates are succesful in passing these stages are trained to fly a propeller-training plane. After this training, the successful candidates take basic military training. After passing all these stages, the candidate becomes a student in the academy.

The selection procedure of TAFA cadets having desired characteristics is presented in **Figure 1.**

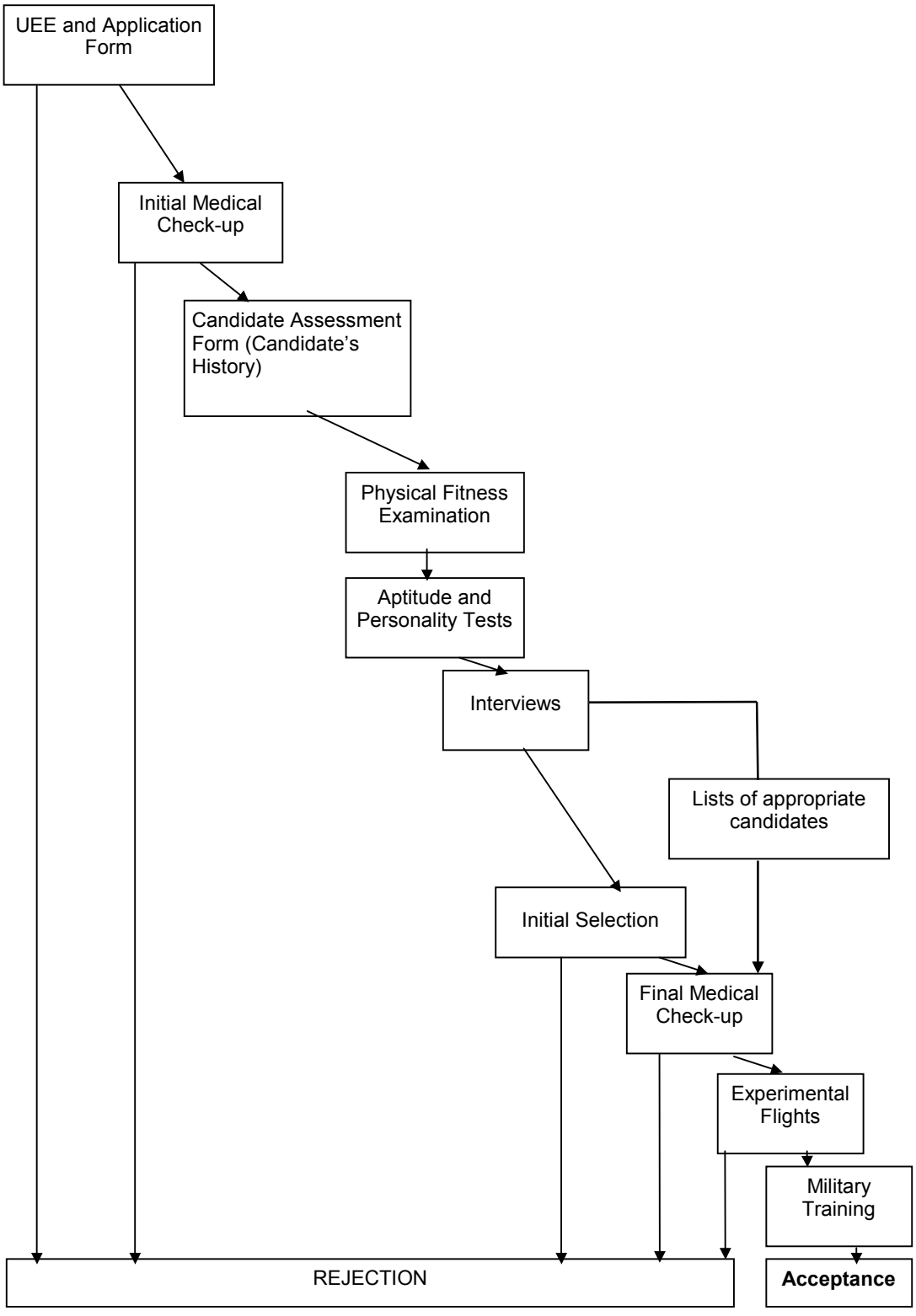

Figure 1.
Turkish Air Force Academy Student Selection Procedure (Bekmezci, 1999)

1.4.2.2. The Personality Test of Turkish Air Force Academy

In TAFA, 16 Personality Factors Questionnaire is used as the main personality test. 16 PF is designated in order to get information about an individual's personality factors, in other words individual's whole personality characteristics are modelled under 16 major factors (Cattell, Eber & Tatsuoka, 1970). The aim of the test is to collect data about candidate's personality prior to the interviews. However the test is not directly used for candidate elimination, rather it influences the final decision.

There are some criticisms about 16 PF, which are focused on the "plain English" descriptions. Saville and Blinkhorn (2002) studied the reliability and construct validity of The 16 PF. Especially L, M, N with C, O, Q4, which are factors related to anxiety, have poor validity. Moreover most factors are found to be homogeneous, meaning agreement among the subscales; although Cattell claims that the test is heterogeneous (Cattell et al, 1970). Mccranek and Tan (2004) examined the relationships between 16 PF and job performance among fire fighters, considering criterion related to validity. 16 PF's global factors' (e.g. extraversion, anxiety, independence, though- mindedness, self control) scores are compared with supervisor ratings. The results indicate that only though-mindedness scale is significantly related to job performance (r= .39).

As cited previously, the Five Factor Model (Big Five)'s personality traits are accepted world wide as a significant model. Cattell conducted factor analysis of 16 PF and derived 5 main factors namely Cattell's Big Five, which are the origins of Costa and Mc-Crae's Five Factor Model. It is also related to Goldberg's Big Five. The comparisons of different five factor models were presented in **Table 1.6.** The Big Five of Costa and Mc-Crae is broader than Cattell's Big Five. For detailed feedback or predictive purposes, it is claimed that using more specific factors like 16 PF predicts actual behavior better than global traits like Big Five. Because of the complicated interpretation of the 16 PF, 16PF 5, a revised form of 16PF becomes more popular.

Table 1.6
The Comparisons of Cattell's, Goldberg's and Costa's Big Five

Cattell	Goldberg	Costa
Introversion / Extraversion	Surgency	Extraversion
Low Anxiety / High Anxiety	Emotional Stability	Neuroticism
Tough-mindedness / Receptivity	Intellect	Openness
Independence / Accommodation	Agreeableness	Agreeableness
Low / High Self-Control	Conscientiousness	Conscientiousness

16 PF has been used since 1988 in TAFA selection process. The translations and validity studies were made by CANTEZ. But some translation mistakes were found and with the supervision of SANVER, who is still a major in Turkish Air Force. The test was translated into Turkish again and the mistakes were corrected. In this study, Turkish Norm Tables were computed in the second time. Finally the test was applied with computer instead of paper–pencil form, which decreases the time required for finishing the test and evaluating the personality profile of applicants. (SANVER, 2004, personal communication).

In 2002, a group of psychologist in TAFA made a form of criterion related validity study by comparing 16 PF results with discipline, academic score and the rank order of the cadets, computed by the composite score from all performance scores. The purpose of the study was whether successful and unsuccessful cadets could be differentiated by using personality profiles. Successful cadets have significantly high scores in B (more intelligent), G (conscientious), I (tender-minded), and Q2 (self-sufficient). After that, a cooperation score is computed based on the most successful 45 cadets. However no differences were found between the general profile and the successful profile of TAFA cadets (Human Resources Evaluation and Selection Seminar-HRESS, 2004).

Another study was conducted to explore the correlation between 16 PF score and interview scores during the selection process of TAFA cadets in 2003 which was presented in HRESS (HRESS, 2004). The results reveals that the cadets who pass the selection process and accepted to the TAFA have significantly higher scores in cooperation scores. Moreover, the successful applicants are significantly different

from failed ones in terms of A+, E+, F+, H+, and Q2-. This study confirms that 16 PF test predicts interview scores of the applicants. The 16 PF results were suggested to be used before the interview as a source of information for his personality. One of the main aims of TAFA is to train pilot candidates. The characteristics of the cadets should go hand in hand with pilot characteristics. However there is no agreement about the ideal pilot personality profile around the world. Therefore another project has been conducting since 2004 including job analyses and applying many personality tests (e.g. 16 PF, extraversion-introversion test, demographic data) by psychologist of TAFA. The results will provide information for evaluating selection criteria.

Table 1.7
Cattell's 16 Personality Factors

Factor	Factor	High Scorer	Low Scorer
PF1	A	Outgoing	Reserved
PF2	B	More Intelligent	Less Intelligent
PF3	C	Emotionally Stable	Affected by Feelings
PF4	E	Assertive	Humble
PF5	F	Happy-go-lucky	Sober
PF6	G	Conscientious	Expedient
PF7	H	Socially Bold	Shy
PF8	I	Tender-minded	Thought-minded
PF9	L	Suspicious	Trusting
PF10	M	Imaginative	Practical
PF11	N	Shrewd	Forthright
PF12	O	Apprehensive	Placid
PF13	Q1	Experimenting	Traditional
PF14	Q2	Self-sufficient	Group-tied
PF15	Q3	Controlled	Casual
PF16	Q4	Tense	Relaxed

1.4.2.3. The Psychomotor Test of Turkish Air Force Academy

The computer-based aptitude tests has been used since 1986 in TAFA which is purchased from British Royal Air Force. A work group measured validity and reliability of the tests and constituted Turkish norms (Bekmezci, 1999). Psychomotor test battery has three sub-tests, namely Sensory Motor Apparatus Test, Rapid Perception Test and Instrument Interpretation Test. Moreover, two ability test, vigilance test and digit recall test are used in TAFA.

Sensory Motor Apparatus Test measures hand-eye coordination. There are a flexible circle and a cross-hair on the screen. The candidate should keep the circle on the cross-hair in the middle of the screen by using a joystick and a rudder. The score is given by depending on the deviation from the cross-hair. The test-retest reliability is .66 (N= 472) and validity is .32 (N= 849).

Rapid Perception Test measures the ability to the perception of the situation and the ability to response to the situation. There are small red circles moving from top to down of the screen in a pattern like a river. The applicant should control the white circle with a joystick and keep the white circle on the red ones. The score is determined by the number of overlapped red and white circles. The test-retest reliability is .67 (N= 472) and validity is .33 (N= 849).

Instrument Interpretation Test measures rapid perception and interpretation. First, the candidate is explained six aircraft instrumentations (altimeter, artificial horizon, vertical speed, air speed, compass, turn & bank). Then, the candidate should interpret the aircraft instrument and decide among different positions, the correct position of the aircraft depending on the instruments. The test-retest reliability is .65 (N= 472) and validity is .25 (N= 849).

The ability tests used in Air Force Academy were taken from NATO Aircrew Selection Working Group (ACSWG) Two sub-test is evaluated in the selection process of TAFA, namely ; digit recall test and vigilance test.

Digit Recall Test measures short-term memory. A number digit appears on the screen for 5 seconds. The candidate is expected to remember the number and write it down to the empty boxes on the screen. The length of the strings ranges from 7 to 12 numbers. Response time and response accuracy determines the score.

Vigilance test measures divided attention and sudden decision making ability. There is a 9x9 matrix on the screen which is consisting of cells . Each cell is defined by its row and column coordinates. An asteroid (*) or an arrow (↑) appears on the screen. Asterix(*) represents routine tasks whereas arrow represents (↑) emergency tasks. The candidate is expected to cancel the asterix (*) with the mouse. When the arrow(↑) appears, the candidate should write the column and row coordinate of the arrow (↑) as soon as possible. The score is computed depending on the response time and successfully completed routine and emergency tasks.

Until 1998, there has been not a specific cut off score to eliminate the candidate depending of the psychomotor scores. The psychomotor scores were used for giving additional information to the decision making council. The maximum score of psychomotor tests is 180. After 1998, 80 is accepted a minimum overall score to pass the psychomotor measurement phase. A study group in TAFA made a research in order to determine a certain score for selection decisions. Based of pass-fail criteria of flight training school, the study group compared 1777 pilot candidates psychomotor and ability scores by Human Resources Center of TAFA (TAFA, 2004). It was found positive and significant correlation between the psychomotor scores and the percentage of the pilot candidates who pass the flight school. As the psychomotor scores increases, the percentages of passed candidates increase too. The candidate whose psychomotor score is between 20 and 60 could 56% be a pilot. Whereas likelihood of being a pilot is 89% of the candidates whose psychomotor scores are 150 or above. Moreover the mean of psychomotor scores of the most successful candidates completing the flight school is 107, the mean of the all candidates, completing the flight school is 90, and the means of the psychomotor scores of failed ones are 82. All the groups are significantly different

at the level of .001. Moreover, a significant correlation is found between the graduation note and psychomotor note ($\underline{r} = .23$, $p \leq .01$).

1.5. Turkish Armed Forces Personality Battery (TAFPB)

Military tasks are challenging and nerve-racking. Because of the need of both culture and job specific personality tests, Sümer et al. (2000) developed a Personality Battery for Turkish Armed Forces. While developing the test, as a first step, the job analysis was conducted in order to determine the required personality constructs for the officer selection. In this step, initially the job analytic interviews were done with 70 officers and 8 officers who voluntarily left the army. The interviewed officers were selected in an order that would represent the all forces, ranks, genders and specialty areas of the army. In other words the samples were representative for military. The interview was semi structured including 16 open-ended questions. The aim of the interview was to determine the routine and non-routine responsibilities of the officers, materials, tools, and equipments, work aids used and personality attributes. The content analysis of the interviews was done to identify the qualities required for the officer. Thus, it is aimed to clarify the ideal profile for the officer. Secondly, the validity of the 83 attributes that were determined as a result of interviews was measured. The attributes were asked to 447 officers in order to determine the degree of relevance and importance of each attribute. Principal Component Analysis analyzed the scores of relevance and importance study, and 5 major components and 18 sub-dimensions were found. These components are; conscientiousness/self-discipline, military factor (M factor), self-confidence, agreeableness-extraversion, and leadership. Conscientiousness explains 37% of the variance. M factor explains 4.51 % of the variance. Self-confidence explains 2.88% of the variance. Agreeableness-extraversion explains 2.86 % of the variance. Leadership explains 1.95 % of the variance.

The second step was the development of a personality test battery. In this step 279 items were developed for the 5 major dimensions. These items are tried to be expressed behaviorally, also the social desirability effect was taken into

consideration. The items were revised and reallocated in accordance with the previously established categories. So the items were decreased 242 in number and they constituted the pilot battery. The pilot battery is applied to 573 officers. As a result of the exploratory factor analysis of the data, it is concluded that the presumed sub-dimensions were not reached due to measurement problems, because there was inadequacy in the measurement of the majority of the sub-dimensions. In order to tackle this problem, the creation of new items in the coming phases of the project is decided. Then, confirmatory factor analysis was conducted to test the five-factor structure. The result of this analysis concluded that the 16 of the 18 sub-dimensions were loaded significantly on the expected factor. Agreeableness and risk-taking were found as non-significant and these factors were suggested to be eliminated.

As a third step, the revised inventory was applied to 698 officers in order to measure construct validity. As a result of this study 4 factors (conscientiousness/self-discipline, military factor, agreeableness-extraversion, and leadership) and 19 sub-dimensions were determined with exploratory factor analysis. The validity of this four-factor-model is done by comparing it with alternative models and using confirmatory factor analysis (LISREL 8.30). The four-factor-model is found statistically more significant than the alternative models.

As a fourth stage the convergent validity of the inventory is assessed and the norms are tried to be established. The participants were given both the Brief Symptom Inventory and the Turkish Armed Forces Personnel Battery. The internal consistency was found satisfactory (.70-.88) and the dimensions were found to be significantly correlated with each other. The correlation between TAFPB and BSI showed the existence of convergent validity.

As a fifth stage the study of criterion-related validity assessment is conducted. The first commanding officers evaluated the performance of 257 officers by performance evaluation forms that were developed by the project team and by an overall performance dimension that has 10-point scale. The correlations between

the TAFPB and performance measures showed that the 11 sub-dimensions were significantly correlated with both performance measures. 269 officers who filled out the inventory twice with 3 weeks intervals measure the test-retest reliability. The test-retest reliability ranged from .62 to .74 for 19 sub-dimensions. As a result of this study the conscientiousness ($\underline{r} = .22$, $\underline{p} \leq .01$) and leadership ($\underline{r} = .22$, $\underline{p} \leq .01$) are found to be significantly correlated with overall performance measures and only the conscientiousness was found to have predictive power ($\beta = .20$, $\underline{p} \leq .01$).

At the end of this 5-staged study, the TAFPB is found as a reliable and valid tool for personnel selection (Sümer et al., 2000). The main and Sub-factors of TAFPB were presented in **Table 1.8.**

Table 1.8
The main and sub-factors of TAFPB

No.	Sub-factors of TAFPB	Nbr of Quest.	No.	Sub-factors of TAFPB	Nbr of Quest.
1.	Military Spirit	10	11.	Openness to Experience	10
2.	Discipline	10	12.	Superior Relations	10
3.	Orderliness	10	13.	Social Extraversion	10
4.	Strength of character	10	14.	Sociability	10
5.	Group management	10	15.	Work Discipline	10
6.	Persuasiveness	10	16.	Planning	10
7.	Decisiveness	10	17.	Self-esteem	10
8.	Decision Making	10	18.	Monitoring Task Progress	10
9.	Problem Solving	10	19.	Communication	10
10.	Stress Tolerance	10		**Total Question Number**	**190**
No	**Main factors of TAFPB**	**Nbr of Quest.**	**No**	**Main factors of TAFPB**	**Nbr of Quest.**
M1	Military	50	M3	Agreeableness-Extraversion	30
M2	Leadership	70	M4	Conscientiousness	20

1.6. The Purpose of the Present Study

Today the personality tests used in the Turkish Air Force Academy are west originated. So not the original tests but their translations are being applied. It is supposed that the translations are open to mistakes or more affiliated to depart from the original's intentions. Moreover translations require long term and detailed statistical studies. Cantez made the statistical study about the validity and the reliability of the 16 PF tests that is being used in Turkish Air Force in 1985. And since 1985 there has not been made any additional study for this purpose. Although the 16 PF is a popular test, it is not originally prepared for Turkish Air Force. In other words it is not culture and job analysis oriented. For many years there have been scholars advocating the development of personality tests which are independent from culture, but when the academic literature is scrutinized the opposite argument gains more support. It may be argued that a more culture-

oriented test is required in the selection of TAFA candidates. Job analysis is the base of selection procedures showing the relationship between the selection procedure and the job. The aim of personnel selection is to select the individuals having higher performance. Job performance has a multi-dimensional nature (Campbell, 1990). These dimensions should be determined by job analysis (Viswesvaran & Ones, 1990). The dimensions were distinguished as task performance and contextual performance (Borman & Motowidlo, 1993). It is assumed that soldier effectiveness involves more than just performing the assigned job duties effectively, because there exists other elements contributing to soldier effectiveness and they are measured by contextual performance (Borman & Motowidlo, 1993). Personality is more related to contextual performance than task performance (Motowidlo & Scatter, 1994). So the personality oriented job analysis is more likely to guess the knowledge, skill, ability and other attributes needed for the performance. Military tasks are challenging and nerve-racking. Because of the need of both culture and job specific personality tests, Sümer et al. have prepared a Personality Battery for Turkish Armed Forces. The TAFPB aims to determine an ideal officer profile, and the aim of the TAFA is also to select ideal candidates who will become the officers of Turkish Air Force. So there is a commonality between the aims of TAFPB and TAFA. Starting with this point, the aim of my thesis is to find out whether the TAFPB could be used in the cadet selection phase of TAFA by examining the reliability and validity of the test for Air Force cadets.

1.7. Hypotheses of the study

Validity of the test is defined whether the test measures what is intendended to be measured (Mueller, 1986; Litwin, 1995). The hypotheses were drown from the literature, in order to measure criterion, convergent and construct validity.

1.7.1. Personality- Performance Relationships (Criterion Related Validity)

Criterion related validity explains whether the test predicts performance (Cook, 2004).

1.7.1.1. Personality and Academic Performance (AP) Relationships

TAFA is also a type of university which gives industrial, electronic, computer and aircraft engineering programs to the cadets. Therefore Academic Performance (AP) is indispensable to measure measure TAFA cadets performance. Additionally, Roth, BeVier, Switzer III and Schippmann (1996) pointed out that Grade Point Average (GPA) predicts future performance significantly (.32). Conscientiousness predicts AP better than intelligence and introverts are more likely to get high grades (Furnham, Chamorro-Premuzic & McDougall, 2003). Leadership is also expected to be negatively correlated with AP because of the high relationship between leadership and extraversion (Thomas, Diakson & Bliese, 2001). The study results of Duff, Boyle, Dunleavy and Ferguson (2003) reveals that of the five factor, conscientiousness has the strongest correlation with AP (r = .14). Furnham and Chamorro-Premuzic (2003) considered the role of individual differences on academic performance especially for statistics examination grades (SEG). The relationship between personality, measured by NEO-FFI and two SEG of 91 undergraduate students was evaluated. SEG were positively correlated with conscientiousness as expected, reminding work ethic, dutifulness and need for achievement, whereas extraversion and SEG relationship was negative. Neurotism was not significantly associated with SEG. Agreeableness was not included to the analysis, because it is not theoretically and empirically related to SEG. It confirms that personality predicts AP. In homogenous samples with high levels of intelligence, personality differences become more necessary in order to select higher performer, although the personality and intelligence interactions are not clear and absolute. Furnham et al.(2003) were more close to the approach of the orthogonal constructs of personality and intelligence, meaning that they are uncorrelated. Additionally, the study of McIlroy and Bunting (2002) has consistent results indicating that conscientiousness is significantly related to the test performance of undergraduate psychology students.

H1: Personality is significantly correlated with AP.
H1a: Extraversion is negatively correlated with AP.

H1b: Conscientiousness is positively correlated with AP.

H1c: Leadership is negatively correlated with AP.

H1d: Openness to experience is positively correlated with AP.

H1e: Neurotism is negatively correlated with AP.

1.7.1.2. Personality and Sport Performance (SP) Relationships

An ideal officer is expected to be fit and sportive. Therefore Sport Performance (SP) is another important criteria. Examining personality and SP relationship, it is realized that successful athletes have extravert dispositions.

McNeill and Wang (2003) explored whether psychological profiles affect success in sport, while comparing 121 secondary-school students motivation and goal orientation profiles. Elite sport players refered to highly motivated group, having moderate task orientation (task improvement) and high ego dispositions (winning and outperforming than others). Highly motivated students saw sport as an opportunity for gaining social status, which reminds leadership and extraversion. Whereas motivated students were likely to associate sport with being a good citizen which reminds conscientiousness.

Ingledew, Markland and Sheppard (2003) investigated the mechanisms of personality and exercise behavior links, applying NEO Five Factor Inventory and exercised self-determination scale to 182 individuals in a sport centre. Exercise behavior is self-determined by the extravert and conscientious people because of satisfying different needs. For example, extraverts are able to feel socially participative.The extravertion and exercise behaviour relationship is consistent with present study. Conscientious individuals may feel themselves more competent.

Rhodes, Courney and Jones (2003) found a relationship of activity trait (e.g. active, energetic and competitive) with exercise intention and behavior, suggesting that personality should always be considered by exercise practitioners. Activity

trait explains 1% of the variance in predicting intention and 4% of the variance in exercise behavior.

The effect of self-esteem and self-handicapping on physical performance is examined by Richards, Johnson and Wood (2001) with 353 recruits, during the military recruit training. Self-handicapping refers to externalize failure and internalize success. Using discriminant function analysis, 92% of the recruits that passed the training, could be accurately predicted. In addition to that, self-handicapping and self-esteem inferences provided 58.8 % accurate prediction in the recruits, who withdrew voluntarily. Considering the strong relationship between self-esteem and leadership, it was expected that the cadets, who were successful in sport posses high leadership characteristics as found in present study.

Beside these analyses, Hausenblas, and Giacobbi (2003) stressed the role of personality on exercise behavior and exercise dependence. The excessive amount of exercise behaviors, which had negative outcomes, are named as exercise dependence. The correlation between exercise dependence and extraversion ($r = .11$, $p \leq .05$) and neurotism ($r = .15$, $p \leq .01$) is positive and significant. In contrast, agreeable students show fewer exercise dependence symptoms. ($r = -.16$, $p \leq .01$).

H2: Personality is significantly correlated with SP.
H2a: Extraversion is positively correlated with SP.
H2b: Leadership is positively correlated with SP.
H2c: Neurotism is negatively correlated with SP.

1.7.1.3.Personality and Flight Performance Relationships

The main objective of TAFA is to train cadets who are candidates of pilot. Therefore flight is another important criteria. Flight performance could be predicted by intelligence, personality and psychomotor ability (Rose, 2001; Kantar & Caretta, 1988; Ataman, 2000; Kale, 2004).

Jessup and Jessup (1971) found that Eynseck Personality Inventory (EPI) predicts the performance of flight training depending on failure rates during the flight. Individuals who were introvert and neurotic make the highest rate of failure, whereas introvert and stable ones had the lowest failure rate. Assertiveness was also found significantly related to pass-fail scores of flight training. Additionally, Bartram (1995) applied EPI and 16 PF in order to determine which traits differentiate pilot training applicants and cadets from the general population. The results of 16 PF revealed that people who were more extravert, less anxious, more though minded and more independent were significantly more likely to be selected for the military flight training. EPI results indicated similar results that military flight training applicants were more extravert and stable, which was a function of the self-selection characteristics of the applicants. The predictive validity of tests ranged from .20 to .30.

Also, the Handbook of 16 PF (Cattell, Eber, & Tatsuoka, 1970) proved that ideal pilots are high ego strength, parmia, shrewdness, high dominance and self-sufficiency, low superego and self-sentiment and low on ergic tension-Q4, guilt proneness (O) and protension (L) and are harric rather than premsic(I) in temperament. The combinations of these traits represent high reality and emotional stability under stress. When the whole profile was examined, pilots have high morale and social dependability aquared from the combination of high superego and self-sentiment scores. Another interesting point was that military pilot cadets had similar profiles with the civil airline pilots except for former have higher dominance, self-sufficiency and lower superego and self-centiment traits.

Another study is conducted by comparing the personality of successful and failed pilot candidates in Turkish Flight Training School (HRESS, 2004). 16 PF is applied successful and pilot candidates. The factors of C-stress tolerance, E–dominance, I-sensivity, M- practicality, N-egoism, O- self esteem, Q1- openness to experience, Q4- tense are significantly different in two groups. A pilot should perform different complex time simultaneously in limited time (Kale, 2004). In an emergency situation, pilot should make quick decisions, whether the problem could be solved or whether to eject (remove from the aircraft). Sometimes the time to make decision should be fewer than 3-4 seconds. Due to the fact that, problem

solving, decision making, decisiveness and psychomotor ability seem necessary for flight performance.

H3: Personality is significantly correlated with FP.
H3a: Extraversion is correlated with FP.
H3b: Stress tolerance is positively correlated with FP.
H3c: Leadership is positively correlated with FP.
H3d: Decision-making is positively correlated with FP.
H3e: Decisiveness is positively correlated with FP.
H3f: Self-esteem is positively correlated with FP.
H3g: Problem solving is positively correlated with FP.
H3h: Psychomotor ability is significantly correlated with FP.

1.7.1.4. Personality-First Commander Evaluations(CE, a type of supervisor ratings) and Military Scores (MS, a type of leadership ratings) Relationships

TAFA is a military school. First commanders evaluate cadets general performance and give a score of Commander Evaluation (CE). Moreover, they give Military Score (MS), including military culture, individual development and close order drill. CE is a type of supervisor ratings and MS is a type of leadership rating. Because of the specific objective of TAFPB, selecting ideal officer, all main factors of TAFPB is expected to be significantly correlated with CE and MS. Leaders possess some personality traits, which differentiate them from other people (Judge, Bono, Ilies & Gerhart, 2002). A high correlation between Five Factor Model and leadership was found (.48). The relationships of five factors with leadership were neurotism= -.24, extraversion = .31, openness to experience = .24, agreeableness = .08 and conscientiousness = .28. The highest correlation between extraversion and leadership reveals that extraverts are more likely to be leaders.

Stricker and Rock (1998) analyzed the relationships between personality traits (dominance, emotional stability, need for Achievement, self-confidence, and

sociability) and leadership that are measured by Military Performance Grades (MPG) of 233 US Naval Academy cadets. Except self-confidence, all traits were correlated with leadership criteria. The correlations of Need for Achievement scales and sociability scales with MPG were moderately, respectively .21, .20. The dominance scale was correlated significantly but slightly with MPG. The combination of five scale scores with MPG is .31 that was moderate. In general, sociability (.28) and self-confidence scales found more valid predictors of general leadership's criteria.

Another study exploring the relationship between leadership and personality was made by Bradley, Nicol, Charbonneau and Meyer (2002) by using 174 Canadian Forces Officer Candidates as the sample. Instructors' rate and Basic Officer Training Cource (BOTC) final grades were DV's, which are significantly predicted by internal control and dominance. Four years later, personality traits of cadets were compared with the leadership scores again. It was found that personality factors were especially dominance, energy level and internal control are correlated with leadership development in the military.

Aiming to validate NEO Personality Inventory Furnham, Crump and Whelan (1997) conducted a study depending on supervisory ratings of managerial capability of 160 people. Overall, results indicated that conscientiousness and extraversion scores were the most significant determinants of individual's managerial characteristics measured by supervisory ratings. Similarly, Piedmont and Weinstein (1994) proposed that conscientiousness was significantly related to supervisor evaluations. Low neurotism and high extraversion predicted high supervisor ratings reflecting high performance.These results were reinforced by many studies in literature (Mount, Barrick & Strauss, 2002 ; McCrae & Costa, 1987).

H4: Personality is significantly correlated with MS and CE.
H4a: Extraversion- Agreeableness is correlated with MS and CE.
H4b: Leadership is positively correlated with MS and CE.
H4c: Conscientiousness is positively correlated with MS and CE.

H4d: Military factor is positively correlated with MS and CE.

H4e: Self-esteem is positively correlated with MS and CE.

H4f: Discipline is positively correlated with MS and CE.

1.7.2. TAFA and BSI relationship (Construct Validity)

All TAFA cadets are expected to be psychologically healthy. BSI, developed by Derogatis (1992), is used to measure psychological symptoms. It is expected that all BSI factors are negatively correlated with TAFPB. High scores in TAFPB indicate low psychological symptoms. The study of Sümer et al. (2000), in which TAFPB and BSI scores are compared with a sample of 1111 officers revealed that the officers having high scores in TAFPB is expected to show less psychological symptoms.

H5: All BSI sub factors are negatively correlated with 19 sub factor and 4 main factor of TAFPB

1.7.3. TAFA and 16 PF relationship (Convergent Validity)

16 PF is the personality test which currently used in the TAFA selection system. It is expected that TAFPB and the related factors of 16PF measure similar things. Cattell et al (1970) suggest that administrators and airline pilots should have above- average ego strength. Low ego strength is preferred for occupations, not demanding sudden adjustments (e.g. clerks, postmen). Cattell et al.(1970) measured and evaluated dominant personality factors of different occupations. Airmen cadets get very high mean scores on PF 4 (assertive-humble) and PF 7(H; socially bold-shy), respectively 9.2 and 9. PF2 (B; more-less intelligent), (7.8), PF3 (C; emotionally stable-affected by feelings) (7.5) and PF16 (Q4; tense-relaxed), (.6) results are high too. Additionally, airmen cadets profile are similar to pilots. 16 PF factors cited above is expected to be correlated with related factors of TAFPB.

Bartram (1995) applied Eynseck Personality Inventory (EPI) and 16 PF in order to determine which traits differentiate pilot training applicants and cadets from the general population. The results of 16 PF revealed that people who are more extravert, less anxious, more though minded and more independent were significantly more likely to be selected for the military flight training. EPI results indicated similar results that military flight training applicants were more extraverts and stable The results indicates that 16 PF and EPI factors are converging.

It is widely accepted that the Five Factor Model (Big Five)'s is a significant model in selection.(Mount & Barrick, 1998). TAFPB factor model includes five factor in addition to military and leadership factors. Cattell conducted factor analysis of 16 PF and derived 5 main factor namely Cattell's Big Five, which are the origins of Costa and Mc-Crae's Five Factor Model. It is also related to Goldberg's Big Five. The comparisons of different five factor models ,presented in **Table 1.6,** indicates that Cattell's Big Five and other Five factor models are related.

H6: TAFPB and 16 PF are related.

H6a: Military and 16 PF are related.

Military and self-esteem are positively related.

Military and anxiety are negatively related.

Military and nervousness are negatively related.

Military and control are positively related.

H6b: Leadership factor and 16 PF are related.

Leadership and self-esteem are positively related.

Leadership and anxiety are negatively related.

Leadership and nervousness are negatively related.

Leadership and control are positively related.

Leadership and independence are positively related.

Leadership and extraversion are positively related.

H6c: Extraversion and 16 PF are related.

Extraversion and self-esteem are positively related.

Extraversion and anxiety are negatively related.

Extraversion and nervousness are negatively related.

Extraversion and independence are positively related.

Extraversion and extraversion are positively related

H6d: Conscientiousness and 16PF are related.

Conscientiousness and anxiety are negatively related.

Conscientiousness and nervousness are negatively related.

Conscientiousness and control are positively related.

Conscientiousness and independence are positively related.

CHAPTER 2

METHOD

2.1 Participants and Demographic data:

This study consisted of 698 male and female, first, second and third year cadets of Turkish Air Force Academy. A total of 51 case were deleted because there were 10 missing data, 30 univariate outlier, 9 multivariate outlier and 2 hidden outlier. The data of 647 participants were analysed. The demographic characteristics of the cadets were explained respectively. The numbers given in the parentheses are the proportions in the sample of 647 participants.

Gender: The sample used for the analysis consisted of 633 male and 14 female cadets. 97.8% of the sample is male and 2.2% is female.

Department: 130 cadets (20.1%) were in aircraft engineering department, 196 cadets (30.3%) were in industrial engineering department, 127 cadets (19.6%) were in computer engineering department and 194 cadets (30%) were in electronic engineering department.

Class: Of 647 cadets, 182 cadets (28.1%) were in Class 1, 238 cadets (36.8%) were in Class 2, 227 cadets (35.1%) were in Class 3. The test could not be applied to cadets in Class 4 because of their initial flight training.

Income level of family: The incomes of the cadets family were as follows.
Very low: 7 (1.1%), low-medium: 73 (11.3%), medium: 456 (70.5%), medium-high:103 (15.9%), high: 3 (.5%). 5 case have missing data.

The educational levels of mothers: The mothers of cadets educational levels were as follows.

No education: 33 (5.1%), elementary school: 279 (43.1%), secondary school: 69 (10.7%), high school: 161 (10.3%), university or higher: 103 (15.9%)

The educational levels of fathers: The fathers of cadets educational levels were as follows.

No education: 9 (1.4%), elementary school: 165 (25.5%), secondary school: 62 (9.6%), high school: 194 (30%), University or higher:215 (33.2%)

2.2. Instruments

2.2.1. Demographic Data Sheet

Turkish Air Force cadets will be asked their name, ID number, gender, age, source, class, department, their mother's and father's education.

2.2.2. Personality Scales

Turkish Armed Forces Personality Test (Sümer et al., 2000) is developed in order to select officers recruited from outside sources in the Turkish Armed Forces. It has 190 questions measuring four main factors and 16+3 sub dimensions. It is a 5-point scale.

Brief Symptom Inventory (BSI) (Derogatis, 1992) measures psychological symptoms. BSI is adapted to Turkish culture by Sahin and Durak in 1994. Participants will be asked to their psychological symptoms levels on 4-point scales. The internal reliability of subscales are ranged from .71 to .85. All scales are correlated with each other. The BSI consists of 53 items measuring 9 clinical dimensions and four independent items .

16 Personality Factors Questionnaire is used as the main personality test in TAFA. Also it is one of the widely used model describing personality around the world. 16 PF is designated to get information about an individual's personality factors, in other words individual's whole personality characteristics are modelled under 16 major factors (Cattell , Eber & Tatsuoka, 1970). 16 PF scores of the students were derived from the data base of TAFA. 16 PF was applied during the selection process. So all the applicants had scores on 16 PF.

2.2.3. Performance criterion

Performance is multivariate in nature (Campbell, 1990). Therefore different performance criterion were used. Academic Performance (AP) represents cadets' achievements in engineering programs. Taken from the database of TAFA, verbal scores, numerical scores, mathematic scores, map scores and mean 1 of all cadets are the scores got in first class. The last year's academic scores is Mean 2. Sport Performance (SP) represents the physical performance of cadets measured by sport teachers in TAFA during the first class. It is a mean score of different sport activities evaluation including, 400-meter run, long, jump and push-up in order to determine their physical fitness. Flight Performance (FP) consists of flight knowledge and experimental flight training (OSU) graduation scores. The applicants were expected to pass the theoretical lessons and after 14 hour flight training with an instructor pilot, to flight solo with T-41 D, a kind of propeller training plane. In some years, flight training was only 7 hours because of time limitations or the high number of student pilots. In that circumstance, they do not flight solo. At the end of the last flight, regardless of their flight hour, the applicants were given a final scores, namely experimental flight training (OSU) graduation score, representing their flight ability. Both, Military Score (MS) and Commander Evaluation (CE), are given by the students first line commander. Military scores are a kind of leadership scores that consists of the evaluations of military culture, individual development and close order drill. Commander evaluation is made depending on how much the cadet possess the main desired characteristics listed as Kemalism, honesty, self-esteem, agreeableness, motivation, discipline, etc.

2.2.4. Interview

Three different interview is applied to each applicant. Psychological interview, which is an unstructured interview, is made by a wing commander, a faculty staff and a psychologist. Group interview is made in order to evaluate the interaction between cadets by discussing a given topic by the same interviewer. Finally School commander and commanders are decide to pass or fail of the cadets in decision making interview. The interview scores, used in this thesis, are decision making interview scores (Bekmezci, 1999). Only Class 1 interview scores were avaible in TAFA. For this reason, only Class 1 interview scores were used in this study.

2.2.5. Psychomotor scores

The aim of psychometric assessment is to determine the appropriateness of the candidate to be a pilot by using aptitude tests. Computer based aptitude tests are used since 1986, which is taken from British Royal Air Force (Bekmezci, 1999). There are five sub-tests in the psychomotor ability test battery namely sensory motor apparatus test, rapid perception test, instrument interpretation test, digit recall test, vigilance test. Sensory motor apparatus test measures hand-eye coordination. Rapid perception test measures the ability of the perception to the situation and giving response. Digit Recall test measures the short-term memory. Vigilance test measures the ability of to response to the routine and emergency tasks (Ataman, 2000).

2.3 Designs and Procedure:

First examination of the TAFPB was conducted by two researchers. The questions were examined whether the items were appropriate to the cadets or all the items were caught on by the cadets. After the necessary permissions taken, the aim of the study was explained to the cadets and the TAFPB and BSI was given at the same time with demographic data sheet. 16 PF scores were taken from the database of TAFA.

Next descriptive statistics and correlations were examined. Means, standard deviations, minimum and maximum scores and the sample size for each variable were reported. Then the intra-correlations of demographic data, TAFPB, BSI and 16 PF are evaluated.

Validity is defined as how well a survey or index measures what is intended to measure. Face validity, content validity, criterion-related validity, convergent validity and construct validity were examined. Face validity and content validity were evaluated in the discussion part.

Criterion-related validity demonstrates whether the results from the test scores predict performance of cadets or not. It was measured by comparing the mean of academic scores, sports scores, military training scores, flight scores and the overall evaluation of the first line commander of the cadets with TAFPB scores. Then standard multiple regressions were conducted to determine the explained variance by demographic variables, TAFPB, BSI and 16 PF. Additionally, psychomotor ability scores were included into some regression analyses as IV (see **Figure 2).**

Convergent validity is measured via comparing an instrument with the results of other instrument measuring the similar construct (McIntire & Miller, 2000). TAFPB, BSI and 16 PF results were compared.

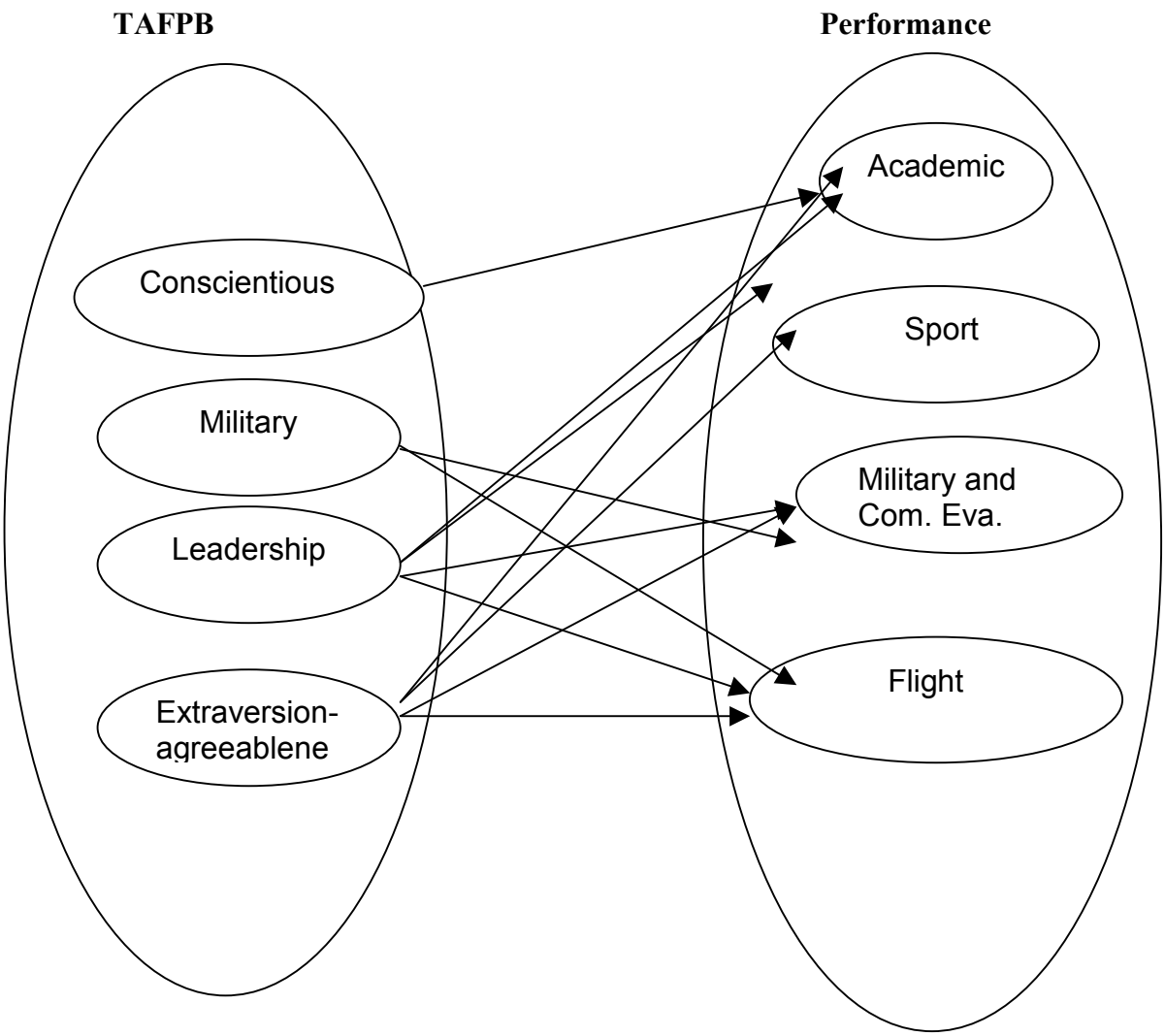

Figure 2.
The model of performance and TAFPB factor relationship

CHAPTER 3

RESULTS

3.1. Screening Data

Prior to analysis, accuracy of data entry was checked for the items of each subscale and demographic variables separately by using SPSS Frequency table showing max-min scores. 10 cases were deleted because of missing data. Then total scores of the 19 sub factors and 4 main factors for TAFPB and 10 sub factors for BSI were calculated, by dividing the sum of items into the item number of that scale.

Some variables were slightly negatively distributed. Linearity and nonlinearity were diagnosed from the shape of SPSS scatter plot. There was a linear relationship between scales, because the shape of the scatter plots was oval. In addition, residual analysis was used. Residual scatter plot was rectangular in shape, which indicates that there was linearity. Homoscedasticity is related to linearity and normality. According to scatter plots, all of the scales were homoscedastic. Next, depending on extreme $\underline{z}$ scores, $\underline{z} \leq -3.29$ and $\underline{z} \geq 3.29$, 30 case were deleted because of being univariate outlier. Additionally, 9 multivariate outliers and 2 hidden outliers were deleted. Multivariate outliers were examined through Mahalanobis distance scores, χ^2 (23, N=658) = 49.728, $\underline{p} \leq .001$ was critical. The data of 647 participants were analysed. Multicollinearity and linearity were tested by using regression. Tolerance values were controlled. They were high enough.(T > .10). VIF scores were not greater than 4. Criteria for multicollinearity is condition index >.30. There was not any value greater than .30. There was not multicollinearity and linearity.

3.2. Descriptive Statistics

Descriptive statistics of DV's and IV's were examined. **Table 3.1 and Table 3.2** represents the means, standard deviations, minimum and maximum scores and the sample size for each variable. All of the means of 19 sub factors and 4 main factors were greater than midpoint 3 of 6 point Lykert-type scale.

3.3. Correlations of IV's and DV's

Then, bivariate, Pearson correlation coefficients and correlation matrixes were analysed in order to find the relationships between variables. In **Appendix A**, correlation coefficients were computed among the 19 sub factors of TAFPB, showing means and SD's. All of the correlations among subfactors of TAFPB were significant at the level .01. The highest correlations were determined between work discipline and planning ($r = .658$, $p \leq .01$), group management and self-esteem ($r = .678$, $p \leq .01$), and self-esteem and persuasiveness ($r = .669$, $p \leq .01$). The means and correlation matrixes were compared with the results of Sümer et al. (2000) and Kale (2004), who were applied the TAFPB too. Results were consistent among three studies. Additionally, the lowest mean scores were discipline and stress tolerance in all studies. The comparisons of the means and SD's of 3 study were presented in **Table 3.4**. The consistency of the results is a good evidence for psychometric quality of the TAFPB. Although, the studies were applied to different groups in military meaning, present study applied to TAFA cadets, Sümer et al.(2000) applied the test to a wide group of Navy, Army, Air Force and Gendarmerie Officers and Kale (2004) used Army pilots as sample, correlations patterns among subscales remained the same.

Table 3.1
Descriptive Statistics of Dependent Variables

	N	Minimum	Maximum	Mean	Std. Deviation
1. Dependent Variables					
a. Performance Variables					
Sport	670	10,00	100,00	69,708	14,308
Flight	107	66,24	92,44	79,937	5,496
Commander Evaluation	679	65,00	100,00	83,390	7,549
Verbal	573	34,00	98,00	83,194	6,233
Numerical	670	27,50	98,50	64,287	11,797
Military	679	51,33	92,33	78,969	4,625
Mean2	680	1,09	4,00	2,690	,491
Mean1	666	1,09	3,93	2,689	,496
b. BSI					
Somatization	677	1,00	4,43	1,546	,517
Obsession	679	1,00	4,83	2,126	,604
Sensitivity	677	1,00	5,00	1,964	,678
Depression	676	1,00	5,00	1,773	,598
Anxiety	676	1,00	4,00	1,630	,563
Hostility	671	1,00	4,60	2,038	,713
Fobic Anxiety	674	1,00	4,80	1,528	,528
Paranoid Thinking	676	1,00	4,40	2,135	,647
Psychotism	676	1,00	4,60	1,784	,572
c. 16 PF					
PF1(outgoing-reserved)	655	1,00	10,00	5,997	2,111
PF2(more-less intelligent)	655	1,00	10,00	6,037	2,009
PF3 (emotionally stable-affected by feelings)	655	1,00	11,00	5,985	1,968
PF4 (assertive-humble)	655	1,00	10,00	5,921	2,057
PF5 (happy-go lucky-sober)	655	1,00	11,00	6,568	2,095
PF6 (conscientious-expedient)	655	1,00	10,00	6,089	2,066
PF7 (socially bold-shy)	655	1,00	10,00	6,440	2,118
PF8 (tender-minded-thought-minded)	654	1,00	10,00	5,547	2,006
PF9 (suspicious-trusting)	655	1,00	11,00	5,638	1,906
PF10 (imaginative-practical)	655	1,00	10,00	5,678	2,095
PF11 (shrewd-forthright)	655	1,00	10,00	5,757	1,977
PF12 (apprehensive-placid)	655	1,00	11,00	5,402	1,911
PF13 (experimenting-traditional)	655	1,00	10,00	5,548	1,943
PF14 (self-sufficient- group-tied)	655	1,00	10,00	5,070	1,955
PF15(controlled-casual)	655	1,00	10,00	6,119	1,935
PF16 (tense-relaxed)	655	1,00	12,00	5,348	1,773
Leadership	604	,44	10,77	6,425	1,781
Self-esteem	604	,22	11,17	5,500	1,709
Anxiety	604	1,18	10,32	5,130	1,696
Cartertia	604	,58	10,42	4,846	1,788
Control	604	,23	10,76	6,227	1,988
Independence	604	,62	11,30	5,901	1,906
Extraversion	604	,95	11,31	6,505	1,957
Creativeness	603	-2,60	10,98	5,252	1,704

Table 3.2
Descriptive Statistics of Independent Variables

	N	Minimum	Maximum	Mean	Std. Deviation
1. Independent Variables					
a. TAFPB					
Military Spirit	688	2,00	6,00	4,572	,629
Discipline	688	1,30	6,00	4,017	,682
Orderliness	688	1,90	6,00	4,704	,637
Strength of character	688	1,89	6,00	4,581	,670
Group management	688	2,60	6,00	4,376	,573
Persuasiveness	688	2,50	6,00	4,367	,537
Decisiveness	688	2,51	5,46	4,205	,530
Decision Making	688	2,10	6,00	4,505	,567
Problem Solving	688	2,40	5,90	4,499	,515
Stress Tolerance	688	2,10	5,80	4,008	,583
Openness to Experience	688	2,40	6,00	4,371	,513
Superior Relations	688	3,00	6,00	4,932	,492
Social Extraversion	688	2,30	6,00	4,474	,563
Sociability	688	2,40	6,00	4,479	,604
Work Discipline	688	2,40	6,00	4,620	,562
Planning	688	2,10	6,00	4,509	,567
Self-esteem	688	2,70	6,00	4,619	,553
Monitoring	688	2,20	6,00	4,585	,635
Communication	688	2,22	6,00	4,322	,594
Military1	688	2,28	5,67	4,469	,453
Leadership2	688	3,14	5,77	4,333	,401
Agreeableness-extravertion3	688	2,77	6,00	4,628	,446
Conscientiousness4	688	2,25	6,00	4,565	,514
b. Psychomotor Scores					
Vigilance	644	8,00	28,00	19,099	4,275
Digit Recall	644	8,00	36,00	21,193	6,188
Instrument Interpretation	644	4,00	36,00	23,093	6,646
Sensory Motor	644	4,00	36,00	22,540	6,853
Rapid Perception	644	4,00	36,00	22,416	7,160
Psychomotor Total	644	72,00	164,00	108,342	16,296
Psychomotor Range	640	7,00	16,00	10,430	1,651

Table 3.3
The comparisons of means and SD among 3 TAFPB applications

	Present Study		SÜMER (2000)		KALE (2004)	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Superior Relations	4,93	,49	5.04	.42	4.94	.45
Orderliness	4,70	,64	4.88	.60	4.76	.69
Work Discipline	4,62	,56	5.02	.47	4.73	.53
Self-esteem	4,62	,55	4.76	.51	4.75	.53
Monitoring Task Progress	4,59	,63	4.56	.66	4.39	.62
Strength of Character	4,58	,67	4.85	.55	4.65	.57
Military Spirit	4,57	,63	4.75	.61	4.61	.65
Decision Making	4,51	,57	4.72	.53	4.55	.55
Planning	4,51	,57	4.93	.48	4.70	.52
Problem Solving	4,50	,52	4.70	.53	4.49	.54
Sociability	4,48	,60	4.76	.53	4.57	.55
Social-extraversion	4,47	,56	4.51	.52	4.48	.54
Group Management	4,38	,57	4.61	.57	4.44	.61
Persuasiveness	4,37	,54	4.50	.52	4.39	.53
Openness to Experience	4,37	,51	4.36	.56	4.24	.59
Communication	4,32	,59	4.70	.54	4.44	.57
Decisiveness	4,21	,53	4.77	.50	4.57	.50
Discipline	4,02	,68	4.16	.60	3.72	.57
Stress Tolerance	4,01	,58	4.14	.58	4.07	.53

Next, the associations of 4 main factors were examined, illustrated in **APPENDIX B.** The highest correlation was between extraversion-agreeableness and leadership ($r = .715$, $p \leq .01$), which was expected. All correlation coefficients were significant at the level .01.

APPENDIX C shows the correlations among 10 BSI subscales. All the subscales were correlated significantly. All factors were significantly related. The highest correlations were observed between anxiety and obsessive behavior ($r = .726$, $p \leq .01$) and between anxiety and somatization ($r = .724$, $p \leq .01$).

16PF correlations were presented in **APPENDİX D**. After that, the 16 PF's correlations were examined. PF5 (F; happy-go-lucky_sober) and PF7 (H; socially bold_shy) showed the highest correlations ($r = .502$, $p \leq .01$). Moreover, PF7 (H; socially bold_shy) and PF4(E; assertive_humble) ($r = .473$, $p \leq .01$) and PF12 (O; apprehensive-placid) and PF16 (Q4; tense_relaxed) were highly correlated ($r = .407$, $p \leq .01$).

Finally, the correlation table of demographic data was examined **APPENDİX E.** Mother education and father education were correlated (r = .593 , p≤ .01). Not surprisingly, income was predicted by mother(r = .344 , p≤ .01) and father education (r = .328 , p≤ .01). The higher the mother education indicated the less number of child (r = - .386 , p≤ .01). In small towns mothers (r = .113 , p≤ .01) and fathers (r = - .075 , p≤ .05) were significantly less educated.

3.4. Criterion-related validity:

The criterion-related validity was determined by correlating the tests' scores with well-established measure of performance or behaviour (Guion, 1998; Cook, 2004; Litwin, 1995). The effectiveness of a test battery could be most strongly explained by the predictive power of the performance criteria (Sümer, 2000).

In this step, the relationships between the TAFPB and TAFA cadet's performance were examined. The aim of the criterion related validity analyses were to predict performance criterions of TAFA cadets, which were Academic scores (verbal, numerical and mean), Sport scores, Flight scores, Military scores and Commander Evaluation, from the personality factors derived from the TAFPB and BSI. The correlations among 19 subfactors and 4 main factors of TAFPB and seven performance criteria were presented in **APPENDIX F. APPENDIX G** includes more detailed performance factors including English, Turkish, mathematics, psychics, chemistry, military culture, close order drill scores and individuals development factors and experimental flight scores

First, **Personality- Academic Performance (AP) relations** were examined.

Extraversion and AP were negatively correlated but not significant. H1a was rejected. As expected, conscientiousness-numerical score correlations (r = .097 , p ≤ .05) and conscientiousness- Mean2 correlations (r = .146, p ≤ .05) were significant. Of the 4 main factors of TAFPB, conscientiousness-academic performance correlations were the highest, confirming the literature. H1b was accepted. Leadership was negatively correlated with Mean1 (r = .086 , p ≤ .05). H1c was accepted. Cadets having strength of character were more likely to have

higher Mean2 ($r = .101$, $p \leq .01$) and higher numerical score ($r = .088$, $p \leq .05$). Openness to experience was significantly related to Mean 2 ($r = .088$, $p \leq .05$). H1d was accepted. Moreover, planning was positively correlated with AP, Mean 2.($r = .141$, $p \leq .01$). The negative correlation of self-esteem and Mean1 ($r = -.104$, $p \leq .01$) did not support expectations, concerning positive association between them. There was positive relationship between work discipline and numerical ($r = .082$, $p \leq .05$) and work discipline and Mean2 ($r = .124$, $p \leq .01$). H1f was accepted. To sum up, results supported the personality-AP relationships. H1 was accepted.

While examining the 16 PF's correlations with performance criterion, which were figured in **APPENDIX H**, significant correlations were determined between PF1 (A; outgoing-reserved) and Verbal score ($r = .145$, $p \leq .01$), PF2 (B; more-less intelligent) and numerical score ($r = .106$, $p \leq .01$), PF4 (E; assertive-humble) and Mean1 ($r = -.093$, $p \leq .05$), PF6 (G; conscientious-expedient) and numerical score ($r = .082$, $p \leq .05$), and PF13 (Q1; experimenting-traditional) and Mean1 ($r = .081$, $p \leq .05$). The examinations of BSI-AP associations, presented in **APPENDIX I,** were surprising. Although negative correlations were expected for all factors of BSI, sensivity ($r = .088$, $p \leq .05$), depression ($r = .128$, $p \leq .01$), anxiety ($r = .101$, $p \leq .01$), and paranoid thinking ($r = .101$, $p \leq .01$) were positively correlated with Mean1. Only hostility was negatively correlated with numerical score ($r = -.088$, $p \leq .05$). H1e was rejected.

Secondly, **Personality- Sport Performance (SP)** relations were explored.

It was examined whether personality was associated with SP or not. Analysing **APPENDIX F**, it could be seen that of the all performance factors, personality was mostly related to SP. Group management ($r = .159$, $p \leq .01$), persuasiveness ($r = .101$, $p \leq .01$), decision making ($r = .084$, $p \leq .05$), social extraversion ($r = .115$, $p \leq .01$), sociability ($r = .163$, $p \leq .01$), planning ($r = .089$, $p \leq .01$) and communication ($r = .093$, $p \leq .05$) were positively correlated with SP. Screening main factors, leadership ($r = .114$, $p \leq .01$) and extraversion ($r = .131$, $p \leq .01$) were positively related to SP. H2a and H2b was accepted.

Considering 16PF- SP relationship, it was found that only PF1 (A; outgoing_reserved) ($r = .107$, $p \leq .01$), PF5 (F; happy-go-lucky_sober) ($r = .151$, $p \leq .01$), PF7 (H; socially bold_shy) ($r = .095$, $p \leq .05$) and PF14 (Q2; self-sufficient_group-tied) ($r = -.164$, $p \leq .01$) were significantly correlated with SP. BSI- SP correlations and their directions were as expected. Somatization ($r = -.084$, $p \leq .05$), and Anxiety ($r = - .093$, $p \leq .05$) were significantly related to SP. H2c was accepted. To conclude H2 was accepted.

Thirdly , **Personality- Flight Performance (FP) relations** were explored.

Flight performance, measured by experimental flight training (OSU) and Flight Knowledge (FK) did not related to any personality factor of TAFPB, BSI, 16PF and psychomotor abilities. Although two different criterion were used, the results revealed that H3 and all sub hypotheses were rejected. Personality did not related to FP of TAFA cadets.

Fourthly, **Personality- Commander Evaluation(CE) and Military Score (MS) relations** were explored.

Any personality factor, assessed by TAFPB did not related to CE and MS. H4 and related hypotheses were rejected. From 16 PF (see **APPENDIX H**), PF1 (A; outgoing_reserved) ($r = .104$, $p \leq .01$) and PF7 (H; socially bold_shy) ($r = .079$, $p \leq .05$) was correlated with MS and only PF5 (F; happy-go-lucky_sober) ($r = -.105$, $p \leq .01$) was negatively related to CE. BSI did not predict CE. However somatization ($r = - .132$, $p \leq .01$) and anxiety ($r = - .086$, $p \leq .05$) were found significant factors affecting MS. Negative correlations were expected.

Fifthly, **interview and performance relations** were explored.

There were positive and high relationships between interview scores which were given for entrance to TAFA and verbal scores ($r = .195$, $p \leq .01$), MS ($r = .265$, $p \leq .01$), FP ($r = .109$, $p \leq .05$) and CE ($r = .187$, $p \leq .01$).(See **APPENDIX J**)

Sixthly, **psychomotor scores and performance relations** were explored.

Psychomotor scores were significantly related to numerical scores, and academic mean. Numerical score and Vigilance(r = .-,088 , p≤ .05), numerical score and digit recall test (r = .156 , p≤ .01), numerical score and instrument interpretation (r = .122 , p≤ .01) and academic mean and digit recall (r = .110 , p≤ .01) were significantly correlated.(See **APPENDIX K**)

Finally , **demographic data and performance relations** were explored (See **APPENDIX J**). Demographic data- performance relationship revealed very surprising and interesting results. The higher the class indicates the lesser the CE (r = - .122 , p≤ .01). In other words, Class1 got the highest CE. In contrast to that Class 3 had the lowest CE. Additionally, as mother education increased, CE (r = -.115 , p≤ .01) and MS (r = - .085, p≤ .05) decreased significantly. Father education was negatively correlated with CE too (r = - .153 , p≤ .01).

3.5. The comparisons of Source and Class Variances in TAFPB, BSI, 16 PF, Performance, Psychomotor Scores:

A set of One-Way ANOVA was conducted by using SPSS 11.5. The purpose of ANOVA studies was to examine whether TAFPB, BSI, 16 PF, Performance, Psychomotor scores significantly changed depending on the source and the class of TAFA cadets.

3.5.1.Source

Source was determined as IV having two level, civilian (CSR) and military high school graduates (MSR). The significant mean differences and standard deviations were presented in **APPENDIX L.**

First it was tested whether source affects performance. The relationships between source and performance were surprising. MSR cadets performed significantly higher on academic area with Verbal mean ($\underline{F}$ (1, 497) =14.66, p ≤ .01), Numerical mean ($\underline{F}$ (1, 588) = 9.63, p ≤ .01), Mean2 ($\underline{F}$ (1, 592) =16.47, p ≤ .01), MS ($\underline{F}$ (1, 591) = 29.50, p ≤ .01), FP ($\underline{F}$ (1, 591) =8.11, p ≤ .01) and SP ($\underline{F}$ (1,

588) =55.16, p ≤ .01). Only Mean1 of the performance factor did not differ depending on the source of the cadets. In other words, in first class, there was not any differences between MSR and CSR cadets.

Next, BSI and Source relationship was tested. CSR cadets had significantly higher scores on all BSI factors, showing more psychological symptoms except for depression scale which was non significant between groups. Significant results were reported. Somatization (F (1, 628) = 4.54, p ≤ .01), Obsession (F (1, 629) =6.234, p ≤ .01), Sensitivity (F (1, 588) =9.63, p ≤ .01), Anxiety (F (1, 626) =8.35, p ≤ .01), Hostility (F (1, 622) =4.31, p ≤ .05), Phobic Anxiety (F (1, 625) =6.60, p ≤ .01), Paranoid Thinking (F (1, 626) =8.75, p ≤ .01) and Psychotics (F (1, 588) =9.63, p ≤ .01).

Then, another series of ANOVA was conducted to test whether TAFPB scores might change depending on the source of the cadets. Results revealed that CSR cadets got only on Discipline scale significantly higher scores. (F (1, 599) =7.865, p ≤ .01). Whereas on eleven scale, which will be cited below, MSR cadets' scores were significantly high. Group management (F (1, 599) =11.83, p ≤ .01), persuasiveness (F (1, 599) =4.52, p ≤ .05), decision making (F (1, 599) =6.127, p ≤ .05), stress tolerance (F (1, 599) =4.40, p ≤ .05), openness to experience(F (1, 599) = 6.68, p ≤ .01), social extraversion (F (1, 599) =4.70, p ≤ .05), sociability (F (1, 599) =10.94, p ≤ .01), self-esteem (F (1, 599) =5.307, p ≤ .05), communication(F (1, 599) =4.88, p ≤ .05), leadership (F (1, 599) =8.63, p ≤ .01) and agreeableness-extraversion (F (1, 599) =7.35, p ≤ .01).

And then, psychomotor ability of two sources were compared. MSR cadets performed better on, digit recall test (F (1, 578) =5.40, p ≤ .01). CS cadets were significantly better on sensory motor apparatus test (F (1, 599) =11.83, p ≤ .01).

Finally, from the 16 PF, CSR cadets had higher scores on PF6 (G; conscientious_expedient), (F (1, 599) =4.79, p ≤ .05), PF14 (Q2; self-sufficient_group-tied), (F (1, 599) =10.70, p ≤ .01), creativeness (F (1, 551) =16.49, p ≤ .01) and Academic Success (F (1, 433) =6.29, p ≤ .01). Whereas MSR cadets were significantly higher on PF1(A; outgoing_reserved), (F (1, 599)

=52.62, $p \leq .01$), PF4 (E; assertive_humble), (F (1, 599) =3.95, $p \leq .01$), PF5 (F; happy-go-lucky_ sober),(F (1, 599) =39.56, $p \leq .01$), PF7 (H; socially bold_shy), (F (1, 599) = 6.64, $p \leq .01$), PF8(tender-minded_thought-minded), (F (1, 599) =3.95, $p \leq .01$), PF9 (L; suspicious_trusting), (F (1, 599) =7.19, $p \leq .01$), leadership (F (1, 551) =3.96, $p \leq .05$), independence (F (1, 599) =9.30, $p \leq .01$) and extraversion (F (1, 551) =3.95, $p \leq .01$).

3.5.2. Class

The ANOVA results of tree classes (Class 1, Class 2, Class 3) were examined. The mean differences and standard deviations were presented in see **APPENDIX L.**

First it was tested whether performance varies depending on class. Class 3 was better on Sport (F (2,629) = 25.38, $p \leq .01$). They had also the lowest CE (F (2,636) = 4.69, $p \leq .01$). Verbal Means were significantly different between 3 groups. The higher the class , the higher the mean (F (2,535) = 50.30, $p \leq .01$). The numerical mean of Class 1 was the highest (F (2,629) = 5.00, $p \leq .01$). The Flight Knowledge of Class 2 was lower than Class 1 and Class 3 (F (2,636) = 29.04, $p \leq .01$).

Then, BSI results were compared between 3 class. Class 1 showed lower somatization than Class 2 and Class 3 (F (2,674) = 4.84, $p \leq .05$). Moreover Class 2 exhibited higher hostility than other classes. (F (2,668) = 3.97, $p \leq .05$).

Next, TAFPB results were considered, taking class differences into account. Class 1 was significantly high on Discipline (F (2,644) = 14.85, $p \leq .01$) and on Military factor (F (2,644) = 6.49, $p \leq .01$). Social extraversion could be observed significantly highly by Class 3 (F (2,644) = 4.74, $p \leq .01$). Additionally, Class 2 was significantly low on communication compared other two classes (F (2,644) = 6.27, $p \leq .01$).

Comparing psychomotor scores, it was found that Class 2 was significantly high on Instrument interpretation (F (2,602) = 5.00, $p \leq .01$).

Finally, the differences of 16 PF factors among classes were examined. Of 11 factors, cited below, Class 1 was significantly different from Class 2 and Class 3. For PF 2 (B; more_less intelligent (F (2,611) = 6.69, p ≤ .01), PF 10 (M; imaginative_ practical) (F (2,611) = 2.98, p ≤ .05) PF 14 (Q2; self-sufficient_group-tied) (F (2,611) = 9.74, p ≤ .01), cartertia (F (2,563) = 4.11, p ≤ .05), creativeness (F (2,562) = 12.19, p ≤ .01). Class 1 Means were significantly higher than other classes. Moreover, Class 1 was low on PF5(F (2,611) = 9.60, p ≤ .01), PF 7 (F (2,611) = 7.40, p ≤ .01), leadership (F (2,663) = 4.85, p ≤ .01), independence(F (2,563) = 3.90, p ≤ .05), extraversion (F (2,563) = 20.96, p ≤ .01).

The interview scores of first class students were compared with performance criterion in order to understand and evaluate the selection system. Interview scores were significantly correlated with Military Score (r= .265, p≤.01), Verbal Score (r= .195, p≤.01), Commander Evaluation (r = .187, p≤.01) and Flight Score (r = .109, p≤.05).

3.6. Regression results

In this part, a series of regression analyses were conducted to evaluate how well demographic variables, TAFPB, BSI and 16 PF (IV's), predicted performance (DV), by using SPSS Regression. The assumptions of regression were met, cited previously. Unstandardized regression coefficients - β, t values, making significant contribution to the prediction of SP were reported as summary.

3.6.1. Predicting Sport Performance (SP)

Determining SP as DV, different regression analyses were reported .

First 4 main factors and 3 independent factors of TAFPB were entered into regression as IV's. Stepwise regression was run based on statistical criteria. R was significantly different from zero for each step. After last step, R=.13, F(2, 629) = 8.34, p≤ .01. The keadership factor made the highest contribution to the prediction

of SP, explaining 1.7% of the variance in SP. For leadership, β = .184, t = 4.07, p≤ .01 and for military, β = -.105, t = 4.07, p≤ .01. Both, leadership and military significantly predicted SP, explaining 2.6 % variance.

The regression equation: **y = 55.56 + 6.9 x1 -3.49 x2**

Table 3.4
Regression Table
(IV: 4 main factors and 3 independent factors of TAFPB, DV: SP-stepwise)

Predictor		Beta	t	Sig.
x1	Leadership	,184	4,067	,000
x2	Military	-,105	-2,332	,020
R =,161	**R² =**,026			

Next, 19 factors of TAFPB were regressed on to SP, using stepwise regression. R was significantly different for each step. Group management made the highest contribution to the prediction of SP, explaining 3.6% of the variance in SP. Group management and work discipline together accounted for 5.2% of variance in SP. R^2 =.052, adj.R^2 =.049, F(2, 629) = 17.19, p≤ .01. For group management, β = .253, t = 3.98 , p≤ .01 and for work discipline, β = -.143, t = -2.55, p≤ .01.

The regression equation: **y = 58.215 + 6.6 x1 -3.7 x2**

Table 3.5
Regression Table
(IV: 19 factors of TAFPB, DV: SP-stepwise)

Predictor		Beta	t	Sig.
x1	Group management	,178	3.958	,000
x2	Work discipline	-,118	-2,546	,000
R =,228	**R² =**,052			

After conducting the stepwise regression, the hierarchical regression was conducted by entering 4 main factors and 3 independent factors of TAFPB, and second order factors of 16PF respectively to predict SP. R was significantly different from zero for each step. After Step1, entering TAFPB into regression , R^2 =.036, adj.R^2 =.034, F(7, 438) = 3.70, p≤ .01. The unique contribution of TAFPB to prediction SP was 3.6 %. After step 2, including 16 PF into regression equation, R =.228, F(16,438) = 3,28, p≤ .01. The unique contribution of 16 PF

scale to prediction of SP was 1.6%. In step 2, monitoring task progress factor of TAFPB, β = -.114, t = -1.958, p≤ .05, for extraversion of 16 PF, β = -.345, t = 3.546. The results demonstrated that, TAFPB and 16 PF together explained significantly 5.2 % of the variance in SP, suggesting TAFPB was better predictor than 16 PF.

The regression equation: **y = 36.31 – 2.63 x1 + 2.48 x2**

Table 3.6
Regression Table
IV: 4 factors and 3 independent factors of TAFPB and second-order factors of 16 PF, respectively, DV: SP-hierarchical)

Predictor		Beta	t	Sig.
x1	Monitoring task progress (TAFPB)	-,114	-1.958	,050
x2	Extraversion (16 PF)	,345	3,546	,000
R =,332	**R² =**,11			

Finally, the hierarchical regression were conducted by entering 16PF and TAFPB respectively to predict SP . R is significantly different from zero for the second step. After Step1, entering 16 PF into regression , R^2 =.077, adj.R^2 =.057, Finc(9, 429) = 3.96, p≤.01. The unique contribution of 16 PF to predicting AP is 7.7%. After Step 2, including TAFPB into the regression equation, R^2 =.110 adj.R^2 =.034, F(16,438) = 3.276, p≤.01. Adding TAFPB improved 3.4% of the variance. In step 2, from the 16 PF scale, extraversion, β = .345, t = 3.546, p≤ .01, from the TAFPB monitoring task progress, β= -.114, t = -1.958, p≤ .05. 16 PF and TAFPB together explains 11% of the variance in SP. Moreover TAFPB has incremental validity over 16 PF adding 3.4% of variance in explaining SP. However the extraversion factor of 16 PF is a better predictor than TAFPB factors.

The regression equation: **y = 36.31 + 2.47 x1 - 2.64 x2**

Table 3.7
Regression Table
(IV: second-order factors of 16 PF and 4 factors and 3 independent factors of TAFPB, respectively, DV: SP-hierarchical)

Predictor		Beta	t	Sig.
x1	Extraversion (16 PF)	,345	3,546	,000
x2	Monitoring task progress (TAFPB)	-,114	-1,958	,051
R =,332	**R² =**,11			

3.6.2. Predicting Academic Performance (AP)

Determining Academic Mean as DV, different regression analyses were reported.

First 4 main factors and 3 independent factors of TAFPB were entered into regression as IV's. Stepwise regression was run based on statistical criteria. R was significantly different from zero for each step. After the last step, R=.20, F(2, 637) = 13.86, p≤ .01. Conscientiousness made the highest contribution to the prediction of AP, explaining 2.5% of the variance in AP. Both conscientiousness and extraversion- agreeableness significantly predicted AP, explaining 4.2% variance. For the last step, R^2 =.042, adj.R^2 =.039, Finc(1, 637) = 8.34, p≤ .01. Considering the last step, for conscientiousness, β = .263, t =5.26, p≤ .01 and for agreeableness-extraversion, β = -.168,t = -3.73, p≤ .01.

The regression equation: **y = 2.40 + .26 x1 - 1.98 x2**

Table 3.8
Regression Coefficients
(IV: 4 main factors and 3 independent factors of TAFPB, DV: AP-stepwise)

Predictor		Beta	t	Sig.
x1	Conscientiousness	,263	5,264	,000
x2	Extraversion-Agreeableness	-,168	-3,373	,001
R =,204	**R^2 =**,042			

Next, 19 factors of TAFPB were regressed on to Mean2, using stepwise regression. R was significantly different for each step. After the last step, R=.20, F(2, 637) = 13.83, p≤ .01. Planning made the highest contribution to the prediction of AP, explaining 2.4% of the variance in AP. Planning and persuasiveness together accounted for 4.2% of variance in AP. R^2 =.042, adj.R^2 =.039, Finc(1, 637) = 11.58, p≤ .01. For planning, β= .23, t = 5.16, p≤ .01 and for persuasiveness, β= -.151, t = -3.40, p≤ .01. TAFPB and 16 PF together explained 4.2% of the variance in AP.

The regression equation**: y = 2.38 + .20 x1 - .15 x2**

Table 3.9
Regression Table
(IV: 19 factors of TAFPB, DV: AP-stepwise)

Predictor		Beta	t	Sig.
x1	Planning	,229	5,160	,000
x2	Persuasiveness	-,151	-3,404	,001
R =,204	**R² =**,042			

After that, hierarchical regression was conducted by entering TAFPB and16PF respectively to predict AP. R was significantly different from zero for the second step. After Step1, entering TAFPB into regression , R^2 =.026, adj.R^2 =.011, F(8, 556) = 1.798, p≥.05, not significant. The unique contribution of TAFPB to predicting AP was 2.6%. After Step 2, including 16 PF into regression equation, R^2 =.072, adj.R^2 =.046, F_{inc}(7, 541) = 1.80, p≤.01. Adding 16 PF improved 4.6% of the variance. In step 2, from the 16 PF scale, control, β = .125, t = 2.02, p≤ .05, extraversion, β= .274, t = 3.03, p≤ .01. TAFPB and 16 PF together explained 7.2% of the variance in AP.

The regression equation: **y = 2.09 + .03 x1 - .07 x2**

Table 3.10
Regression Table
(IV: 4 factors and 3 independent factors of TAFPB and second-order factors of 16 PF, respectively, DV: AP-hierarchical)

Predictor		Beta	t	Sig.
x1	Control (16 PF)	,125	2,020	,044
x2	Extraversion (16 PF)	,274	3,034	,003
R =,268	**R² =**,072			

Next, the hierarchical regression was conducted by entering TAFPB, and 5 psychomotor scores, respectively in order to predict AP. R was significantly different from zero for each step. R=.304, F(12, 586) = 4.972, p≤.01. After Step1, entering TAFPB into the regression , R^2 =.039, adj.R^2 =-.028, Finc(7,591) = 3.463, p≤ .01. The unique contribution of TAFPB to prediction of AP was 3.9% which was significant. After Step 2, including psychomotor scores into the regression equation, R^2 =.092, adj.R^2 =.074, F(12, 586) = 4.972, p≤ .01. The unique contribution of TAFPB to prediction of AP was 5.3%. For the last step, from the TAFPB, social extraversion, β = -.153, t =-2.389, p≤ .05, conscientiousness, β =

.275, t = 4.534, p≤ .01, from psychomotor scores, vigilance, β = -.078, t = -1.958, p≤ .05, digit recall, β = .151, t = 3.777, p≤ .01, rapid perception, β = -.123, t = -2.932, p≤ .01.

The regression equation: **y = 2.33 - .18 x1 + .28 x2 -.01 x3 + .01 x4 - .01x5**

Table 3.11
Regression Table
(IV:4 main factors and 3 independent factors of TAFPB, 5 psychomotor score, respectively, DV: AP-stepwise)

Predictor		Beta	t	Sig.
X1	Social extraversion (TAFPB)	-,153	-2,389	,017
X2	Conscientiousness (TAFPB)	,275	4,534	,000
X3	Vigilance (psychomotor)	-,078	-1,958	,051
X4	Digit recall (psychomotor)	,151	3,777	,000
X5	Rapid perception (psychomotor)	-,123	-2,932	,004
R =,304	**R² =**,092			

Finally, the hierarchical regression was conducted by entering 5 psychomotor scores and TAFPB respectively in order to predict AP. R was significantly different from zero for each step. R=.304, F(12, 586) = 4.972, p≤.01. After Step1, entering 5 psychomotor scores into regression , R^2 =.051, adj.R^2 =-.043, Finc(5,593) = 6.322 p≤ .01. The unique contribution of psychomotor scores to prediction of AP was 5.1% which was significant. After Step 2, including TAFPB into the regression equation, R^2 =.092, adj.R^2 =.074, F(12, 586) = 4.972, p≤ .01. The unique contribution of TAFPB to the prediction of AP was 4.2%. For the last step, from psychomotor scores, Vigilance, β = -.078, t = -1.958, p≤ .05, Digit recall, β = .151, t = 3.777, p≤ .01, Rapid perception, β = -.123, t = -2.932, p≤ .01 from the TAFPB, social extraversion, β = -.153, t =-2.389, p≤ .05, conscientiousness, β = .275, t = 4.534, p≤ .01. TAFPB had 5.3% incremental validity over psychomotor scores in explaining AP.

The regression equation**: y = 2.33 - .01 x1 + .01 x2 -.01 x3 - .18 x4 + .28 x5**

Table 3.12
Regression Table (IV: 5 psychomotor score,4 main factors and 3 independent factors of TAFPB, respectively, DV: AP-stepwise)

Predictor		Beta	t	Sig.
X1	Vigilance (psychomotor)	-,078	-1,958	,051
X2	Digit recall (psychomotor)	,151	3,777	,000
X3	Rapid perception (psychomotor)	-,123	-2,932	,004
X4	Extraversion-Agreeableness(TAFPB)	-,153	-2,389	,017
X5	Conscientiousness (TAFPB)	,275	4,534	,000
R =,304	**R^2 =**,092			

3.6.3. Predicting Commander Evaluation and Military Score

First 4 main factors and 3 independent factors of TAFPB were entered into regression as IV's and the CE was the DV. Stepwise regression was run based on statistical criteria. R was not significantly different from zero R=.10, F(7, 631) = .93, p≥ .05, not significant. The results suggest that, TAFPB did not significantly predict CE.

Next, 19 factors of TAFPB were regressed on to CE. R was not significantly different from zero. After last step, R=.144, F(19, 619) = .69, p≥ .05. None of the 19 factors of TAFPB significantly explained variance in CE.

After that, hierarchical regression was conducted by entering TAFPB and 16PF respectively to predict CE. R was not significantly different from zero for all steps. After last step, R=.186, F(15, 556) = 1.296 p≥ .05. TAFPB and 16 PF did not significantly explain variance in CE.

Finally, the hierarchical regression was conducted by entering 16PF and TAFPB respectively to predict CE. R was not significantly different from zero for all steps. After last step, R=.186, F(15, 556) = 1.296 p≥ .05. TAFPB and 16 PF did not significantly explain variance in CE.

3.6.4. Predicting Flight Knowledge(FK) and Experimental Flight Training (OSU)

When Flight Knowledge (FK) was determined as DV's, only entering 4 main factors and 3 independent factors of TAFPB did not significantly predict FK. R=.207, F(7, 172) = 1.099, p≥ .05.

Next, 19 factors of TAFPB were regressed on to FK, using stepwise regression. R was significantly different for each step. After last step, R=.31, F(2, 637) = 9.88, p≤ .01. Stress tolerance made the highest contribution to the prediction of FK, explaining 5.8% of the variance in FK. Stress tolerance and openness to experience together accounted for 10% of variance in FK. R^2 =.10, adj.R^2 =.09, Finc(1, 637) = 8.26, p≤ .01. For stress tolerance β= .31 t = 4.15, p≤ .01 and for openness to experience, β= -.22, t = -2.88, p≤ .01. To sum up, TAFPB explained 10% of the variance in FK.

The regression equation: **y = 80.45 +5.23 x1 – 4.39 x2**

Table 3.13
Regression Table
(IV: 19 factors of TAFPB, DV: FK-stepwise)

Predictor		Beta	t	Sig.
x1	Stres tolerance	,314	4,154	,000
x2	Openness to experience	-,217	-2,875	,005
R =,317	**R^2 =**,10			

Next, hierarchical regression was conducted by entering TAFPB and16PF respectively to predict FK. R was not significantly different from zero for all steps. After last step, R=.198, F(15, 556) = 1.469 p≥ .05. TAFPB and 16 PF did not significantly explain variance in CE.

Then another hierarchical regression was conducted by entering 16PF and TAFPB respectively to predict FK. R was not significantly different from zero for all steps. After the last step, R=.198, F(15, 556) = 1.469 p≥ .05. TAFPB and 16 PF did not significantly explain variance in FK.

Finally, hierarchical regression was conducted by entering 5 psychomotor scores and TAFPB respectively in order to predict FK. R was significantly different from zero only for the second step. R=.195, F(12,585) = 1.918, p≤.05. After the Step1, entering 5 psychomotor scores into regression , R^2 =.008, adj.R^2 = .00, Finc(5, 592) = .966, p ≥.05, not significant. The unique contribution of the psychomotor scores to the prediction of FK was .8 % which was not significant. After Step 2, including TAFPB into the regression equation, R^2 =.038, adj.R^2 =.018, F(12, 585) = 1.918, p≤ .05. The unique contribution of TAFPB to prediction of FK was 3%. However none of the factors was significant at the level of .05. TAFPB had 3% incremental validity over psychomotor scores in explaining FK.

Table 3.14
Regression Table
(IV: 5 psychomotor score ,4 main factors and 3 independent factors of TAFPB, respectively, DV: FK stepwise)

Predictor		Beta	t	Sig.
x1	Sociability (TAFPB)	,121	1,842	,066
x2	Monitoring task progress (TAFPB)	-,093	-1,872	,062
R =,195	**R^2 =**,038			

After that, 4 main factors and 3 independent factors of TAFPB were entered into regression as IV's in order to predict OSU. R was not significantly different from zero R=.24, F(7, 99) = .83, p≥ .05, not significant. The results suggested that, TAFPB did not significantly predict OSU.

Next, 19 factors of TAFPB were regressed on to OSU. R was not significantly different from zero. R=.44, F(19, 87) = 1.08, p≥ .05. None of the 19 factors of TAFPB significantly explained variance in OSU.

After that, the hierarchical regression was conducted by entering TAFPB and16PF respectively to predict OSU. R was not significantly different from zero for all steps. After last step, R=.409, F(15, 104) = 1.194 p≥ .05. TAFPB and 16 PF did not significantly explain variance in OSU.

And then, the hierarchical regression was conducted by entering 16PF and TAFPB respectively to predict OSU. R was not significantly different from zero for all

steps. After the last step, R=.409, F(15, 104) = 1.469 p≥ .05. TAFPB and 16 PF did not significantly explain variance in OSU.

Finally, the hierarchical regression was conducted by entering 5 psychomotor scores and TAFPB respectively in order to predict OSU. R was not significantly different from zero for all steps. R=.091, F(12,93) = .776, p ≥.05. The unique contribution of the psychomotor scores to the prediction of OSU was 3.6% which was not significant. Similarly, the unique contribution of TAFPB to the prediction of OSUwas 5.5% which was not significant too.

3.6.5. Predicting Military Performance (MP)

Military Performance (MP) could not be predicted by the regression equations entering 4 main factors and 3 independent factors independently**.** R was not significantly different from zero R=.07, F(7, 631) = .45, p≥ .05, not significant. The results suggested that, TAFPB did not significantly predict MP.

Next, 19 factors of TAFPB were regressed on to MP. R was not significantly different from zero. R=.44, F(19, 87) = 1.08, p≥ .05. None of the 19 factors of TAFPB significantly explained variance in MP.

After that, the hierarchical regression was conducted by entering TAFPB and 16PF respectively to predict MP. R was not significantly different from zero for all steps. After the last step, R=.157, F(15, 556) = .914 p≥ .05. TAFPB and 16 PF did not significantly explain variance in MP.

Finally, another hierarchical regression was conducted by entering 16PF and TAFPB respectively to predict MP. R was not significantly different from zero for all steps. After the last step, R=.157, F(15, 556) = .914 p≥ .05. TAFPB and 16 PF did not significantly explain variance in MP.

3.6.6. Predicting Mathematics Score (MTS)

In order to predict MTS, first 4 main factors and 3 independent factors of TAFPB were regressed onto MTS, using stepwise regression. R was significantly different from zero for each step. After the last step, R=.15, F(2, 630) = 7.32, p≤ .01. Conscientiousness made the highest contribution to the prediction of MTS, explaining 1.4% of the variance in MTS. Both conscientiousness and leadership, explaining 2.3% of the variance in MTS, were significant. Considering last step, for conscientiousness, β= 5.79,t =3.83, p≤ .01 and for leadership, β = -4.77,t = -2.11, p≤ .05. Conscientiousness was positively and leadership was negatively related to MTS.

The regression equation: **y = 59.31 + 5.79 x1 – 4.77 x2**

Table 3.15
Regression Table
(IV: 4 main factors and 3 independent factors of TAFPB, DV: MTS-stepwise)

Predictor		Beta	t	Sig.
x1	Conscientiousness	,198	3,827	,000
x2	Leadership	-,126	-2,437	,015
R =,151	**R² =**,023			

Then, 19 factors of TAFPB were regressed on to MTS, using stepwise regression. R was significantly different for each step. Planning made the highest contribution to the prediction of MTS, explaining 1.6% of the variance in MTS. Adding persuasiveness improved 1.2% of the variances uniquely. Strength of the character accounted for 1% of variance in MTS. And orderliness explained .7% of the variance in MTS. All factors , cited above, together accounted for 4.5 of the variance. R^2 =.045, adj.R^2 =.04, Finc(1, 628) = 4.74, p≤ .01. Concerning the last step, for planning, β = 5.37, t = 4.17, p≤ .01 , for persuasiveness, β = -3.59, t = -2.79, p≤ .01, for strength of the character, β = 2.55, t = 2.79, p≤ .01 and for orderliness, β = -2.45, t = -2.19, p≤ .05.

The regression equation: **y = 56.63 + 5.37 x1 – 3.59 x2 + 2.55 x3 – 2.50 x4**

Table 3.16
Regression Table
(IV: 19 factors of TAFPB, DV: MTS-stepwise)

Predictor		Beta	t	Sig.
X1	Planning	,202	4,174	,000
X2	Persuasiveness	-,127	-2,798	,005
X3	Strength of the character	,116	2,796	,005
X4	Orderliness	-,099	-2,178	,030
R =,213	**R² =**,045			

After that, hierarchical regression was conducted by entering 4 main factors and 3 independent factors of TAFPB, and second order factors of 16PF respectively to predict MTS. R was significantly different from zero for each step. After the Step1, entering TAFPB into regression , R^2 =.031, adj.R^2 =.018, Finc(7, 546) = 2.465, p≤ .05. The unique contribution of TAFPB to prediction SP was 3.1 %. After step 2, including 16 PF into regression equation, R =.232, F(15,553) = 2.044, p≤ .05. The unique contribution of 16 PF scale to the prediction of MTS was 2.3%. In step 2, from the TAFPB, for leadership β = -.172, t = -2.165, p≤ .05, for conscientiousness, β = .244, t = 3.787. The results demonstrated that, TAFPB and 16 PF together explained significantly 5.4 % of the variance in MTS, suggesting TAFPB was better predictor than 16 PF.

The regression equation: **y = 53.76 – 6.57 x1 + 7.07 x2 + 2.01 x3 + 1.25 x4**

Table 3.17
Regression Table
(IV: 4 factors and 3 independent factors of TAFPB and second-order factors of 16 PF, respectively, DV: MTS-hierarchical)

Predictor		Beta	t	Sig.
X1	Leadership (TAFPB)	-,172	-2,165	,031
X2	Conscientiousness(TAFPB)	,244	3,787	,000
X3	Extraversion (16PF)	,286	3,136	,002
X4	Creativity (16 PF)	,149	2,038	,042
R =,232	**R² =**,054			

Then, hierarchical regression was conducted by entering 16PF and TAFPB respectively to predict MTS . R was significantly different from zero for the second step. After Step1, entering 16 PF into regression , R^2 =.022, adj.R^2 =.007, Finc(8,545) = 3.96, p≥.05. The unique contribution of 16 PF to predicting MTS

was 2.2%. After Step 2, including TAFPB into regression equation, R^2 =.054 adj.R^2 =.028, F(15, 553) = 2.044, p≤.01. Adding TAFPB improved 3.2% of the variance. In step 2, from the 16 PF scale, extraversion, β = .286, t = 3.136, p≤ .01, creativity, β = .149, t = 2.038, p≤ .05, from the TAFPB leadership, β= -.172, t = -2.165, p≤ .05, conscientiousness, β= .244, t = 3.787 p≤ .05 . 16 PF and TAFPB together explained 5.4% of the variance in MTS. TAFPB predicted MTS better than 16 PF. Moreover TAFPB had incremental validity over 16 PF adding 3.2% of the variance while explaining the variance in MTS.

The regression equation: **y = 53.76 + 2.01 x1 + 1.25 x2 – 6.57 x3 + 7.06 x4**

Table 3.18
Regression Table
(IV: second-order factors of 16 PF and 4 factors and 3 independent factors of TAFPB, respectively, DV: MTS-hierarchical)

Predictor		Beta	t	Sig.
X1	Extraversion (16 PF)	,286	3,136	,002
X2	Creativity (16 PF)	,149	2,038	,042
X3	Leadership (TAFPB)	-,172	-2,165	,031
X4	Conscientiousness(TAFPB)	,244	3,787	,000
R =,232	**R^2 =**,054			

After that, 5 psychomotor scores were entered into regression as IV's. Stepwise regression was run based on statistical criteria. R was significantly different from zero for each step. After the last step, R=.151, F(2, 593) = 6.960, p≤ .01. digit recall test made the highest contribution to the prediction of MTS, explaining 1.6% of the variance in MTS. For digit recall test, β = .286, t = 3.058, p≤ .01 and for rapid perception tests, β = -.169, t = -2.113, p≤ .05. Both digit recall test and rapid perception test significantly predicted MTS, explaining 2.3 % variance.

The regression equation: **y = 62.97 + .29 x1 - .169 x2**

Table 3.19
Regression Table
(IV: 5 psychomotor score, DV: MTS-stepwise)

Predictor		Beta	t	Sig.
X1	Digit recall test	,124	3,058	,002
X2	Rapid perception	-,086	-2,113	,035
R =,151	**R^2 =**,023			

Next, the hierarchical regression was conducted by entering TAFPB, and 5 psychomotor scores, respectively in order to predict MTS. R was significantly different from zero except for first step. R=.221, F(12, 583) = 2.487, p≤.01. After the Step1, entering TAFPB into the regression , R^2 =.024, adj.R^2 =-.013. The unique contribution of TAFPB to prediction of MTS was 2.4% which was significant. After the Step 2, including psychomotor scores into the regression equation, R^2 =.049, adj.R^2 =.029, F(12, 583) = 2.487, p≤ .01.The unique contribution of the psychomotor scores to prediction of MTS was 2.4%. For the last step, from the TAFPB, conscientiousness, β =.193, t =5.857, p≤ .01, from psychomotor scores, Digit recall tests, β = .119, t = 2.885, p≤ .01, Rapid perception test, β =- .187, t = -2.20, p≤ .05.

The regression equation: **y = 52.95 + 5.68 x1 + .27 x2 - .19 x3**

Table 3.20
Regression Table
(IV:4 main factors and 3 independent factors of TAFPB, 5 psychomotor score, respectively, DV: MTS-stepwise)

Predictor		Beta	t	Sig.
X1	Conscientiousness (TAFPB)	,193	3,088	,002
X2	Digit recall (psychomotor)	,119	2,885	,004
X3	Rapid perception (psychomotor)	-,095	-2,202	,028
R =,221	**R^2 =**,049			

Finally, hierarchical regression was conducted by entering 5 psychomotor scores and TAFPB respectively in order to predict MTS. R was significantly different from zero except for first step. R=.163, F(12,583) = 2.487, p≤.01. After Step1, entering 5 psychomotor scores into regression , R^2 =.026, adj.R^2 =-.018, Finc(5, 590) = 3.302, p≤.01. The unique contribution of TAFPB to prediction of MTS was 2.6% which was significant. After Step 2, including TAFPB into regression equation, R^2 =.047, adj.R^2 =.029, F(12, 583) = 2.510, p≤ .01. The unique contribution of the TAFPB to prediction of MTS was 2.2%. For the last step, from the psychomotor scores, digit recall test, β = .119, t =-2.885, p≤ .01, , rapid perception, β = -.095, t =-2.202, p≤ .05, from TAFPB conscientiousness, β = .193,

t = 3.088, p≤ .01. TAFPB had 2.2% incremental validity over psychomotor notes in predicting MTS.

The regression equation: **y = 52.95 + .27 x1 - 19 x2 + 5.68 x3**

Table 3.21
Regression Table
(IV: 5 psychomotor score ,4 main factors and 3 independent factors of TAFPB, respectively, DV: MTS-stepwise)

Predictor		Beta	t	Sig.
X1	Digit recall test (psychomotor)	,119	2,885	,004
X2	Rapid perception (psychomotor)	-,095	-2,202	,028
X3	Conscientiousness(TAFPB)	,193	3,088	,002
R =,221	**R² =**,049			

3.6.7. Predicting Map Score (MPS)

In order to predict MPS, first 4 main factors and 3 independent factors of TAFPB were regressed onto MPS, using stepwise regression. None of the factors predicted MPS.

Then, 19 factors of TAFPB were regressed on to MPS, using stepwise regression. R was significantly different for each step. R=.243, F(3,311) = 6.49, p≤ .01. Strength of the character made the highest contribution to the prediction of MPS, explaining 2.4% of the variance in MPS. R^2 =.024, adj.R^2 =.021, F(1, 313) = 7.74, p≤ .05. Social extraversion accounted for 1.6% of variance in MPS. R^2 =.04, adj.R^2 =.034, Finc(1,312) = 17.19, p≤ .01. Decision making explained 1.9% of the variance in MPS, R^2 =.059, adj.R^2 =.050 Finc(1, 311) = 6.22, p≤ .01. For strength of the character, β = 2.66, t = 2.45, p≤ .05 and for social extraversion, β = -4.16, t = -3.06, p≤ .01 and for decision making, β = 3.40, t = 2.50, p≤ .01.5.9 of the variance was accounted for by 19 TAFPB.

The regression equation: **y = 67.87 + 2.66 x1 -4.16 x2 + 3.40 x3**

Table 3.22
Regression Table (IV: 19 factors of TAFPB, DV: MTS-stepwise)

Predictor		Beta	t	Sig.
X1	Strength of the character	,146	2,454	,015
X2	Social extraversion	-,188	-3,066	,002
X3	Decision making	,159	2,495	,013
R =,243	**R² =**,059			

After that, hierarchical regression was conducted by entering 4 main factors and 3 independent factors of TAFPB, and second order factors of 16PF respectively to predict MPS. R was not significantly different from zero for each step. After the Step1, entering TAFPB into regression , R^2 =.025, adj.R^2 =-.001, Finc(7, 264) = .953, p≥ .05. The unique contribution of TAFPB to the prediction MPS was 2.5 %. After the Step 2, including 16 PF into regression equation, R =.247, F(15,269) = 1.106, p≥ .05. The unique contribution of 16 PF scale to prediction of MPS was 3.6%.

Then, hierarchical regression was conducted by entering 16PF and TAFPB respectively to predict MPS. R was not significantly different from zero for all steps. After Step1, entering 16 PF into regression , R^2 =.035, adj.R^2 =.006, Finc(7, 264) = 1.189, p≥.05, not significant. The unique contribution of the 16 PF to the prediction of MPS was 3.5%. After Step 2, including TAFPB into regression equation, R^2 =.061 adj.R^2 =.006, F(15, 256) = 1.106, p≥.05. Adding TAFPB improved 2.6% of the variance MPS. TAFPB and 16 PF together did not predict MPS significantly.

After that, 5 psychomotor scores were entered into regression as IV's. Stepwise regression was run based on statistical criteria. R was significantly different from zero for each step. After last step, R=.253, F(2, 293) = 9.97, p≤ .01. Instrument interpretation made the highest contribution to the prediction of MPS, explaining 5% of the variance in MPS. For instrument interpretation, β = .203, t = 3.526, p≤ .01 and for digit recall, β = .121, t = 2.111, p≤ .05. Both, instrument interpretation and digit recall tests significantly predicted MPS, explaining 6.4 % variance.
The regression equation: **y = 65.21 + .33 x1 + .22 x2**

Table 3.23
Regression Table (IV: 5 psychomotor score, DV: MPS-stepwise)

Predictor		Beta	t	Sig.
X1	Instrument (psychomotor)	,203	3,526	,000
X2	Digit recall (psychomotor)	,121	2,111	,036
R =,253	**R²** =,064			

Next, the hierarchical regression was conducted by entering TAFPB, and 5 psychomotor scores, respectively in order to predict MPS. R was significantly different from zero except for first step. R=.311, F(12, 293) = 2.510, p≤.01. After Step1, entering TAFPB into regression , R^2 =.018, adj.R^2 =-.018, Finc(7,286) = .760, p≥ .05. The unique contribution of TAFPB to prediction of MPS was 1.8% which was not significant. After Step 2, including psychomotor scores into regression equation, R^2 =.097, adj.R^2 =.058, F(12, 293) = 2.510, p≤ .01. The unique contribution of psychomotor scores to the prediction of MPS was 7.9%. For the last step, from the TAFPB, extraversion-agreeableness, β = -.206, t =-2.065, p≤ .05, from psychomotor scores, instrument interpretation, β = .184, t = 3.061, p≤ .01, digit recall, β = .128, t = 2.20, p≤ .05.

The regression equation: **y = 68.66 – 5.54 x1 + .23 x2 + .30 x3**

Table 3.24
Regression Table
(IV: 4 main factors and 3 independent factors of TAFPB, 5 psychomotor score, respectively, DV: MPS-stepwise)

Predictor		Beta	t	Sig.
X1	Extraversion-Agreeableness(TAFPB)	-,206	-2,065	,040
X2	Digit recall (psychomotor)	,128	2,200	,029
X3	Instrument interpretation (psychomotor)	,184	3,061	,002
R =,311	**R²** =,097			

Next, the hierarchical regression was conducted by entering 5 psychomotor scores and TAFPB, respectively in order to predict MPS. R was significantly different from zero except for the first step. R=.311, F(12, 281) = 2.510, p≤.01. After Step1, entering psychomotor scores into regression , R^2 =.076, adj.R^2 =.060, Finc(5,288) = 4.719, p≤.01. The unique contribution of psychomotor scores to the prediction of MTS was 7.6% which was significant. After Step 2, including TAFPB into regression equation, R^2 =.097, adj.R^2 =.058, F(12, 281) = 2.510, p≤ .01.The unique

contribution of the TAFPB to the prediction of MPS was 2.1%. For the last step, from psychomotor scores, Instrument interpretation, β = .184, t = 3.061, p≤ .01, digit recall, β = .128, t = 2.20, p≤ .05. from the TAFPB, extraversion-agreeableness, β = -.206, t =-2.065, p≤ .05.

The regression equation: **y = 68.66 + .23 x1 + .30 x2– 5.54 x3**

Table 3.25

Regression Table

(IV: 5 psychomotor score, 4 main factors and 3 independent factors of TAFPB, respectively, DV: MPS-stepwise)

Predictor		Beta	t	Sig.
X1	Digit recall (psychomotor)	,128	2,200	,029
X2	Instrument ınt.(psychomotor)	,184	3,061	,002
X3	Extraversion-Agreeableness(TAFPB)	-,206	-2,065	,040
R =,311	**R² =**,097			

3.7. TAFPB and BSI Correlations (Construct validity)

Then TAFPB results were compared with BSI and 16 PF. There were expected negative correlations between all factors of TAFB and BSI factors. Almost all correlations were significant at the level .01, which were presented in **APPENDİX M.** The highest negative correlations were observed between depression scale and leadership (r=-.377, p≤.01), conscientiousness (r = -.340, p≤.01), extraversion-agreeableness (r = -.331, p≤.01) and military (r =- .319, p≤.01). Obsessive behavior was associated with leadership (r = -.366, p≤.01), conscientiousness (r = -.310, p≤.01). Anxiety also predicted military (r = -.271, p≤.01), leadership (r = -.342, p≤.01), extraversion-agreeableness (r = -.296, p≤.01) and conscientiousness (r =- .288, p≤.01). Internal sensivity was correlated negatively with leadership (r = -.320, p≤.01).

3.8. TAFPB and 16 PF Correlations (Convergent validity):

In addition to the BSI,the relationship between 16 PF and TAFPB relationship was analysed. The 4 main factors were compared with 16 PF and 8 second order

factors, namely, self-esteem, anxiety, cartertia, control, independence, extraversion, creativity, and academic success (see **APPENDIX N**).

Military factor and self- esteem correlation was not as expected. Military factor was not related to self-esteem. Whereas military factor was significantly and negatively correlated with anxiety ($r = -.136$, $p \leq .01$), nervousness ($r = -.093$, $p \leq .05$), and positively correlated with control ($r = .166$, $p \leq .01$) and academic success ($r = .169$, $p \leq .01$). Moreover Military was related to PF3 (C; emotionally stable_affected by feelings), ($r = .148$, $p \leq .01$), PF6 (G; conscientious_expedient), ($r = .149$, $p \leq .01$), PF7 (H; socially bold_shy), ($r = .136$, $p \leq .01$), PF9 (L; suspicious_trusting), ($r = -.084$, $p \leq .05$), PF15 (Q3; controlled_casual), ($r = .149$, $p \leq .01$) and PF16 (Q4; tense_relaxed), ($r = -.104$, $p \leq .01$). All correlations were significant as expected, except for self-esteem. H6a was accepted.

Leadership was significantly correlated with anxiety ($r = -.217$, $p \leq .01$), cartertia, ($r = -.260$, $p \leq .05$), independence ($r = .262$, $p \leq .01$), and extraversion ($r = .227$, $p \leq .01$). However self-esteem and control did not associate with leadership significantly. Leadership was related to PF1 (A; outgoing_reserved), ($r = .091$, $p \leq .05$), PF3 (C; emotionally stable_affected by feelings), ($r = .163$, $p \leq .01$), PF4 (E; assertive_humble), ($r = .292$, $p \leq .01$), PF5 (F; happy-go-lucky_sober), ($r = .190$, $p \leq .01$), PF7 (H; socially bold_shy), ($r = .280$, $p \leq .01$), PF11 (N; shrewd_forthright), ($r = -.080$, $p \leq .05$),PF12 (O; apprehensive_placid), ($r = -.166$, $p \leq .01$) and PF14 (Q2; self-sufficient_group-tied), ($r = -.107$, $p \leq .01$) and PF16 (Q4; tense_relaxed), ($r = -.185$, $p \leq .01$). Correlations were significant as expected, except for self-esteem and control. H6b was partly accepted.

Extraversion was significantly correlated with anxiety ($r = -.183$, $p \leq .01$), cartertia ($r = -.210$, $p \leq .05$), independence ($r = .179$, $p \leq .01$), and extraversion ($r = .268$, $p \leq .01$). However self-esteem and control did not associate with leadership significantly. It was not surprising that the highest correlations were between extraversion scores of both battery. Extraversion and independence relationship was not significant although there was a positive trend. Extraversion and self esteem relationship was not significant too. Extraversion was related to PF1 (A;

outgoing_reserved), (r = .146, p≤.01), PF3 (C; emotionally stable_affected by feelings), (r = .136, p≤.01), PF4 (E; assertive_humble), (r = .169, p≤.01), PF5 (F; happy-go-lucky_sober), (r = .193, p≤.01), PF7 (H; socially bold_shy), (r = .262, p≤.05), PF11 (N; shrewd_forthright), (r =- .089, p≤.05), PF12 (O; apprehensive_placid), (r =- .118, p≤.01) and PF14 (Q2; self-sufficient_group-tied), (r =- .165, p≤.01), PF15 (Q3; controlled_casual), (r = .08, p≤.05) and PF16 (Q4; tense_relaxed), (r =- .15, p≤.01). H6c was accepted.

Conscientiousness was significantly correlated with anxiety (r = -.144, p≤.01), cartertia (r = -.132, p≤.05), control (r = -.146, p≤.05) and academic success (r = .094, p≤.05). Conscientiousness was related to PF3 (C; emotionally stable_affected by feelings), (r = .103, p≤.01), PF6 (G; conscientious, expedient), (r = .119, p≤.01), PF7 (H; socially bold_shy), (r = .134, p≤.01), PF15 (Q3; controlled_casual), (r = .110, p≤.01) and PF16(Q4; tense_relaxed), (r = -.128, p≤.01). H6d was accepted.

CHAPTER 4

DISCUSSION

The purpose of this study was to determine whether TAFPB was a valid selection device for the TAFA cadets. Although measuring personality is not a new concept, the importance of the personality tests has been ignored in personnel selection process until recently. The reasons for that were discussed as the low relationship between personality and behaviour (Michel, 1968 reported by Little, 2004), measuring false traits or using false performance criteria (Burger, 1990), and using not cultural and job specific inventories (Sümer et al., 2000).

Personality is used for selecting better performer in personnel selection. It is proved that the contributions of the employees to the organization is not equal and employers wants to select higher performer (Cook, 2004). Therefore, firstly personality and performance, than their relation were carefully explored in order to construct the bases of these theses. Personality is very important in understanding and evaluating the individual differences and their effects to the work behavior. There is no single definition of personality. Among different approaches to personality, namely, psychoanalytic, trait, humanistic, behavioral-social learning, cognitive approaches, trait theory is the most reasonable one from the perspective of TAFPB, based on ideal officer profile. Trait approach is focused on inherited dispositions, relatively enduring descriptive characteristics of peoples, while explaining the individual differences (Eynseck, 1971). This approach enables the researchers to identify and measure the traits with interval scales and apply it to scientific selection procedures.

Performance is defined as behavior. Performance is not the consequence or the result of the action, it is the action itself (Campbell et al., 1993). Performance is more than one thing (Campbell, 1990), which is divided into task performance and contextual performance. Task activities are related to technical core whereas

contextual activities are voluntary activities of incumbents. According to Soldier Effectiveness Model, only performing assigned task activities is not sufficient for the effectiveness of a soldier. Personality is more related to contextual performance than task performance.

Many studies reveaed that personality predicts performance especially contextual performance well (Motowidlo & Scatter, 1994). Big Five was found beneficial for PS (Mount& Barrick, 1991; Tett et al. 1991; Salgado, 1997). Moreover Tett et al.(1991) proved that personality predicts performance in military better than in civilian.

The importance of the personality and the personnel selection in Turkish Air Force is both related to finance and human life. False decisions in selection may jeopardize the fulfilment of the aims of the Turkish Air Forces, may waste the training resources, cause accidents, and lead to negative impacts in the personnel's future job performance. Additionally, few turnover rates of military personnel indicate the significance of the selection of best fitted person. Fit of the personality to the organization is as important as personality–performance relationships (Schneider, 1987).

The main objective of TAFA is to select and train officers. Two basic candidate sources of TAFA are military and high school's graduates. Turkish Air Force is aware of the importance of selecting better and appropriate candidates. Therefore, a complex and multi-staged selection system is developed, which is illustrated in **Figure 1** including a University Entrance Score above the limits, medical check-up, physical fitness test, various ability and personality tests, there different interviews, flight and basic military training. In TAFA, 16 PF is used as main personality test in order to collect data about candidate's personality prior the interviews.

TAFPB was originally prepared for selecting ideal officers and the aim of the TAFA is also select ideal candidates, who will become the officers of Turkish Air Force. The aims is similar. The idea of using it in the selection process of TAFA

comes from the definition that personality pursues a consistent path (Kelly 1955 reported by Hogan et al., 1996) and there is commonality between the aims of TAFBP and TAFA. TAFPB was selected for this study because it had many advantages over other tests. All the undesired factors, cited above for low validities of the personality tests, were considered during the development process and validation studies. While preparing the test, contextual performance and soldier effectiveness model were considered (Sümer, 2000). TAFPB is job and culture specific. The personality and performance factors of an ideal officer were determined by personality oriented job analysis in order to guess the skills, ability and other attributes needed for the performance. It decreased the probability of measuring wrong traits or using false performance criteria. More importantly, TAFPB is proved a reliable and valid test for selecting officers.

The highest internal correlation was observed between extraversion and leadership (r= .715, p≤.01). Judge el al, 2002 found consistent results with present study. Of the five factors, extraversion has the highest correlation with leadership in Judge's study too. Thomas, Dickson and Bliese (2001) were explored the role of personality and values in predicting leadership performance (LP) of 818 ROTC cadets who are one of the sources of Army officers. The values of power and affiliation from the leader motive pattern (LMP) and extraversion of the Big Five were measured. Criterion variable, LP is evaluated by the ratings of cadets commanders giving a cadet evaluation score (CES). Of the personality factors, only extraversion was considered predictive in LP. The reason for that is extraverts are high in need for power and high in need for affiliation. Additionally, extraversion could be easily rated by assessors. This research reveals that personality serves as a mediator between power and leadership partly and affiliation and leadership completely. To sum up, extraverts, who are high in need for power and affiliation, are better in leadership. High extraversion-leadership relationship was supported by Piedmont and Weinstein(1994), Furnham, Crump and Whelan (1997), McCrae and Costa (1987), Mount et al.(2002).

After that, validity studies were performed in order to determine how well a survey or index measures what is intended to be measured (Mueller, 1986; Cook, 2004;

Litwin, 1995; Henerson, Morris & Gibson, 1987). This research included different validity studies, namely, face, content, criterion related, convergent and construct validity studies.

4.1. Face and Content Validity of TAFPB

First, face validity and content validity were evaluated. Face validity is related to the general idea whether the test looks applicable (Cook, 2004). Before applying the test, TAFPB was decided to have face validity. The reason for that was TAFPB was developed depending on job analysis and prepared for selecting TAF officers, meaning job and culture specific. Because TAFA selects officer candidates, the test seemed applicable for the selection of TAFA cadets. Moreover the reliability and validity of that was proved with many statistical analyses for selecting officers, which was a support for content validity, too. Content validity depends on the decisions of the experts whether the test is plausible. Statistical analyses is not strictly required in order to prove content validity. Content validity is related to examining the items of the tests rather than reporting correlations of the test results with performance and other tests. Experts evaluate how essential each test question is to what is being measured. Examining the development process of TAFPB, it could be realized that the traits were determined by interviews with Army, Navy, Air Force and Gendermarie SME. Moreover a big sample of officer scored all traits relevance and importance. Additionally, soldier effectiveness model, explaining different aspects for a good soldier and other models related to performance like Big Five were taken into account at the development phase. Additionally , the questions of the TAFPB were analyzed whether they were appropriate for the cadets and found that they were applicable. Therefore TAFPB was choosed to cover needed traits for an ideal officer.

4.2. Criterion-related Validity of TAFPB

Criterion-related validity was measured by comparing the results of TAFPB with many performance criteria. Criterion-related validity explains whether the test predicts productivity (Cook, 2004). Criteria could be objective or subjective. An

objective criterion is observable and measurable whereas a subjective criterion is based on personal judgement. Both types of criterion were used in this research. Academic and Sport performances were objective criteria. Subjective ones were military score and commander evaluation. Flight criterion had both objective and subjective characteristics. The findings of this study implied that some sub factors of TAFPB predict objective criteria better than subjective ones. It should be kept in mind that subjective criteria, like supervisor evaluations, may include bias, such as halo effect, leniency etc. Even appearance, liking or weight could affect evaluation of that person. Although criteria depending on judgement are used widely, everyone could not make equal quality judgements. In order to improve the quality of the decisions, selecting and training the evaluators is necessary. The motivation of evaluator also leads to the change in the accuracy of the ratings. People making judgements should be aware of impression management techniques of the candidates. In addition, using more than one person would improve the quality of the results, too (Cook, 2004; Muchinsky, 2000).Below, each performance criteria will be discussed used in this study.

4.2.1. Personality- Academic Performance (AP) Relationship

TAFA gives different engineering training programs to their cadets. Therefore AP should be a performance criterion. Moreover the relationship between grades and future job performance indicates that AP could be a criterion of TAFA cadets performance. Roth, BeVier, Switzer III and Schippmann (1996) made a meta-analysis in order to confirm the relationship between grades and performance in which Grade Point Average (GPA) was predictor and supervisory and expert performance rating were criterion. These results indicates that GPA predicts performance.

Extraversion and AP correlations were not significant although there was a negative trend (H1a, rejected). Of the five factors, conscientiousness had the highest correlation with AP (H1b, accepted). Leadership-AP relationship was negative as expected, because extravertswere more likely to be a leader (Thomas et al, 2001 ; Piedmont & Weinstein, 1994, Crump & Whelan, 1997 ; McCrae

&Costa, 1987 ; Mount et al., 2002), and extraversion and AP correlation was cited negative in literature (Furnham, Chamorro-Premuzic and McDougall, 2003).(H1c, accepted). Cadets, more openness to experience got higher academic scores (H1d, accepted). Moreover, planning and work discipline were positively related to AP. It should be remembered the high correlation between that factors (r= 658, p≤ .01).

The significant associations between personality factors and AP (H1, accepted) are consistent with literature. Traditionally, individuals' AP is predicted by intelligence and personality. Duff, Boyle, Dunleavy and Ferguson (2003) included students approaches to learning as IV in addition to personality factors, which was not inconsistent with the trait approach because of the strong relationship between learning orientation and personality, while predicting AP. The correlation between personality and AP was found not high and significant in this analysis. Conscientiousness had the strongest correlation with AP (r = .14). Of the learning approaches, deep and strategic approaches were positively correlated with GPA and surface approach was negatively related to GPA. The Big Five personality traits explained 22.7 %, 43.6% and 30.6 % of the variance in deep, surface and strategic approaches respectively. In addition, regression results indicated that age, prior educational achievement and of the Five Factors, conscientiousness was statistically significant and explains 24.1 % of the variance in GPA scores.

Although negative correlations were expected for all factors of BSI, sensitivity, depression, anxiety and paranoid thinking were positively correlated with Mean1, which was surprising (see **APPENDIX I**). Only hostility was negatively correlated with Numerical Score. H1e was rejected. The reason for that might be that the negative feelings and thoughts lead people to study more.

4.2.2. Personality- Sport Performance (SP) Relationship:

Sport was one of the important criteria of the success of the TAFA cadets. Psychical ability and fit are an indispensable requirement of a prospective officer. The interactions of personality and sport are not a new concept. The comparison

between personality factors of TAFPB and SP indicated that cadets, who had higher score on extraversion and leadership, were more likely successful in sport (H2a and H2b, accepted). And neurotism was found negatively related to SP (H2c, accepted). The results of the present study were consisted with the study conducted by Cerin (2003). Cerin's study (2003) about sport players was conducted with 22 male athletes considering how much the anxiety perceptions affect the anxiety directions of athletes. Extraversion and neurotism were added as moderators to the research. Somatic anxiety, intensity, proximity to competition and their interactions with neurotism significantly predict somatic anxiety direction. Extraverts were generally defined as outgoing, socially participative, assertive and active. As expected, it was found that athletes have extravert dispositions similar to the ones in the present study.

McNeill and Wang (2003) explored whether psychological profiles affect success in sport. Elite sport players referred to highly motivated group, having moderate task orientation (task improvement) and high ego dispositions (winning and outperforming than others). The students, who saw sport as an opportunity for gaining social status, which reminds leadership and extraversion were highly motivated ones. Hausenblas, and Giacobbi (2003) examined the role of personality on exercise behavior and exercise dependence. The excessive amount of exercise behaviors, which had negative outcomes, are named as exercise dependence. The correlations between exercise dependence and extraversion ($r = .11$, $p \leq .05$) and neurotism ($r = .15$, $p \leq .01$) were positive and significant. In contrast, agreeable students showed fewer exercise dependence symptoms ($r = -.16$, $p \leq .01$).

4.2.3. Personality- Flight Performance (FP) Relationship:

Flight was another criterion in order to evaluate the TAFA cadets' success. The main and dominant aim of TAFA was to train candidates as pilot officers. Being a pilot requires different capabilities like fast decision making in a stressful environment, dealing with complex tasks, demands and operating different systems simultaneously. To determine good pilots, 3 aspects of pilot selection system were cited in literature with consensus: 1. Intelligence (general mental

ability), 2. Personality, 3. Psychomotor ability (Rose, 2001; Kantar & Caretta, 1988; Ataman, 2000; Kale, 2004).

Flight performance was measured by evaluating Experimental Flight Training (OSU) during the selection phase and flight knowledge. None of the personality factors measured by TAFPB was related to two types of FP in this study. Moreover 16 PF, BSI and psychomotor abilities could not predict FP of TAFA too. Some analyses, cited below, support these results, claiming low or no relationship between flight and performance.

The meta-analysis of Hunter and Burke (1994) revealed that the personality- FP relationship is r = .10, whereas mechanic knowledge-flight training performance is r = .29. Moreover, Work sample- FP associations were between r = .11 and r = .19. They suggest that, the most predictive instrument for flight training success was psychomotor and related tests.

Olea and Ree (1994) analysed the validity of psychometric g and specific ability and job knowledge for predicting pilot performance. Of the 16 subtests of AFOQT, five subtests, namely, Verbal (V), Quantitative (Q), Academic Aptitude, Pilot (P) and Navigator-Technical (N-T) were used to predict pass-fail of flight training, four different work sample scores and an overall score. The best predictor of pilot performance was g with an average validity coefficient .332. The relationship between g and FP was explained via the effect of g on learning.

Siem (1992) evaluated five personality factors, hostility, self-confidence, values flexibility, depression and mania, which were considered to be related to pass-fail scores of flight training. Of the five factors, hostility negatively ($r = -.12$, $p \leq .05$), self-confidence ($r = .13$, $p \leq .01$), and values flexibility ($r = .12$, $p \leq .05$) were positively correlated with Pass- Fail outcome. The correlations were not as high as expected. Moreover the personality factors selected do not add incremental validity on to Basic Attributes Tests (BAT) measuring psychomotor coordination and information processing.

Though these studies did not encourage to focus on personality traits in predicting FP, it is known that good pilots have specific personality characteristics and all pilot selection systems world wide cover personality measurements. The selected cadets should posses the requirements of a pilot. However, the lack of agreement about determining the characteristics differentiating successful pilots from other people would be the main problem (Ataman,2000). Cultural differences and different job requirements should be in mind (Sümer, 2000).

Jessup and Jessup (1971) pointed out that the differences of pilots from general population was that pilots were more extravert, more though minded and more independent. Similarly, Bartram (1995) found that people who were more extravert, less anxious, more though minded and more independent were significantly more likely to be selected for the military flight training. Also, the Handbook of 16 PF (Cattell, Eber, & Tatsuoka, 1970) proved that high reality and emotional stability under stress were significant pilot characteristics and military pilot cadets had similar profiles with the civil airline pilots except for former have higher dominance, self-sufficiency and lower superego and self-centiment traits.
To determine ideal personality characteristics of TAF pilots, TAF started a scientific research covering four different Squadron (2004). The first study group consisting of SME (Squadron commanders and higher ranked pilots) and psychologist determined the criteria that define an ideal pilot. Of the 4 squadron, 51 pilot were categorized as ideal, good and standard according to determined criteria. 16 PF was applied to pilots and 3 group in order to make comparisons. Ideal and standard pilots were significantly different in C-Stress tolerance, E-Dominance, M-Practicality and Q4-Tense. For C factor, ideal pilots were mature, stable in their feelings, realistic, could accept the situations bravely, have higher stress tolerance. Whereas, standard pilots were under the influence of their feelings, could not manage their feelings, have adaptation problems, low stress tolerance. For E factor, ideal pilots were dominant, competitive, aggressive. Controversially, standard pilots were recessive, easily manageable, modest. For M factor, ideal pilots were good at practice, whereas standard group was careless and imaginative. For Q4 factor, results were published after TAF Human Resources Evaluation and Selection Seminar in 2004.

Another study results in Turkish Military Flight Training School (2004) were similar to previously explained researches. In order to determine in what characteristics pilot training students that finished the flight school with the degrees ranged from 1 to 10, were different from the failed pilot candidates. 16 PF was applied to 70 the successful pilots and 123 failed pilot candidates. The factors of C-stress tolerance, E–dominance, I-sensivity, M- practicality, N-egoism, O- self esteem, Q1- openness to experience, Q4- tense were significantly different in two groups. It was concluded in the Human Resources Evaluation and Selection Seminar that personality factors predicting ideal factors should be considered while selecting TAFA cadets.

Under the lights of these studies with TAFA cadets and Turkish Air Force Pilots, it was proved that some personality traits were associated with personality. However, the results of the present study did not confirm these findings, although 16 PF was used, too. The reason for that the used criteria to measure FP could be problematic. OSU was a short period to measure flight success. Whereas Flight school pass-fail scores, or categorizing ideal, good or standard pilots by SME as criteria requires more time and effort which were more reliable.

4.2.4. Personality-First Commander Evaluation (A type of supervisor ratings) and Military Scores(a type of leadership ratings):

A TAFA cadet is defined with the factors of honesty, self-esteem, perfectism, conscientiousness, hard-working, agreeableness, courage, Kemalism and patriotism. Military score is given by the commanders of the cadets, which is a type of supervisory rating and leadership scores. It was hypothesized that cadets who possess these factors more dominantly were likely to have higher military scores. Additionally military scores and commander evaluation could be evaluated as forms of leadership scores. A good soldier should be a good leader.

Personality and leadership were generally evaluated by leader-trait approach. The review of the Judge, Bono, Ilies and Gerhart (2002) confirmed the belief that

leaders possess some personality traits, which differentiate them from other people. For example. leaders were less neurotic, more extravert and more openness to experience. Stricker and Rock (1998) found that, of the dominance, emotional stability, need for Achievement, self-confidence, and sociability were correlated with leadership criteria. Sociability and self-confidence scales were found more valid predictors of general leadership's criteria.

In order to find which personality traits were more valued by a supervisor, Piedmont and Weinstein (1994) compared Big Five scores of 211 person. As expected, conscientiousness was found significantly correlated with all supervisory evaluation dimensions and for all occupations in the analysis. Low neurotism and high extraversion predicted high supervisor ratings reflecting high performance. Furnham, Crump and Whelan (1997) found that conscientiousness and extraversion scores were the most significant determinants of individual's managerial characteristics measured by supervisory ratings. These results were reinforced by many studies in literature (Mount, Barrick & Strauss, 2002 ; McCrae & Costa, 1987).

In contrast to these findings, none of the personality factors of TAFPB did not correlated with MS and CE in this study. Again, criteria problems come in mind. MP and CE were subjective evaluations, which were open to bias. However, PF1 (A) and PF7 (H) were positively related to MS . Additionally, PF5 (F) was correlated negatively and significantly with CE. Low scores in PF1 (A-) indicates reserved, detached, critical, aloof and stiff personality, whereas high scores in PF1 (A+) represents warm-hearted, outgoing, easygoing and participating character (Cattell et al., 1970). Moreover PF1 is suggested to be evaluated with PF7 (H+). Low scores in PF7 (H-) explains shy, timid, restrained, threat-sensitive personality. In contrast to this, high scores in PF7 (H+) indicates thick-skinned and socially bold personality. The highest rankings in H+ belongs to airmen and administrations and social workers and business executes havd high scores in A+ . The interrelations of PF1 (A+) and PF7 (H+) gives evidence for a talkative ,extravert, and independent characteristics which are desired for a cadet. The study of Kelly and Fiske (1951) revealed that H+ people were rated significantly

high in therapy (cited in Cattell et al., 1970) which could be an explanation of high ratings in MS. PF5 (F-) represented sober, serious, cautious characteristics whereas PF5(F+) was associated with enthusiastic, heedless, cheerful characteristics. Administrators were more likely to have low scores on PF5 (F-). The highest intercorrelations were found in the present study between PF5 and PF7 (r= .65,p ≤.01). To conclude, 16 PF predicted MS and CE better than TAFPB. In other words subjective criteria was measured better by 16 PF.

4.2.5. Regression

Then regression results were examined in order to compare the explained variance by 16 PF, psychomotor scores and TAFPB in performance factors. 4 main factors and 3 independent factors of TAFPB explained significantly 2.6% of the variance in SP, 4.6% of the variance in Academic Performance (AP) and 2.3% of the variance in Mathematic Score (MTS). Commander Evaluation (CE), Flight Knowledge (FK), Experimental Flight Training (OSU), Military Performance (MP), and Map Score (MPS) could not be predicted by 16 PF and TAFPB. Psychomotor scores only predicted AP, MPS, MTS. The hierarchical regression results indicated that TAFPB had 3.4% incremental validity in explaining SP over 16 PF. TAFPB and 16 PF together explained 11% of the variance in SP. TAFPB added 5.4% of the variance to 16 PF and 4.2% of the variance to psychomotor scores in explaining AP. 16PF and TAFPB accounted for 9% of the variance and psychomotor scores and TAFPB accounts for 92% of the variance in AP. TAFPB had 3% incremental validity over psychomotor scores in explaining FK too. The total variance explained by psychomotor scores and TAFPB is 3.8% in FK. The incremental validity of TAFPB over 16 PF was 3.6% and over psychomotor scores is 2.2% in MTS. TAFPB and 16PF together accounted for 5.4% of the variance and TAFPB and psychomotor scores accounted for 4.9% of the variance in MTS. Finally, TAFPB had 2.1% incremental validity over psychomotor scores in MPS. TAFPB and psychomotor scores together explained 9.7% of the variance in MPS.

The significant interview and subjective performance criterion correlations revealed that the subjective criterion, MS,CE, and FP could be better measured by

interview scores. Whereas interview did not significantly predicts objective performance criterion, which could be significantly predicted by TAFPB.

Generally speaking, TAFPB had incremental validity over 16PF in predicting objective performance factors (sport score, academic score, or mathematic score). Whereas for subjective factors (commander evaluation and military performance) could not be predicted by TAFPB. To conclude, TAFPB is a successful instrument in predicting objective performance criterion.

4.3. Convergent validity

Next convergent validity was examined by comparing the results of TAFPB, BSI and related factors of BSI. Convergent validity explained whether the scores on a test is correlated significantly with other test scores measuring the similar construct (McIntire & Miller, 2000). BSI, developed by Derogatis (1992), was used to measure psychological symptoms. All BSI factors were negatively correlated with TAFPB, as expected in this study (h5, accepted). High scores in TAFPB indicated low psychological symptoms (see **APPENDIX M**). More specifically, cadets having high leadership characteristics were less likely to show obsessive behavior, internal sensivity, depression, anxiety or other undesired symptoms. Extraverts feel less anxiety and depression. High scores in TAFPB indicated less psychological symptoms, which were congruent with the study of Sümer et al (2000), in which TAFPB and BSI scores were compared with a sample of 1111 officers. Both results supported construct validity of the TAFPB.

After that TAFPB and the related factors of 16 PF were compared. All hypotheses were accepted (H6a, H6b, H6c and H6d) indicating TAFPB and the related factors of 16PF measure similar things (H6, accepted). PF3, PF7, PF16 and anxiety, nervousness, independence, and extraversion were the factors most strongly correlated with TAFPB. Additionally, PF5, PF12, PF14 and PF15 were highly related to TAFPB, too. In contrast to them, the relationship between self-esteem, creativitism and TAFPB was not significant. PF3 represents for low scorers, low ego strength meaning affected by feelings, less stable, easily upset and changeable.

High ego strength is defined as mature, reality, calm and patient. An ideal officer was expected to have high scores in PF3. Cattell et al (1970) suggested that administrators and airline pilots should have above- average ego strength. Low ego strength was preferred for occupations, not demanding sudden adjustments (e.g. clerks, postmen). The positive correlations between TAFPB and PF3 proved that TAFPB selects people, who had high ego strength in order to adjust difficult tasks.

PF7 measures therectio versus parmia. Low scorers on PF7 are shy, restrained, therear-sensitive and timid whereas high scorers on PF7 are socially bold, inhibited, venturesome and spontaneous people. High scorers are more responsive, friendly, active and adventurous. From the definitions, an ideal cadet is expected to get high scores on PF7 having explained characteristics. The positive correlations between two tests indicate cadets having high scores on TAFPB hadsimultaneously the high PF7 traits.

PF16 measures low ergic tension versus high ergic tension. Low scorers on PF16 are relaxed, tranquil, unrestricted and composed whereas high ones are tense, frustrated, driven, overrought, fretful. Cattell et al (1970) reported that high scorers in PF16 achieve rarely leadership. Low scorers are more likely to be successful in school. Low score is desired for airline pilots. From these results, it could be easily understood the negative correlation between PF16 and TAFPB. High scores in TAFPB indicated low ergic tension, too.

Cattell et al.(1970) measured and evaluated dominant personality factors of different occupations. Airmen cadets got very high mean scores on PF 4 and PF 7, respectively 9.2 and 9. PF2 (7.8), PF3 (7.5) and PF16 (.6) results were high too. Additionally, airmen cadets profile were similar to pilots.

These results strengthen the validity of TAFPB because of the high relations between them. TAFPB measured similar desired constructs.

4.4. Limitations and suggestions:

The first limitation is to administrate the TAFPB to only TAFA cadets, who had been carefully selected. According to Schneider (1995), organizations constitute a homogen structure, which is a threat for restriction of range. Although employees were found more reliable than applicants (Rosse et al., 1998), it is suggested to apply the tests to the applicants during the selection process and to compare the results of passed and eliminated applicants. One year later, test scores could be compared with performance criteria.

Second limitation is the problems of self-report measures, were used ‘n the present study. Self report measures are suspectible to faking (Stecher et al, 1998 ; Vieswesvaran et al., 1999 ; Elingson et al., 1999). Although the academic reason for the application of the TAFPB is explained to the cadets, some cadets voiced their concerns about how the test is to be evaluated and whether the results will affect their future.

Third limitation concerns the subjective measures of performance namely, commander evaluation (CE) and military score (MS), which are open to bias. TAFPB could not predict both criteria. Similarly, 16 PF- CE and 16PF-MS relationships are low. In order to use commenders’ evaluation as subjective performance criteria, it is suggested that the commenders in TAFA should be trained about bias and other evaluation problems. Flight performance including both objective and subjective aspects is not correlated with TAFPB. Flight performance is determined by flight knowledge and basic flight training results. The aim of flights in TAFA is to attract the students for being a pilot. Cadets use low performance propeller aircraft in TAFA. And the flight time is very limited to evaluate the performance of the cadets. The real flight training starts after the graduation of TAFA, lasting in 18 months. During 3 types of aircraft training, namely SF-260 (propeller), T-37 (subsonic jet) and T-38 (supersonic jet), the candidate pilot is evaluated to be a pilot with different instructors in a standardized form. Therefore, it is suggested to compare the passed and failed officers’ TAFPB

results in order to evaluate the criterion related to validity for flight training, which will provide.

Another limitation of the present study is the uncertainty about the weights for the criteria, being a good pilot, being a good soldier or being a successful engineer. An extensive job analysis, providing the information about human source requirements and specifications is needed to determine which criterion is more important for the candidate officers in TAFA, who are the future of Air Force. Although TAFA selection system is one of the most scientific and developed systems in Turkey, including different selection methods, job analysis results improve the true decisions for selection. The job analysis study, aiming to determine ideal pilot characteristics, started in 2004 and still continuing, leads to over screen the system again. Beside pilots, other branches' requirements should be determined.

To sum up, military sourced cadets performance is significantly higher than civil sourced ones. Moreover military sourced cadets shows less psychological symptoms. The reasons for that should be carefully examined. Military high school graduates seems more prefable by selecting cadets.The selection system should be redesigned under the lights of these job analyses results.

REFERENCES

Aamodt, M.G., "Introduction to I/O Psychology", *Applied Industrial and Organizational Psychology*, (3rd edition), Wadsworh: Belmont, California, 1999, pp.1-22

Aircraft Accidents (February, 1998), available at Http://162.58.27.106/aam-600/610/600Air.html

Arabian, J., "Current Practice of Officer Selection in the United States", presented at the IMTA/NATO/RTA/Human Factors Medicine Panel workshop on Officer Selection, Monterey, California, USA, 9-11 November 1999

Arvey, R.D. & Murphy, K.R., "Performance Evaluation in Work Settings", *Annual Reviews Psycology*, 1998, 49, pp.141-168

Ataman, S., "A Model for Selection of Pilot Candidate in Army Aviation", Master's Thesis, Istanbul, Yeditepe University, Institude of Science and Engineering, 2000

Bartone, P.T., "Subay Ögrencilerinin Liderlik Performansının Belirleyicisi Olarak Kisilik Dayanıklılıgı", IMTA/NATO/RTA/Human Factors Medicine Panel workshop on Officer Selection, Monterey, California, USA, 9-11 November 1999

Bartram, D., "The Predictive Validity of the EPI and 16PF for Military Flying Training", *Journal of Occupational and Organizational Psychology*, 1995, Vol. 68, pp. 219-236

Bekmezci, I., "Officer and Pilot Selection System in Turkish Air Force", paper presented at the RTO HFM Workshop on "Officer Selection" held in Monterey, USA, 9-11 November 1999, and published RTO MP-55

Borman, W.C. & Mottowidlo, S.J., "Expanding the Criterion Domain to Include Elements of Contextual Performance" in N.Schmitt and W.C. Borman (eds.) *Personnel Selection in Organizations*, (San Francisco: Jossey Bass.), 1993, pp.71-98

Bradley, J.P., Nicol, A.A.M., Charbonneau, D. & Meyer, J.P.,"Personality Correlates of Leadership Development in Canadian Forces Officer Candidates", *Canadian Journal of Behavioral Science*, 2002, Vol. 34(2), pp.92-103

Brannick, M.T. & Levine, E, "Job Analysis: Methods, Research, and Applications for Human Resource Management in the New Millennium.", Sage Publications: Thousand Oaks, London, New Delhi, 2002, pp.1-97

Bunce, D., & West, M.A., "Self Perceptions and perceptions of group climate as predictors of individual innovation at work", *Applied Psychology: An International Review*, 1995, 11, 215

Burger, M.J, "Personality", Belmont, California: Wadsworth Publishing Company, 1990, pp.1-17

Burnett, J.R & Motowidlo, S.J., "Relations Between Different Sources of Information in the Structured Selection Interview", *Personnel Psychology*, 1998, Vol. 51, Issue 4, p.963

Campbell, J.P., Wise, L.L. & J.Mc Henry, "Modelling Job Performance in a Population of Jobs", *Personnel Psychology*, 1990, 43, pp.313-333

Campbell, J.P., Mc Cloy, R.A., Oppler, S.H. & Sager, C.E., "A Theory of Performance" in N.Schmitt and W.C. Borman (eds.) "Personnel Selection in Organizations", (San Francisco: Jossey Bass.), 1993, pp.35-70

Campbell, J.P., Wise, L.L. & Mc Henry, J., (1990), "Identifying Optimal Predictor Composites and Testing for Generalizabilty across Jobs and Performance Factors", *Personnel Psychology*, 1990, 43, pp.355-365

Caretta, T.R. & Ree, M.J., "Factor Structure of the Air Force Officer Qualifying Test: Analysis and Comparison", *Military Psychology*, 1996, Vol.8, No.1, pp.29-42

Caretta, T.R., Ree, M.J., " General and Specific Cognitive and Psychomotor Abilities in Personnel Selection: The Prediction of Training and Job Performance" *International Journal of Selection and Assessment*, 2000, Vol.8(4), pp.227-236

Carretta, T.R., Rodgers, M.N., & Hansen, I., "The Identification of Ability Requirements and Selection Instruments for Fast Jet Pilot Training", Euro-NATO ACHFWG Technical Report-2, 1996

Cattell, R.B., Eber, H.W & Tatsuoka, M.M., "Handbook of the 16 PF", IPAT Inc., Champaign, Illinois, 1970

Cerin, E., "Predictors of Competitive Anxiety Direction in Male Tae Kwon Do Practitioners: A Multilevel Mixed Idiographic/Nomothetic Interactional Approach", *Psychology of Sport and Exercise*, 2003, Article in Press, Corrected Prof

Chapman, D.S. & Webster, J., " The use of Technologies in the Recruiting, Screening, and Selection Processes for Job Candidates", *International Journal of Selection and Assessment*, 2003, Vol.11(2/3), pp. 113-120

Chatman, J. A., "Matching people and organizations: Selection and socialization in public accounting firms", *Administrative Science Quarterly,* 1991, 36, 459-484

Cook, M., "Personnel Selection-Adding Value Through People", fourth edition, John Wiley & Sons, Ltd., 2004

Day, D. V. & Bedeian, A. G., "Personality similarity and work-related outcomes among African-American nursing personnel: A test of the supplementary model of person-environment congruence", *Journal of Vocational Behavior,* 1995 46:55-70

Denton, D.W., "The Attraction-Selection-Attrition Model of Organizational Behavior and the Homogeneity of Managerial Personality", *Current Research in Social Psychology*, 1999, Vol.4 (8) www.uiwa.edu/~grpproc/crisp/crisp.4.8.htm

Driskell, J.E. "Psychology and the Military", *American Psychologists*, 1989, Vol.44, No.41, pp.43-54

Duff, A., Boyle, E., Dunleavy, K. & Ferguson, J., "The Relationships Between Personality Approach to Academic Learning and Academic Performance", *Personality and Individual Differences*, 2002, Vol. 36(8), pp. 1907-1920

Ellingson, J.E., Sackett, P.R. & Hough, L.M., "Social Desirability Corrections in Personality Measurement: Issues of Applicant Comparison and Construct Validity", *Journal of Applied Psychology*, 1999, Vol.84 (2), pp.155-166

Eynseck, H.J., "The Structure of Human Personality", 1971, pp.1-104

Eynseck, H.J., “Trait Theories of Personality” in Hampson, S.E. &Colman, M.A., *Individual Differences and Personality*, London and Newyork: Longman,1995, pp.40-50

Furnham, A. & Chamorro-Premuzic, T., “Personality and Intelligence as Predictors of Statistics Examination Grades”, *Personality and Individual Differences*, 2003, Article in Press, Corrected Prof

Furnham, A., Chamorro-Premuzic,T. & McDougall, F., “ Personality, Cognitive Ability, and Beliefs About Intelligence as Predictors of Academic Performance”, *Learning and Individual Differences*, 2003, Vol. 14 (1), pp.47-64

Furnham, A., Crump, J. & Whelan, J., “Validating the NEO Personality Inventory Using Assessor’s Rating”, *Personality and Individual Diffferences*, 1997, pp. 669-675

Guion, R.M., “Assessment, Measurement and Prediction for Personel Decisions”, Mahwah, New Jersey: Lawrence Earl Baum Associates Publishers, 1998

Hall, S.C. & Lindzey, G., “Introduction to Theories of Personality”, p.426

Hartley, R.F., “The Weighted Application Blank Can Improve Retail Employee Selection”, *Journal of Retailing*, 1970, Vol. 46 (1), pp.32-40

Hausenblas, H.A. & Giacobbi, P.R., “Relationship Between Exercise Dependence Symptoms and Personality”, *Personality and Individual Differences*, 2004, Vol. 36 (6), pp.1265-1273

Hayes, N. & Joseph, S., “Big 5 Correlates of Three Measures of Subjective Well-Beeing”, *Personality and Individual Differences*, 2003, Vol.34 (4), pp.723-727

Henerson, M.G. & Morris, L.L., “How to Measure Attitudes”, Sage Publications , 1987, pp. 132-158

Hogan R., Hogan J. & Robert B.W., “Personality Measurement and Employment Decisions”, *American Psychologists*, 1996, Vol.51 (5), pp.469-477

Hough, L.M & Oswald, F.L., “Personnel Selection: Looking Toward the Future-Remembering the Past”, *Annual Review Psychology*, 2000,Vol. 51, pp.631-664

Hough, L.M., Eaton N.K., Dunnette M.D., Kamp. J.D. & McCloy R.A, "Criterion Related Validities of Personality Constructs and the Effect of Response Distortion on those Validities", *Journal of Applied Psychology*, 1990, Vol.75, pp.581-595

HRESS, Hv.K.K.lığı, Insan Kaynaklarını Değerlendirme ve Seçme Semineri, Güzelyalı, İzmir, 2004

Huffcut, A.I. & Arthur, W., "Interview Validity for Entry-level Jobs", *Journal of Applied Psychology*, 1994, 79, pp.184-190

Hunter, D.R. & Burke, E.F.," Predicting Aircraft Pilot Training Success: A meta-analysis of published research", *International Journal of Aviation Psychology*, Vol. 4, pp.297-313

Ingledew, D.K., Markland, D. & Sheppard, K.E.," Personality and Self-Determination of Exercise Behavior", *Personality and Individual Differences*, 2003, Vol. 36 (8), pp. 1921-1932

Internet: www.psychpress.com.av/16pf/sub/big-five. 5 sep 2004 04:46 GMT

Jessup, G. & Jessup, H., "Validity of the Eynseck Personality Inventory in Pilot Selection", *Occupational Psychology*, 1971, Vol. 45, pp. 111-123

Judge, T.A., Bono, J.E., Ilies, R. & Gerhardt, M.W., "Personality and Leadership: A Qualitative and Quantitative Review", *Journal of Applied Psychology*, 2002, Vol. 87 (4), pp. 765-780

Kale, M., "Uçuş Eğitim Performansının Belirleyicileri Üzerine Kara Kuvvetleri Havacılığında Bir Çalışma",Yüksek Lisans Tezi, Kara Harp Okulu, Savunma Bilimleri Enstitüsü, Savunma Yönetimi Ana Bilim Dalı, 2004

Kantar, J.E. & Caretta, T.R., "Aircrew Selection Systems", *Aviation, Space and Environmental Medicine*, 1988, 59: A32-38

Kenny, D.D., "Measuring Model Fit", 2002, www.2.chass.ncsu.edu/garson/po765

Krasner, L. & Ulmann, L.P., "Behavior Influence and Personality- The Social Matrix of Human Action", Newyork: Halt, Rinehart and Winston Inc., 1970, pp.110-128

Krause, D. E. & Gebert, D., "A Comparison of Assessment Center Practices in Organizations in German-speaking Regions and the United States", *International Journal of Selection and Assesment,* 2003, Vol. 11 (4), pp.297-312

Krueger, G.P., "Military Psychology: United States", Science Direct-International Encyclopedia of the Social and Behavioral Sciences, 2001

Little,B.R., "Personality Psychology: Havings, Doings, and beings in Context", http://teachpsy.lemoyne.edu/teachpsych/faces/text/ch02.htm, 2004

Litwin, M.S., "How to Measure Survey Reliability and Validity" , Sage Publications , 1995

McCrae, R.R. & Costa, P.T., "Validation of Five-Factor Model of Personality Across Instruments and Observes", *Journal of Personality & Social Psychology*, 1987, Vol. 52 (1), pp.81-90 Abstract

Mccranek, J.S. & Tan, J.A., "Personality Predictors of Fire-fighter Job Performance and Job Satisfaction, *Applied H.R.M.Research,* 2004, Vol.9 (1), pp.39.40

McIlroy, D. & Bunting, B., "Personality, Behavior, and Academic Achievement: Principles for Educators to Inculcate and Students to Model", *Contemporary Educational Psychology*, 2001, Vol. 27 (2), pp. 326-337

McIntıre, S.A. & Miller, L.A., " Foundations of Psychological Testing", Boston: McGraw Hill, 2000, pp.167-179

McNeill, M.C. & Wang, C.K.J., "Psychological Profiles of Elite School Sports Players in Singapure", *Psychology of Sport and Exercise*, 2004, Article in Press, Corrected Proof

Motowidlo, S.J. & Van Scotter, J.R., "Evidence That Task Performance Should Be Distinguished From Contextual Performance", *Journal of Applied Psychology*, 1994. Vol.79, No.4, pp.475-480

Mount, M.K. & Barrick, M.R., " Five Reasons Why the Big Five Article has been frequently Cited", *Personnel Psychology*, 1998, Vol.51, pp.849-857

Mount, M.K. & Barrick, M.R., "The Big Five Personality Dimensions and Job Performance: A Meta-analysis", *Personnel Psychology*, 1991, Vol.44, pp.25-26

Mount, M.K., Barrick, M.R. & Strauss, J.P., "Validity of Observer Ratings of the Big Five Personality Factors", *Journal of Applied Psychology*, 1994, Vol. 79(2), pp.272-280

Muchinsky, P.M. "Psychology applied to Work: An Introduction to Industrial and Organizational Psychology", 2000 (6th Edition, Belmont, C.A: Wadworth)

Mueller, D.J., "Measuring Social Attitudes", New York: Teachers College. Press, 1986, pp.60-73

Murphy, K.R. & Cleveland, J.N, Understanding Performance Appraisal: Social, Organizational and Goal Based Perspectives", Thousand Oaks, CA:Sage, 1995,Ch.4, p.87

O'Reilly, C. A., Chatman J., & Caldwell, D. F., "People and organizational culture: A profile comparison approach to assessing person-organization fit", *Academy of Management Journal,* 1991,34, 487-516.

Olea, M.M. & Ree, M.J., "Predicting Pilot and Navigator criteria: Not Much More Than *g*", *Journal of Applied Psychology*, 1994, Vol. 79 (6), pp. 845-851

Oppenheim, A.N., Questionnaire Design, Interviewing and Attitude Measurement, London: Printer Publishers, 1992, Chapter 9

Peterson, N.G., Hough, L.M., Dunnette, M.D., Rosse, R.L., Houston, J.S., Toquam, J.L. & Wing, H., " Project A: Specification of the Predictor Domain and Development of New Selection / Classification Tests", *Personnel Psychology,* 1990, Vol.43, pp.247-276

Phillips, J.M., "Effects of Realistic Job Previews on Multiple Organizational Outcomes: A Meta Analysis", *Academy of Management Journal*, 1998, Vol. 41, pp.673-690

Piedmont, R.L. & Weinstein, H.P., "Predicting Supervisor Ratings of Job Performance Using the NEO Personality Inventory", *The Journal of Psychology*, 1994, Vol. 128(3), pp.255-265

Powers, D. & Kaufman, J.C., " Do Standardized Tests Penalize Deep-thinking, Creative, or Conscientious Students? Some Personality Correlates of Graduate Record Examinations Test Scores", *Intelligence*, 2004, Vol. 32(2), pp.145-153

Pulakos, E.D., White, L.A. & Oppler, S.H., "Models of Supervisory Job Performance Ratings", *Journal of Applied Psychology,* 1991, Vol.76 (6), pp.863-872

Raymark, P.H. & Schmith, M.J., "Identfying Potentially Useful Personality Constructs for Employee Selection", *Personnel Psychology*, 1997, Vol.50 (3), pp.723-736

Rhodes, R.E., Courneya, K.S. & Jones, L.W., "Personality and Cognitive Influences on Exersize Behavior: Adding the Activity Trait to the Theory of Planned Behavior", *Psychology of Sport and Exercise*, 2003, Article in Press, Corrected Prof

Richards, H.D.B., Johnson, G. & Wood, J.E., "Predictive Ability of Self-handicapping and Self-esteem in Physical Activity Achievement Context", *Personality and Individual Differences*, 2002, Vol. 32 (4), pp.589-602

Robertson, I. T. & Smith, M, "Personnel selection", *Journal of Occupational and Organizational Psychology*, 2001, 74, 441-472

Robertson, I.T. & Candola, R.S., "Work sample tests: Validity, adverse impact and applicant reaction", *Journal of Applied Psychology,*1982, Vol.55, pp.171-183

Roland, J.P. & Fruyt, F.D., "The Validity of FFM Personality Dimensions and Maladaptive Traits to Predict Negative Affects at Work: A Six Month Prospective Study in a Military Sample", European Journal of Personality, 2003, Vol.17, pp.101-121, published online in Wiley InterScience (www.interscience.wiley.com)

Rose, R., " Practical Use of the Pilot Personality Profile, 2001, internet

Roth, P.L., BeVier, C.A., Switzer III, F.S. & Schippmann, J.S., " Meta-Analyzing the Relationship Between Grades and Job Performance", *Journal of Applied Psychology*, 1996, 81(5), pp.548-556

Rusell, M. & Marrero, J.M., "Personality Styles of Effective Soldiers", *Military Review*, 2000, Vol.80(1), pp. 69-75

Sahin, N.H. & Durak, A., "Kisa Semptom Envanterinin Türk Gençleri için Uyarlanmasi", *Türk Psikoloji Dergisi*, 1994, 9, pp.44-56

Salgado, J.F, "Criterion validity of personality measures based and non-based on the Five Factor Model", *Journal of Occupational and Organizational Psychology*, 2003, Vol. 76, pp.373-375

Salgado, J.F., "The Five Factor Model of Personality and Job Performance in the European Community", *Journal of Applied Psychology*, 1997, Vol.82 (1), pp.30-43

Salgado, J.F., Moscoso,S. & Lado, M., "Evidence of Cross-Cultural Invariance of the Big Five Personality Dimensions in Work Settings", *European Journal of Personality*, 2003, 17:S67-S76

Saville, P. & Blinkhorn , S., "Reliability, Homogeneity and the Construct validity of Cattell's 16 PF", *Personality and Individual Differences*, 1981, Vol.2(4), pp.325-333-Abstact

Schmitt,N., Gooding, R.Z., Noe, R.A. & Kirsch, M., "Meta-analysis of Validity Studies Published between 1964 and 1982 and the Investigation of Study Characteristics", *Personnel Psychology*, 1984, Vol. 37, pp.407-421

Schneider, B, Goldstein, H. W., & Smith, D. B. "The ASA framework: An update." *Personnel Psychology,* 1995, Vol.48, pp.747-773

Schneider, B., Smith, D.B., Taylor, S. & Fleenor,J., "Personality and Organizations: A test of the Homogenetity of Personality Hypothesis", *Journal of Applied Psychology,* 1998, Vol.83 (3), pp.462-470

Shields, J.L. & Hanser, L.M., "Designing, Planning and Selling Project A" in *Personnel Psychology*, 1990, Vol.43, pp.241-245

Siegler, I.C. & Brummett, B.H., "Associations among NEO Personality Assessments and Well-Beeing at Midlife: Facet-Level Analyses", *Psychology and Aging,* 2000, Vol.15 (4), pp.710-714

Siem, F.M., "Predictive Validity of an Automated Personality Inventory for Air Force Pilot Selection", *The International Journal of Aviation Psychology*, 1992, Vol. 2 (4), pp.261-270

Sperl, T.C., Ree, M.J. & Steuck, K.W., "Armed Services Vocational Aptitude Battery and Air Force Officer Qualifying Test: Analysis of Common Attributes", *Military Psychology*, 1992, Vol.4 (3), pp.175-188

Stecher, M.D., Rosse, J.G. & Levin, R.A., "The Impact of Response Distortion on Preemployment Personality Testing and Hiring Decisions", *Journal of Applied Psychology*, 1998, Vol.83 (4), pp.634-644

Stokes, G.S., "Introduction to Special Issue: The Next One Hundred Years of Biodata", *Human Resource Management Review,* 1999, Vol.9 (2), pp.111-116

Stricker, L.J. & Rock, D.A., "Assessing Leadership Potential with Biographical Measure of Personality Traits", *International Journal of Selection and Assessment*, 1998, Vol. 6 (3), pp.164-184

Sümer, H.C, " Psikolojinin Alt Alanlarini Tanıyalim", *Türk Psikoloji Bülteni*, 1998, Sayı.9, pp.62-65

Sümer, H.C., "Performans Degerlendirmesine Tarihsel Bir Bakis ve Kültürel Bir Yaklasim", Türkiye'de Yönetim, Liderlik ve Insan Kaynaklari Uygulamalari, Türk Psikologlar Dernegi Yayinlari

Sümer, H.C., "Personel Seçme, Kisilik ve Performans", ODTÜLÜ, 2000, Vol.24, p.15

Sümer, H.C., Sümer, N. & Demirutku, K., "A Person Oriented Job Analysis for Identifying Skills and Personality Attributes to be Assessed in Officer Selection", presented at IMTA/NATO/RTA/Human Factors Medicine Panel workshop on Officer Selection, Monterey, California, USA, 9-11 November 1999

Sümer, H.C., Sümer, N., Sahin N., Sahin, N., Demirutku, K. & Eroglu, B., "Development of a Personality Test Battery to be Used in Officer Selection in the Turkish Armed Forces", presented at IMTA/NATO/RTA/Human Factors Medicine Panel workshop on Officer Selection, Monterey, California, USA, 9-11 November 1999

Sümer, H.C., Sümer, N., Çifci, O.S. & Demirutku, K., "Measurement of Officer Personality Attributes: A Construct Validity Study.", *Turkish Psychological Journal*, 2000, Vol.15, No.45, pp.15-39

TAFA, "Hava Harp Okulu Öğrenci Seçim Sisteminde Uçuculuk Yeteneklerinin Değerlendirildiği Psikoteknik Test Baraj Puanının Belirlenmesi", Hava Harp Okulu Komutanlığı, Yeşilyurt/İstanbul, 2004

Tett, R.P, Jackson, D.N. & Rothstein, M., " Personality Measures as Predictors of Job Performance", *Personnel Psychology*, 1991, Vol.44, pp.703-742

Thomas, J.L., Diakson, M.W. & Bliese, P.D., "Values Predicting Leader Performance in the U.S. Army Reserve Officer Training Corps Assessment Center: evidence for a personality-mediated model", *The Leadership Quarterly*, 2001, Vol. 12(2), pp.181-196

Türk Hava Kuvvetleri, Maliyet Analizi Kitapcığı, Hava Basimevi ve Nesriyat Müdürlügü Matbaasi, Ankara, 1997, pp.7-59

Vanasse, B., http ://www.humansource.com/article.php? sid=13, 2004

Viswesvaran C. & Ones, D.S., " Perspectives on Models of Job Performance", *International Journal of Selection and Asssessment*, 2000, Vol.8 (4), pp.216-226

Viswesvaran, C. & Ones, D., "Meta-analysis of Fakebility Estimates: Implications for Personality Measurement", *Educational and Psychological Measurement*, 1999, Vol.59 (2), pp.197-210

APPENDICES

APPENDIX A
The Correlations between Subfactors,Means, Standart Deviations,Internal Consistency Coefficients of TAFPB

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1.	**,51**																		
2.	,362	**,69**																	
3.	,302	,282	**,66**																
4.	,334	,275	,272	**,45**															
5.	,291	,177	,343	,219	**,80**														
6.	,275	,181	,331	,245	,705	**,77**													
7.	,338	,176	,351	,321	,504	,511	**,64**												
8.	,308	,184	,344	,340	,582	,522	,519	**,70**											
9.	,212	,123	,286	,252	,561	,524	,439	,491	**,69**										
10.	,154	,215	,197	,256	,347	,382	,410	,422	,376	**,53**									
11.	,208	,128	,226	,250	,500	,473	,348	,353	,482	,256	**,67**								
12.	,409	,304	,430	,315	,563	,545	,508	,459	,464	,274	,369	**,77**							
13.	,245	,194	,308	,262	,366	,390	,343	,365	,360	,279	,370	,388	**,61**						
14.	,274	,265	,309	,168	,557	,620	,433	,444	,409	,353	,427	,511	,505	**,79**					
15.	,395	,400	,468	,420	,437	,410	,500	,455	,399	,371	,365	,572	,382	,430	**,72**				
16.	,316	,286	,505	,329	,533	,475	,484	,457	,446	,364	,411	,594	,366	,469	,658	**,78**			
17.	,330	,207	,370	,232	,678	,669	,581	,546	,592	,391	,516	,602	,366	,550	,483	,539	**,80**		
18.	,274	,277	,374	,297	,462	,384	,381	,344	,304	,206	,286	,542	,293	,380	,486	,528	,412	**,82**	
19.	,273	,228	,345	,300	,415	,433	,425	,421	,372	,363	,323	,425	,378	,472	,415	,443	,418	,301	**,63**
Mean	**4,57**	**4,02**	**4,70**	**4,58**	**4,38**	**4,37**	**4,20**	**4,51**	**4,50**	**4,01**	**4,37**	**4,93**	**4,47**	**4,48**	**4,62**	**4,51**	**4,62**	**4,59**	
	4,32																		
SD	**,63**	**,68**	**,64**	**,67**	**,57**	**,54**	**,53**	**,57**	**,51**	**,58**	**,51**	**,49**	**,56**	**,60**	**,56**	**,57**	**,55**	**,63**	**,59**

APPENDIX B
The Correlations Between 4 Factors, Means, Standart Deviations and Internal Consistency Coefficients

		1	2	3	4
Military	**,64**				
Leadership		,486	**,86**		
Extravertion-Agreeableness		,511	,715	**,72**	
Conscientiousness		,618	,653	,632	**,79**
Mean		**4,47**	**4,33**	**4,63**	**4,46**
SD		**,45**	**,40**	**,45**	**,51**

APPENDIX C
The Correlations between BSI Factors

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Somatization		1									
2. Obses.beh	,631	1									
3. Internal Sens.		,591	,709	1							
4. Depression		,633	,709	,656	1						
5. Anxiety		,724	,726	,683	,766	1					
6. Hostility		,538	,623	,560	,602	,642	1				
7. Phobicanxiety		,701	,590	,608	,629	,693	,511	1			
8. Paranoid think.		,508	,614	,634	,550	,615	,504	,528	1		
9. Psychotism		,563	,581	,575	,595	,625	,537	,607	,540	1	

Note: All correlations are significant at the level of .01

APPENDIX D
The Correlations between 16PF

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
PF1	1															
PF2	,023	1														
PF3	,006	,004	1													
PF4	,168**	,074	,203**	1												
PF5	,289**	,049	,178**	,359**	1											
PF6	,056	,088*	,164**	,100*	-,005	1										
PF7	,268**	-,010	,330**	,473**	,502**	,150**	1									
PF8	,095*	,091*	-,131**	,018	,073	-,112**	-,014	1								
PF9	,074	,037	-,257**	,088**	,049	-,052	-,044	,043	1							
PF10	,024	,037	,067	,140**	,085*	,039	,170**	,078*	,001	1						
PF11	-,046	-,003	-,019	-,116**	-,141	,081*	-,124**	,040	-,034	-,052	1					
PF12	-,056	,058	-,319**	-,219**	-,100*	-,057	-,286**	,175**	,157**	,015	,046	1				
PF13	,021	-,024	,067	,162**	,188**	,019	,154**	-,053	,065	,061	-,042	-,063	1			
PF14	-,226**	,057	-,037	-,091**	-,242**	-,118**	-,321**	,108**	,006	,017	,139**	,128**	,033	1		
PF15	-,032	,027	,188**	,045	-,057	,405**	,171**	-,127**	-,101**	,004	,090*	-,153**	-,030	-,158**	1	
PF16	,021	,103**	-,361**	-,041	-,023	-,083*	-,260**	,208**	,202**	-,043	,040	,407**	,008	,224**	-,152**	1
Mean	5,60	6,04	5,98	5,92	6,57	6,09	6,44	5,55	5,64	5,68	5,76	5,40	5,55	5,07	6,12	5,35
SD	2,11	2,01	1,97	2,06	2,10	2,07	2,12	2,01	1,90	2,09	1,98	1,91	1,94	1,95	1,94	1,77

Note: ** Correlation is significant at the 0.01 level (two tailed)
* Correlation is significant at the 0.05 level (two tailed)

APPENDIX E
The Correlations between Demografic Data

	1.	2.	3.	4.	5.	6.	7.
1. Class	1						
2. Gender	,044	1					
3. Department	-,031	,044	1				
4. Mother Edu.	-,048	-,030	-,048	1			
5. Father Edu.	-,008	-,010	-,005	,593**	1		
6. Income	,003	,037	-,010	,344**	,328**	1	
7. Sister-Brother	,036	-,045	,036	-,386**	-,318**	-,126	1

Note: ** Correlation is significant at the 0.01 level (two tailed)
* Correlation is significant at the 0.05 level (two tailed

APPENDIX F

TAFPB and Performance Correlations

	Verbal	Numerical	Mean1	Mean2	Sport	Military	Flight	Com.Eva.
1. Military Spirit	-,083*	-,009	,010	,033	-,009	,017	-,002	,004
2. Discipline	-,029	,060	-,058	,010	-,032	,075*	,011	,037
3. Orderliness	-,065	-,004	,009	-,009	-,013	,017	-,015	,046
4. Strength of Character	-,032	,088*	-,024	,101**	,028	-,043	,004	-,017
5. Group Management	-,068	,010	-,090*	,023	,159**	,032	,034	-,015
6. Persuasiveness	-,065	-,065	-,118**	-,051	,101**	,039	,040	,000
7. Decisiveness	-,029	,005	-,027	-,002	,053	-,006	,005	-,028
8. Decision Making	-,053	,013	-,031	,024	,084*	-,003	,025	-,013
9. Problem Solving	-,072	-,026	-,008	,030	,075	-,036	,016	-,014
10. Stress Tolerance	-,010	-,008	-,094*	-,003	,065	,007	,073	,000
11. Openness to Experience	-,065	,013	-,070	,088*	,043	,005	,009	,013
12. Superior Relations	,053	,012	-,023	,045	,023	,049	,054	,051
13. Social Extraversion	-,037	-,011	-,021	-,003	,115**	,014	,065	-,009
14. Sociability	-,019	-,020	-,068	-,001	,163**	,039	,029	-,003
15. Work Discipline	-,029	,082*	,044	,124**	-,019	-,021	-,030	,005
16. Planning	-,054	,095	,025	,141**	,089*	,009	,007	,001
17. Self-Confidence	-,052	-,025	-,104**	,020	,027	,020	-,019	-,062
18. Monitoring task progress	-,015	,013	,008	,054	,004	,062	-,022	,052
19. Communication	-,046	-,016	-,013	,045	,093*	,002	,061	-,022
Military	-,074	,050	-,024	,049	-,009	,024	,000	,025
Leadership	-,071	-,011	-,086*	,020	,114**	,008	,040	-,011
Extraversion-Agree.	-,044	-,009	-,048	,015	,131**	,042	,060	,014
Conscientiousness	-,046	,097*	,038	,146**	,039	-,006	-,012	,004

Note: ** Correlations are significant at the level of .001
* Correlations are significant at the level 0f .005

APPENDIX G
TAFPB and Other Performance Correlations

	Eng.	Turk.	Math.	Map	Comp.	Phsi.	Chem.	Sport	Mil.Cul.	Yan. Düz.	Ind.Dev.
1.	-,101**	-,057	,003	,023	-,015	,018	,011	-,009	,050	,016	-,007
2.	-,101**	-,005	,036	-,059	-,058	,052	-,051	-,032	,079*	,036	-,006
3.	-,099*	-,010	-,012	,012	-,022	,020	-,058	-,013	,002	,063	-,039
4.	-,055	-,011	,101**	,161**	,029	,079*	-,109**	,028	,001	-,019	-,047
5.	-,074	-,053	,011	-,002	,056	,042	,013	,159**	,037	,057	,023
6.	-,064	-,048	-,064	-,023	-,029	-,049	-,053	,101**	,020	,024	,016
7.	-,030	-,046	-,004	-,010	,014	,015	-,024	,053	-,033	,030	-,008
8.	-,077*	-,055	,008	,091	,013	,044	-,018	,084*	,015	-,018	-,018
9.	-,019	-,029	-,045	,031	,016	,003	-,056	,075	-,022	-,023	-,012
10.	-,012	-,059	-,025	,004	,010	-,014	-,195**	,065	-,026	-,017	-,026
11.	-,045	-,020	,001	-,004	,066	,051	-,013	,043	,012	-,001	-,009
12.	-,073	-,028	,016	,019	,000	,032	-,091	,023	,066	,046	-,001
13.	-,060	-,083*	,005	-,065	-,025	-,026	,062	,115**	-,035	,027	,026
14.	-,016	-,033	-,012	-,057	-,016	-,032	-,019	,163**	,006	,061	,035
15.	-,047	-,018	,065	,029	-,095	,100**	-,039	-,019	-,004	-,047	,001
16.	-,068	-,044	,102**	,033	-,023	,078*	-,018	,089*	-,019	-,009	,040
17.	-,048	-,032	-,024	,018	,045	,008	-,077	,027	,005	,027	,026
18.	-,086*	-,002	,016	,012	-,050	,009	-,075	,004	,024	,028	,018
19.	-,051	-,062	,013	-,032	-,036	-,030	-,013	,093*	-,017	-,035	,025
Military	-,128**	-,029	,048	,048	-,025	,062	-,073	-,009	,048	,034	-,036
Leadership	-,063	-,062	-,022	,017	,028	,018	-,068	,114**	,001	,010	-,006
Extrav-Agree	-,060	-,060	,003	-,046	-,018	-,014	-,016	,131**	,013	,056	,026
Conscientiou.	-,063	-,034	,092*	,034	-,065	,097*	-,031	,039	-,013	-,031	,023

Note: ** Correlation is significant at the 0.01 level (two tailed)
* Correlation is significant at the 0.05 level (two tailed)

APPENDIX H
16 PF and PerformanceCorrelation

	Verbal	Numerical	Mean1	Sport	Military	Flight	Self-deve.	Comm.evaluation
PF1	,145**	,046	-,020	,107**	,104**	,058	,084*	,015
PF2	,077	,106**	,024	,030	,045	,025	-,045	,032
PF3	,016	-,027	-,058	,028	,040	,015	-,046	-,041
PF4	,039	,000	-,093*	,070	,015	,003	,001	-,044
PF5	,072	,043	-,019	,151**	,054	,070	,098*	-,105**
PF6	,029	,082*	-,014	,011	,074	,013	,048	,008
PF7	,083	,025	-,061	,095*	,079*	,018	,081*	-,059
PF8	,041	-,053	-,006	,018	-,017	,029	,036	,053
PF9	-,012	-,024	-,001	,019	,026	,016	-,005	,019
PF10	,004	,041	-,028	-,075	-,021	-,012	-,043	-,020
PF11	-,009	,009	-,038	-,026	-,006	-,007	-,047	,052
PF12	-,007	,003	,053	-,032	-,067	,043	-,032	,003
PF13	-,023	-,013	-,081*	-,059	-,031	,003	,013	-,048
PF14	-,082	-,003	,032	-,164**	-,061	-,054	-,085*	,047
PF15	,034	,028	-,010	,006	-,003	-,045	-,073	,019
PF16	-,027	,028	,041	-,018	-,022	,043	-,012	-,019

Note: ** Correlation is significant at the 0.01 level (two tailed)
* Correlation is significant at the 0.05 level (two tailed)

APPENDIX I
BSI and Performance Correlations

	Verbal	Numerical	Mean1	Sport	Flight	Military	Comm.Ev.
Somatization	-,017	-,026	,040	-,084*	-,013	-,132**	-,077
Obsession	-,035	-,065	,022	-,048	,013	-,056	-,072
Int.Sens.	-,044	,032	,088*	-,055	,007	-,064	-,067
Depression	-,063	-,068	,128**	-,068	,054	-,040	-,115
Anxiety	-,015	-,009	,093*	-,093*	,002	-,086*	,005
Hostility	,000	-,088*	,044	-,063	-,014	-,023	,016
Fobic Anxiety	-,021	,024	,059	-,054	,015	-,058	-,076
Paranoid	-,023	,030	,101**	-,037	,021	-,064	,046
psychotechnic	-,066	-,061	,011	-,083*	,021	-,042	-,070

Note: **Correlations are significant at the level of .001
* Correlations are significant at the level 0f .005

APPENDIX J
Demografic Data, Interview and Performance Correlations

	Verbal	Sayısal	Mean1	Sport	MilitaryFlight		Com.Eva.
Class	-,021	-,122**	,044	,200**	-,058	,044	-,122**
Source	,176**	,121**	,016	,267**	,202**	,108**	-,011
Gender	,044	,048	,013	-,046	,026	,028	,003
Mother education	-,011	-,103**	,013	,053	-,085*	-,046	-,115**
Father education	-,075	-,072	,021	,087*	-,044	,003	-,153**
Income	-,044	-,077*	-,027	,137**	-,083*	-,073	-,074
Sister-brother	,025	,022	-,014	,021	,000	-,024	,056
Interview	,195	-,011	,027	,046	,265**	,109	,187*

Note: ** Correlation is significant at the 0.01 level (two tailed)
* Correlation is significant at the 0.05 level (two tailed)

APPENDIX K
Psychomotor and Performance Correlations

	Verbal	Numer.	Mean	Sport	Military	Flight	Comm.Ev.
Vigilance	,007	,088*	-,010	-,012	,046 ,	027	-,004
Digit Recall	,056	,156**	,110**	,043	,012	,100*	,053
Instrument	,058	,122**	,021	-,007	,018	,049	,035
Sensory Motor	-,001	,018	,037	,022	-,015	-,021	-,077
Rapid Perception	-,030	-,026	-,077	-,030	-,011	-,037	-,031
Psychomotor tot	,033	,082	,029	,006	,012	,026	-,013
Psychomotor Range	,030	,070	,032	,016	,022	,034	,004

Note: **Correlations are significant at the level of .001
* Correlations are significant at the level 0f .005

APPENDIX L
The Means and SD of Military Source(MS) and Civilian Source(CS) Cadets

	Mean CS	Std. Dev. CS	Mean MS	Std. Dev. MS
1. Dependent Variables				
a. Performance Variables				
Sport	66,1773	13,68156	74,2857	13,82373
Flight	80,4325	7,70074	82,3970	7,84002
Commander Eva.	83,4863	7,03532	83,3670	7,97082
Verbal	82,1368	6,68269	84,3755	5,64695
Numerical	63,1274	11,32949	66,0113	12,26569
Military	78,3379	4,77132	80,2260	4,19404
Mean2	2,6296	,45272	2,7814	,52369
Mean1	2,6108	,46848	2,7814	,52369
BSI				
Somatization	1,5809	,52850	1,4938	,47463
Obsession	2,1854	,60368	2,0649	,59266
Sensitivity	2,0632	,69616	1,8519	,60420
Depression	1,8214	,62325	1,7253	,56611
Anxiety	1,6814	,58838	1,5514	,51137
Hostility	2,1000	,72288	1,9795	,70589
Fobanxiety	1,5745	,54956	1,4662	,48259
Paranoid th.	2,2094	,65873	2,0564	,61452
Psikotism	1,8296	,58711	1,7341	,54081
16 PF				
PF1	5,4661	2,11993	6,6900	1,91482
PF2	5,9322	1,99681	6,1697	2,00018
PF3	6,0786	1,94400	5,8819	1,98347
PF4	5,7832	2,02877	6,1033	2,07909
PF5	6,1409	2,07644	7,1476	1,94755
PF6	6,2520	1,91927	5,8450	2,20730
PF7	6,1436	2,09385	6,8118	2,11468
PF8	5,3144	1,86467	5,7926	2,14561
PF9	5,4472	1,85128	5,8893	1,95759
PF10	5,6992	2,02673	5,6642	2,19633
PF11	5,8862	1,99675	5,5793	1,92647
PF12	5,4472	1,89193	5,3432	1,96175
PF13	5,6233	1,92709	5,4465	1,96730
PF14	5,2900	1,91531	4,7786	1,99324
PF15	6,2547	1,88101	5,9373	1,99994
PF16	5,3306	1,74118	5,3875	1,83214
Leadership	6,3276	1,80655	6,5766	1,76277
Self-esteem	5,6654	1,57332	5,3111	1,86042
Anxiety	5,0862	1,71213	5,1634	1,67706
Cartertia	4,8787	1,82365	4,7641	1,75147
Control	6,3677	1,85994	5,9950	2,13342
Independence	5,7183	1,88789	6,2133	1,90463
Extravertion	6,0423	1,89821	7,2718	1,82182
Creativity	5,4390	1,62911	4,8931	1,73851

APPENDIX L
The Means and SD of Military Source(MS) and Civilian Source(CS) Cadets

	Mean CS	Std. Dev. CS	Mean MS	Std. Dev. MS
TAFPB				
Military Spirit	4,5851	,60527	4,5588	,64499
Discipline	4,0921	,61615	3,8972	,72191
Orderliness	4,7196	,57188	4,6582	,71126
Strength of Character	4,5553	,64854	4,6065	,69327
Group Management	4,3098	,54548	4,4393	,59800
Persuasiveness	4,3290	,52326	4,4013	,54803
Decisiveness	4,1819	,51922	4,2309	,54430
Decision Making	4,4644	,51673	4,5526	,63120
Problem Solving	4,4813	,52020	4,5106	,50143
Stress Tolerance	3,9734	,57957	4,0386	,58455
Openness to Experience	4,3216	,50668	4,4247	,52818
Superior Relations	4,9301	,45710	4,9380	,52946
Social Extravertion	4,4396	,55705	4,5031	,57009
Sociability	4,4129	,59815	4,5379	,61198
Work Discipline	4,6388	,52955	4,5893	,60000
Planning	4,4925	,55126	4,4999	,58972
Self-confidence	4,5772	,55244	4,6638	,55057
Monitoring Task Prog.	4,5977	,63007	4,5582	,64800
Communication	4,2764	,57033	4,3572	,61410
Military	4,4880	,41033	4,4302	,48438
Leadership	4,2945	,37808	4,3711	,42252
Extravertion-Agree.	4,5942	,41985	4,6597	,47536
Conscientiousnss	4,5656	,49054	4,5446	,54353
Psychomotor				
Vigilance	18,8750	4,17921	19,5188	4,31339
Digit Recall	20,5455	6,33879	21,9398	6,00096
Instrument Int.	22,3977	6,69233	24,1053	6,48629
Sensory Motor	22,9886	6,93970	22,0000	6,73151
Rapid Perception	22,7500	7,02174	22,1203	7,30679
Psychomotor	107,5568	15,78008	109,6842	16,98273
Psychomotor Range	10,3486	1,58925	10,5644	1,73633
Demographic Data				
Class	1,9178	,80942	2,2097	,73956
Mother Education	3,04	1,237	2,96	1,193
Father Education	3,67	1,217	3,68	1,229
Income	3,04	,567	3,02	,599
Number of sis. or brot.	2,4642	,96312	2,5020	,89911

APPENDIX M
The correlations between TAFPB and BSI

Somatization	Obses.beh.	Int..sens.	Depression	Anxiety	Hostility	Phobicanx.	Par.thougts	Psychot.	Add.factor
1. -,143**	-,182**	-,121**	-,248**	-,190**	-,134**	-,145**	-,111**	-,173**	-,159**
2. -,155**	-,165**	-,136**	-,211**	-,161**	-,176**	-,126**	-,146**	-,096**	-,197**
3. -,186**	-,173**	-,113**	-,199**	-,182**	-,142**	-,170**	-,132**	-,152**	-,198**
4. -,180**	-,206**	-,164**	-,226**	-,216**	-,208**	-,184**	-,193**	-,189**	-,154**
5. -,176**	-,250**	-,237**	-,243**	-,241**	-,153**	-,204**	-,181**	-,198**	-,163**
6. -,185**	-,249**	-,230**	-,252**	-,214**	-,161**	-,186**	-,193**	-,204**	-,147**
7. -,203**	-,301**	-,234**	-,320**	-,278**	-,173**	-,214**	-,195**	-,233**	-,189**
8. -,227**	-,276**	-,221**	-,287**	-,259**	-,198**	-,231**	-,180**	-,218**	-,140**
9. -,196**	-,276**	-,235**	-,269**	-,237**	-,187**	-,235**	-,174**	-,206**	-,172**
10. -,208**	-,325**	-,294**	-,346**	-,324**	-,310**	-,207**	-,265**	-,204**	-,228**
11. -,145**	-,203**	-,191**	-,214**	-,201**	-,170**	-,209**	-,126**	-,171**	-,152**
12. -,185**	-,186**	-,108**	-,237**	-,224**	-,155**	-,177**	-,130**	-,175**	-,169**
13. -,209**	-,227**	-,180**	-,278**	-,244**	-,245**	-,189**	-,268**	-,201**	-,162**
14. -,204**	-,275**	-,243**	-,279**	-,243**	-,233**	-,231**	-,258**	-,227**	-,177**
15. -,211**	-,285**	-,177**	-,322**	-,260**	-,244**	-,194**	-,169**	-,179**	-,244**
16. -,197**	-,280**	-,182**	-,298**	-,246**	-,244**	-,180**	-,167**	-,179**	-,208**
17. -,211**	-,338**	-,282**	-,327**	-,282**	-,206**	-,236**	-,203**	-,254**	-,204**
18. -,084*	-,110**	-,064	-,163**	-,119**	-,105**	-,101**	-,089*	-,086*	-,096*
19. -,206**	-,283**	-,213**	-,279**	-,221**	-,239**	-,172**	-,203**	-,233**	-,176**
Military-,240**	-,262**	-,194**	-,319**	-,271**	-,239**	-,225**	-,211**	-,220**	-,256**
Leader. -,261**	-,366**	-,320**	-,377**	-,342**	-,264**	-,288**	-,257**	-,278**	-,232**
Ext.Agr. -,248**	-,289**	-,226**	-,331**	-,296**	-,266**	-,249**	-,277**	-,252**	-,210**
Consci. -,224**-,310**		-,197**	-,340**	-,278**	-,268**	-,205**	-,185**	-,196**	-,248**

Note: **Correlations are significant at the level of .001
* Correlations are significant at the level 0f .005

APPENDIX N
The Correlations of 16PF and TAFPB

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
1.	,016	,023	,059	,015	,019	-,004	,070	-,035	-,013	,006	-,016	-,026	-,027	-,020	,039	-,052
2.	-,026	,025	,159**	-,002	-,048	,118**	,101**	-,005	-,109**	-,013	-,025	-,055	,015	-,028	,101**	-,121**
3.	,032	,006	,148**	,081**	,014	,206**	,137**	-,026	-,038	,013	,048	-,056	-,047	-,051	,162**	-,097*
4.	,004	,071	,040	,020	-,025	,087*	,067	,029	-,066	,081*	-,024	,013	,003	,054	,106**	-,017
5.	,136**	,021	,114**	,335**	,202**	,047	,265**	-,024	,021	,052	-,072	-,147**	,045	-,131**	,051	-,118**
6.	,120**	,010	,130**	,297**	,169**	,052	,303**	-,053	,006	,037	-,099*	-,190**	,089*	-,126**	,060	-,162**
7.	,040	,026	,087*	,199**	,130**	,033	,135**	-,011	-,043	,079*	-,006	-,080*	,046	-,085*	,051	-,086*
8.	,094*	-,029	,160**	,192**	,131**	,012	,241**	-,031	-,049	,117**	-,048	-,145**	,022	-,055	,040	-,155**
9.	,070	,017	,098*	,170**	,148**	-,010	,137**	-,023	,014	,019	-,076	-,074	,044	-,071	,045	-,100**
10.	-,011	-,049	,132**	,132**	,075	-,022	,173**	-,058	-,104**	,092*	-,051	-,141**	,007	-,048	,034	-,212**
11.	,017	,004	,111**	,171**	,119**	-,006	,176**	-,035	-,014	,084*	-,056	-,067	-,026	-,033	,007	-,109**
12.	,037	,015	,091*	,088*	,057	,056	,130**	-,018	-,073	-,063	-,054	-,097*	-,006	-,092*	,075	-,096*
13.	,138**	-,013	,109**	,098*	,187**	,033	,157**	,014	-,055	-,007	-,077*	-,057	,019	-,126**	,089*	-,113**
14.	,164**	-,028	,125**	,211**	,204**	,002	,325**	,016	-,050	,041	-,081*	-,129**	,065	-,171**	,033	-,149**
15.	-,020	-,028	,092*	,074	,016	,151**	,125**	-,055	-,082*	,040	-,006	-,046	,036	-,026	,110**	-,074
16.	,004	-,044	,095*	,075	,042	,066	,118**	-,067	-,046*	,034	-,016	-,092	,055	-,089	,091**	-,158
17.	,098*	-,029	,124**	,266**	,169**	,026	,220**	-,055	-,034	,058	-,066	-,139**	,062	-,092*	,029	-,138**
18.	,059	,003	,035	,121**	-,014	,143**	,133**	-,059	-,047	,011	-,033	,004	,008	-,104**	,096**	-,072
19.	,042	,082*	,111**	,153**	,084*	,020	,207**	,040	-,008	,108	-,015	-,071	,069	-,077	,077	-,139

Note: ** Correlation is significant at the 0.01 level (two tailed)
* Correlation is significant at the 0.05 level (two tailed)