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RELATIONSHIP BETWEEN PERSONALITY TRAITS  
AND OFFICER PERFORMANCE AND RETENTION  
CRITERIA

Faye Shenk, et al

Air Force Human Resources Laboratory  
Brooks Air Force Base, Texas

May 1973

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By

Faye Shenk  
Thomas W. Watson, Sgt., USAF  
Joe T. Hazel

PERSONNEL RESEARCH DIVISION  
Lackland Air Force Base, Texas 78236

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13. ABSTRACT

This study concerns an examination of three self-report personality inventories (FCSRI-A, FCSRI-B, DAI) and a Peer Rating Scale designed to measure five personality factors: Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Culture. Regression analysis techniques were applied using these measures to predict retention and officer effectiveness as measured by Officer Effectiveness Reports (OERs). Analysis of the data indicated that measurements based on the Peer Ratings had higher predictive value for both criteria than the factor scores derived from the paper-and-pencil personality tests which rarely reached significance levels. Furthermore, peer ratings had a higher level of prediction for officer performance than retention. A regression equation including the self-report inventories, peer rating factors, and peer rating traits yielded an R of .19 for retention and an R of .36 for officer performance measures. When grade, Duty Air Force Specialty Code (DAFSC) and education were included as predictor variables, the correlations were .39 for retention and .43 for the OER rating.

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## PREFACE

This research was accomplished under Project 7719, Air Force Personnel System Development on Selection, Assignment, Evaluation, Quality Control, Retention, Promotion, and Utilization; Task 771907, Analysis of Major Factors Related to Career Decisions and Retention.

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This report has been reviewed and is approved.

Harold E. Fischer, Colonel, USAF  
Commander

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## RELATIONSHIP BETWEEN PERSONALITY TRAITS AND OFFICER PERFORMANCE AND RETENTION CRITERIA

### I. INTRODUCTION

In a series of studies investigating behavior trait ratings (Tupes, 1957a, 1957b, 1959; Tupes & Christal, 1958; Tupes & Kaplan, 1961a, 1961b) found peer ratings based on Cattell's personality trait clusters were predictive of later officer performance. Factor analyses of these peer ratings (Tupes & Christal, 1961) resulted in the definition of five personality factors: Surgency (Extroversion), Agreeableness, Conscientiousness, Emotional Stability, and Culture. An abbreviated description of the factors and peer nomination scale items are given in Table 1.

**Table 1. Abbreviated Description  
of the Personality Factors  
and Peer Rating Scale Items<sup>a</sup>**

Factor Name	Peer Nomination Scale Description
I. Surgency (Extroversion)	Talkative-Silent Frank, Open-Secretive Adventurous-Cautious Sociable-Reclusive
II. Agreeableness	Goodnatured-Irritable Not Jealous-Jealous Mild, Gentle-Headstrong Cooperative-Negativistic
III. Conscientiousness	Fussy, Tidy-Careless Responsible-Undependable Scrupulous-Unscrupulous Persevering-Quitting, Fickle
IV. Emotional Stability	Poised-Nervous, Tense Calm-Anxious Composed-Excitable Not Hypochondriacal- Hypochondriacal
V. Culture	Artistically Sensitive- Artistically Insensitive Intellectual-Unreflective, Narrow Polished, Refined-Crude, Boorish Imaginative-Simple, Direct

<sup>a</sup>Table adapted from Norman (1962, p. 3).

Based on their findings with Peer Rating Scales, Tupes and Christal (1961) concluded that ratings on personality traits are useful predictors of future

behavior and that such ratings yield sufficiently reliable individual difference to be useful in themselves, either for the study of individual differences in personality or as criteria against which other types of personality measures (for example, paper-and-pencil tests) may be validated. As a result Norman (1961a, 1961b, 1962) developed the Descriptive Adjective Inventory (DAI) and Forced-Choice Self-Report Inventory (FCSRI, Forms A and B) as paper-and-pencil measures of the five personality factors derived from the Peer Nomination Rating Scale. These measures were constructed using the five Peer Nomination Rating Scale factors as criteria.

The Descriptive Adjective Inventory contains 183 forced-choice items designed to measure the five peer nomination factors identified (Tupes & Christal, 1961). For each item (pair of adjectives), the subject is instructed to choose the one which best describes himself. The items were constructed using interjudge agreement as to the adjective's relationship to one of the personality factors and using ratings on the item's "admission-to-OCS desirability." The Forced-Choice Self-Report Inventory was developed in the same manner as the DAI. The major difference between these measures is the DAI uses paired single adjectives while the FCSRI uses paired descriptive statements. Two forms (using different items) of the FCSRI were developed: Form A contains 192 items and Form B, 199 items. Sample items for the DAI and FCSRI follow:

#### Sample Items for the Self-Report Personality Inventories

##### Descriptive Adjective Inventory (DAI)

- A. Clever
- B. Thrifty

##### Forced-Choice Self-Report Inventory (FCSRI)

- A. I like to get up at the crack of dawn.
- B. I enjoy bull sessions with my friends.

This report presents data examining the usefulness of these forced-choice self-report personality inventories and an abbreviated peer rating scale in predicting officer effectiveness ratings and career status (retention).



## II. METHOD

The DAI, Forms A and B of the FCSRI, and a Peer Rating Scale were administered to a sample of 5,951 Officer Training School (OTS)<sup>1</sup> subjects scheduled to enter the Air Force during 1963 and 1964. OTS is a 12-week training program for college graduates leading to a commission as second lieutenant. At that time, these instruments were administered to trainees who entered the program every six weeks.

The Peer Rating Scale used in this study is an abbreviated form of the Peer Nomination Rating Scale used by Tupes (1957) in determining the original personality factors. The present scale contains 11 behavioral descriptions with two items corresponding to each of the personality factors and an overall effectiveness trait rating. Each description contains two alternatives of descriptive phrases representing the extreme of each behavioral trait. Each subject was furnished a roster of the names of the members of his rating group (*i.e.*, OTS class) and instructed to select one third of the group (excluding self) who could be best described by the traits listed. Anonymity of ratings was assured and accuracy on the part of the rater was emphasized.

Keys for each of the five personality factors (I. Surgency, II. Agreeableness, III. Conscientiousness, IV. Emotional Stability, and V. Culture) were applied to the DAI, FCSRI Forms A and B, and the Peer Rating Scale. A detection (fakability) key was also applied to the three self-report inventories.

The criterion variables in this study were the adjusted mean Officer Effectiveness Report (OER) evaluation and retention. The 1967 mean adjusted OER, used as a criterion of on-the-job effectiveness, was an average of all officer effectiveness ratings received as of December 1967 which were adjusted for inflation and form changes (Tupes & Dieterly, 1968). Although a later mean adjusted OER could have been obtained, the 1967 OER data were considered to be more reliable and less susceptible to inflation. The use of the mean adjusted OER was considered necessary to reduce the problems of inflation and form changes in order that these ratings could be directly compar-

able across subgroups. The reliability of single OER ratings has been reported to be in the range of .30 to .40 (Tupes, 1957a). However, the average OER over a period of years is considered more reliable and, for that reason, was used in this study. The second criterion, career status (retention), was determined for these subjects by matching with the Uniform Officer Record (UOR) files as of December 1969. Subjects still on active duty at that time were identified as active; all other subjects were considered inactive; Duty Air Force Specialty Code (DAFSC), grade, and educational level were obtained for these subjects.

## III. RESULTS

Means, standard deviations, and correlations between the predictor variables and the criteria of retention and OER ratings are given in Table 2.

The personality factor scores and Key D (Detection or Fakability Key) derived from the paper-and-pencil forms did not significantly predict officer effectiveness as measured by the OER. The highest correlation derived from these scores on the paper-and-pencil instruments and the OER criterion was .04. However, relationships between factor scores based on peer ratings and the OER criterion are considerably higher and all correlations were significant at the .01 level. Factor III (Conscientiousness) correlated .29 with OER's and Factor IV (Emotional Stability) correlated .24. The range of correlations between the individual trait ratings and the OER corresponds closely to correlations between the same variables previously reported (Tupes, 1957b, 1959; Tupes & Kaplan, 1961b). Each of the traits were related to the OER criterion at the .01 level of significance. Trait 11, which is an overall estimate of the subject's future effectiveness as an officer, correlated .31 with the OER criterion.

With attention to the retention criterion, Factor V (Culture) was the only factor to reach a significant level of prediction. As derived from the DAI and FCSRI-B, it reached the .05 level; as derived from the FCSRI-A, it reached the .01 level. Factors and traits derived from the peer rating data showed similar lack of relevance to the retention criterion. Factor IV (Emotional Stability), as derived from peer ratings, yielded the only significant value—a correlation of .08 with retention.

<sup>1</sup>Now called School of Military Sciences - Officer (SMS-O).

Table 2. Descriptive Statistics for Predictor and Criterion Variables

Variables	Description	Mean	SD	Correlations with Criteria	
				Retention	OER
<b>Personality Predictor Variables</b>					
<b>DAI</b>					
Key D	Detection	16.49	6.30	.0466	.0063
Factor I	Surgency	31.35	9.61	.0040	.0304
Factor II	Agreeableness	45.98	11.99	-.0377	.0109
Factor III	Conscientiousness	45.34	11.44	-.0418	-.0039
Factor IV	Emotional Stability	40.60	8.16	-.0191	-.0044
Factor V	Culture	36.96	7.34	-.0820**	-.0444
<b>FCSRI-Form A</b>					
Key D	Detection	15.91	5.24	-.0151	.0309
Factor I	Surgency	39.62	9.74	-.0281	.0308
Factor II	Agreeableness	39.94	9.48	-.0317	.0077
Factor III	Conscientiousness	43.95	10.40	-.0225	-.0079
Factor IV	Emotional Stability	38.19	7.53	-.0348	.0064
Factor V	Culture	33.93	6.29	-.0749*	-.0184
<b>FCSRI-Form B</b>					
Key D	Detection	20.61	5.72	-.0096	.0441
Factor I	Surgency	36.37	9.53	-.0279	.0221
Factor II	Agreeableness	44.57	9.53	-.0228	.0058
Factor III	Conscientiousness	40.06	9.17	-.0148	.0160
Factor IV	Emotional Stability	35.20	7.55	-.0458	-.0240
Factor V	Culture	41.96	8.34	-.0668**	.0147
<b>Peer Rating Factors</b>					
Factor I	Surgency	198.91	87.22	.0465	.1516**
Factor II	Agreeableness	200.86	82.63	.0064	.1742**
Factor III	Conscientiousness	200.64	85.70	.0654	.2928**
Factor IV	Emotional Stability	199.68	80.52	.0807**	.2389**
Factor V	Culture	199.73	82.11	-.0388	.1911**
<b>Peer Rating Traits (Dichotomous)</b>					
Trait 1	Friendly	99.75	49.80	.0517	.1428**
Trait 2	Cooperative	100.66	43.99	.0047	.1731**
Trait 3	Tidy	100.29	47.26	.0695*	.2797**
Trait 4	Persevering	100.40	43.14	.0675*	.2367**
Trait 5	Artistic	100.18	45.02	-.0458	.1803**
Trait 6	Adventurous	99.71	43.42	.0393	.1377**
Trait 7	Accepting	100.34	42.36	.0098	.1620**
Trait 8	Responsible	100.90	45.53	.0484	.2665**
Trait 9	Calm	99.81	44.11	.0867**	.2111**
Trait 10	Intellectual	100.08	43.69	-.0394	.1662**
Trait 11	Effective Officer	100.32	52.13	.0810**	.3076**
<b>Additional Predictor Variables (Baseline)</b>					
<b>Grade</b>					
2nd Lt		.0074	.0857	-.1056	-.1496
1st Lt		.0513	.2205	-.2796	-.1388
Capt		.9412	.2353	.2999	.1827
Major		.0000	.0000	.0000	.0000
Lt Col		.0002	.0130	.0106	.0334
Col		.0000	.0000	.0000	.0000

Table 2 (Continued)

Variables	Description	Mean	SD	Correlations with Criteria	
				Retention	OER
<b>DAFSC<sup>a</sup></b>					
Operations		.3391	.4734	.1148	-.0760
Pilots		.0931	.2906	.1474	.0352
Navigators		.0827	.2754	.1172	.0150
Technical		.2428	.4288	-.0081	.0421
Science and Engineering		.0449	.2070	.0248	.0101
Administrative		.3260	.4687	-.1103	.0436
<b>Education</b>					
High School		.0087	.0931	-.0817	-.1005
Bachelors Degree		.9303	.2547	-.0340	-.0448
Masters Degree		.0607	.2388	.0670	.0864
PhD Degree		.0003	.0183	.0150	.0081
<b>Criterion Variables</b>					
<b>Retention</b>		.5994	.4900	1.0000	.2240**
<b>Adjusted OERs</b>		37.8910	16.8402	.2240**	1.0000

<sup>a</sup>DAFSC Group Membership (Categories are not mutually exclusive):

DAFSC Group	Description
Operations	DAFSC 10XX-20XX
Pilots	DAFSC 10XX-14XX
Navigator-Observer	DAFSC 15XX
Technical	DAFSC 23XX, 25XX, 30XX-32XX, 43XX, 46XX-47XX
Science and Engineering	DAFSC 26XX-29XX
Administrative	DAFSC 60XX-68XX, 70XX-82XX

\*Significant at .05 level.

\*\*Significant at .01 level.

The multiple linear regression analysis technique developed by Bottenberg & Ward (1963) was used to evaluate the predictive efficiency of the variables, both individually and in various combinations. Multiple correlations are provided in Table 3 for the personality predictor variables including self-report and peer rating inventory items, additional baseline predictor variables, and for various combinations of the personality variables with the baseline variables of grade, DAFSC and education.<sup>2</sup>

For instance, the factor scores and Key D on the FCSRI-A correlated .09 with retention and .07 with OERs; FCSRI-B correlated .08 with retention and .09 with OERs. The factor scores and Key D on the DAI correlated .10 with retention and .09 with OERs. All measures (factor scores and Key D) for the FCSRI-A and FCSRI-B

combined yielded a multiple correlation of .10 with both criteria. The measures for the FCSRI-A and DAI combined correlated .11 with both criteria, and the FCSRI-B and DAI combined correlated .11 with retention and .13 with OERs. The validities for all five peer rating factors combined were: retention, .15 and OER, .33. Combined individual peer traits yielded validities of .17 with retention and .34 with OERs. The peer factors and peer traits together yielded a validity of .16 for the retention criterion and .34 for the officer performance measure. The slight increase in using the peer rating traits is probably due to the exclusion of Trait 11 (estimated overall effectiveness) in the computation of the peer rating factor scores. In fact, when the peer rating factors and peer rating traits are combined, the correlation with retention decreases slightly (.17 vs. .16). The peer factors and traits combined yielded a multiple correlation of .34 with officer performance as measured by the OERs. Measurements based on the peer ratings have higher predictive value than the self-report inventories for

<sup>2</sup>Detailed results of the regression analyses are available upon request to qualified personnel.

both criteria. However, the Peer Rating Scale is much more predictive of officer performance than retention. A full model regression equation which includes both the self-report inventories and the peer factors and traits resulted in a multiple R of .19 for retention and .36 for the officer performance measures. The full models including all predictor variables, however, did not provide any significant increase in prediction over the variance in the peer rating traits alone. Correlations between all of these measures and the criteria were significant at the .01 level.

**Table 3. Multiple Correlations Between Predictor and Criterion Variables**

Variables	Correlations with Criteria <sup>a</sup>	
	Retention	OER
<b>Personality Predictor Variables</b>		
FCSRI-A	.09	.07
FCSRI-B	.08	.09
DAI	.10	.09
FCSRI (A&B)	.10	.10
FCSRI-A + DAI	.11	.11
FCSRI-B + DAI	.11	.13
FCSRI (A&B) + DAI	.12	.13
Peer Factors (all keys)	.15	.34
Peer Ratings (all traits)	.17	.34
Peer Factors + Peer Ratings	.16	.34
FCSRI (A&B) + DAI + Peer Factors and Peer Ratings	.19	.36
<b>Additional Predictor Variables (Baseline)</b>		
Grade	.30	.21
DAFSC	.21	.14
Education	.11	.13
Grade + DAFSC	.35	.25
Grade + Education	.31	.23
Education + DAFSC	.24	.19
Grade + Education + DAFSC	.36	.26
<b>Baseline<sup>b</sup> + Personality Variables</b>		
Baseline + FCSRI-A	.37	.27
Baseline + FCSRI-B	.37	.28
Baseline + DAI	.37	.28
Baseline + FCSRI (A&B)	.37	.28
Baseline + FCSRI-A + DAI	.37	.28
Baseline + FCSRI-B + DAI	.37	.29
Baseline + FCSRI (A&B) + DAI	.37	.29
Baseline + Peer Factors + Peer Ratings	.38	.42
Baseline + FCSRI (A&B) + DAI + Peer Factors + Peer Ratings	.39	.43

<sup>a</sup>All correlations significant beyond .01 level.

<sup>b</sup>Baseline variables for multiple correlation with personality variables include grade, education and DAFSC.

It is known that certain nonperformance variables influence prediction of both officer effectiveness ratings and retention. In a previous study, Vanasek (1962) investigated the extent to which officer specialty, command assignment, and military grade affect the distribution and reliability of effectiveness ratings. It was found: "When the effects of the three nonperformance factors are removed, the reliability of ratings is lowered, but relevance to difference in job performance is increased. The influence of military grade on effectiveness ratings is greatest of the three situational factors, but all contribute significantly" (Vanasek, 1962, p. iii). In the present evaluation of the self-report inventories and Peer Rating Scale, current grade, DAFSC, and education were treated as baseline variables. The relationship between grade, DAFSC, and education with the criteria of retention and OER ratings is presented in Table 3. These three variables combined yielded multiple correlations of .36 with retention and .26 with mean adjusted OER. Grade had the greatest influence for both retention and officer effectiveness (.30 and .21, respectively). By using these variables as a baseline and adding the personality predictor variables, one can evaluate the gain in predictability accomplished by the combination of these two types of predictor variables in contrast to the exclusive use of either type alone. The relationship between the criterion variables and the personality predictor variables in addition to the baseline predictor variables can be found in Table 3. There was very little increase in prediction obtained using the personality and peer rating scales beyond that obtained using the baseline variables alone to predict retention. However, when the peer rating factors and peer rating traits were added to the baseline variables, the prediction of the officer effectiveness criterion (multiple R of .42) was substantially increased. The peer rating factors and traits combined predicted OER (.36) better than the baseline variables alone (.26). The full model for the OER criterion containing all the personality and peer scale measures was slightly higher than the predictive model using the baseline variables plus the peer rating measures (.42 compared to .43). It appears that the original relationship between trait ratings and later effectiveness ratings reported by Tupes (1959) is supported by these data.

Analyses were also accomplished for Duty AFSC groups (science and engineering, pilot, navigator, operations, technical, and administrative). There were variations in prediction of the criteria associated with duty groups; however,

these variations do not appear to be of a practical magnitude beyond the prediction obtained for the total sample.<sup>3</sup>

The paper-and-pencil personality inventories were originally designed to measure five factors derived from the Peer Rating Scale. In previous research, these peer rating factors were found to be related to later performance (Tupes, 1957). In this study, the relationships between the various factors and traits and the criteria of retention and officer effectiveness were explored. As indicated in Table 2, all measures based on the Peer Rating Scale were significantly related to the officer performance criterion while the personality factors were not.

<sup>3</sup>Data concerning these relationships for the Duty AFSC groups are available upon request to qualified personnel.

Data relating to the consistency and inter-relationships between the factor scores within and across inventories, as well as intercorrelations of traits and factors on the Peer Rating Scale, are presented in Tables 4 through 7. The individual self-report factor keys were highly intercorrelated across inventories indicating stability between factors on each of the Norman measures, but showed only a low relationship with the peer ratings for each of the five personality dimensions. For instance, the correlation between the Factor I score on the FCSRI-A and the DAI was .72; on the FCSRI-A and FCSRI-B, .77; and on the FCSRI-A and the Peer Rating Scale, .32. The relationship between the other self-report inventory factor scores and the peer rating factor scores was lower. Although the self-report inventories were originally validated using the Peer Nomination Rating Scale factors as the criteria, it appears that the current criterion variance is quite different in content.

Table 4. Intercorrelations Between Measures by Factor Keys

	FCSRI-A	DAI	FCSRI-B	PRS <sup>a</sup>		FCSRI-A	DAI	FCSRI-B	PRS
<b>Key D Detection Key</b>					<b>Factor III Conscientiousness</b>				
FCSRI-A	1.00	.48	.59		FCSRI-A	1.00	.75	.78	.14
DAI		1.00	.45		DAI		1.00	.77	.14
					FCSRI-B			1.00	.14
<b>Factor I Surgency</b>					<b>Factor IV Emotional Stability</b>				
FCSRI-A	1.00	.72	.77	.32	FCSRI-A	1.00	.61	.66	.12
DAI		1.00	.71	.31	DAI		1.00	.57	.13
FCSRI-B			1.00	.30	FCSRI-B			1.00	.12
<b>Factor II Agreeableness</b>					<b>Factor V Culture</b>				
FCSRI-A	1.00	.78	.77	.14	FCSRI-A	1.00	.56	.55	.15
DAI		1.00	.78	.14	DAI		1.00	.59	.12
FCSRI-B			1.00	.13	FCSRI-B			1.00	.12

<sup>a</sup>There is no Key D (Fakability) for the Peer Rating Scale.

Table 5. Intercorrelations Between Factor Keys by Each Instrument

	I	II	III	IV	V	I	II	III	IV	V
<b>FCSRI-Form A Factors</b>						<b>FCSRI-Form B Factors</b>				
Key D	.18	-.13	-.01	.02	.28	.30	-.11	-.09	.27	.21
Factor I		-.25	-.52	.70	-.16		-.10	-.38	.74	.29
Factor II			.82	.16	.45			.80	.10	.57
Factor III				-.14	.60				-.15	.59
Factor IV					-.09					.30
<b>DAI Factors</b>						<b>Peer Rating Scale Factors</b>				
Key D	.01	-.12	.01	-.06	.02					
Factor I		-.45	-.57	.33	-.09		.18	.04	.46	.32
Factor II			.89	.32	.47			.52	.54	.46
Factor III				.09	.57				.53	.53
Factor IV					.09					.51

Key D - Fakability Key (Not available on Peer Rating Scale)  
 Factor I - Surgency  
 Factor II - Agreeableness  
 Factor III - Conscientiousness  
 Factor IV - Emotional Stability  
 Factor V - Culture

Table 6. Intercorrelations Between Peer Rating Traits and Peer Factors

Peer Rating Traits	Peer Rating Factors				
	I	II	III	IV	V
1	<b>.94</b>	.12	.01	.37	.26
2	.21	<b>.94</b>	.49	.50	.44
3	.02	.34	<b>.92</b>	.45	.44
4	.37	.59	.59	<b>.91</b>	.48
5	.21	.47	.55	.46	<b>.91</b>
6	<b>.92</b>	.23	.07	.52	.34
7	.15	<b>.94</b>	.50	.54	.44
8	.05	.63	<b>.91</b>	.55	.55
9	.50	.43	.39	<b>.91</b>	.47
10	.37	.38	.43	.48	<b>.91</b>
11	.50	.50	.64	.77	.61

Note. - Boldface correlations indicate that the peer rating trait was keyed for that particular factor.

Table 7. Intercorrelations Between Peer Rating Traits

Peer Rating Traits	Peer Rating Traits										
	2	3	4	5	6	7	8	9	10	11	
1	.15	.00	.28	.17	.75	.08	.01	.41	.31	.44	
2		.32	.55	.45	.24	.82	.60	.40	.36	.48	
3			.51	.47	.04	.33	.71	.32	.35	.56	
4				.45	.43	.58	.60	.71	.44	.72	
5					.24	.45	.57	.40	.71	.56	
6						.21	.08	.55	.38	.52	
7							.61	.43	.37	.47	
8								.41	.45	.64	
9									.46	.73	
10										.57	

Further, it appears that the personality factors being measured with these keys are not independent. For example, Factor I (Surgency) and Factor IV (Emotional Stability) were highly inter-correlated on both the FCSRI-A and FCSRI-B (.70 and .74). On all self-report devices, Factor II (Agreeableness) and Factor III (Conscientiousness) were highly related (.82, .80, and .89). Factor V (Culture) appears to be the most independent personality factor. This was also the only

individual factor score that was predictive. The high intercorrelation between factors may account in part for the loss in predictive efficiency using these forms contrasted to the peer rating factors, which remained relatively independent and accounted for more unique variance. The assignment of the individual trait ratings as factor score values was consistent; the highest correlations of the individual trait ratings were found with the assigned factor score.



#### IV. CONCLUSIONS

The present study presents data related to the validation of three self-report inventories and an abbreviated Peer Rating Scale against criteria of retention and officer effectiveness as measured by the OER. These instruments were designed to measure five personality factors: Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Culture. The relationship between the individual factor keys on the self-report forms (FCSRI-A, FCSRI-B, and DAI) and the criteria of retention and officer performance was not significant. The peer rating factors and individual peer rating traits did have higher predictive value for both criteria, although the peer rating measures had higher validities for officer effectiveness than retention. A regression equation including the self-report inventories and peer rating factors and traits resulted in a multiple R of .19 for retention and a multiple R of .36 for OER data. By using education, grade, and DAFSC as baseline variables and adding the personality factor keys for each of the instruments and the peer rating measures, the predictive efficiency for each criterion was increased. Multiple R with retention was .39, and multiple R with OER data was .43. When the internal consistency and validity of the self-report

factor keys were analyzed, it was found that these keys were not highly related to the peer rating factor keys, although the relationship between forms was high. Another fact which became apparent was the lack of independence between individual factors on the personality self-report measures. Apparently Factors I and IV (Surgency and Emotional Stability) and Factors II and III (Agreeableness and Conscientiousness) collapsed in this sample and were no longer independent factors. The peer rating factors remained independent. Although the three self-report personality inventories were originally designed to predict the five personality factors derived from the Peer Nomination Rating Scale, they did not do so in this study. Since the present scales were not predictive of the criteria, it is recommended that further attempts to replicate peer rating variance with paper-and-pencil measures not be attempted.

In 1963, the Chief of Staff formulated a policy decision indicating that peer ratings were not considered suitable for operational use in officer programs. Since it is apparent that the Peer Rating Scale continues to predict officer effectiveness as previously found by Tupes (1957b), an effort to secure approval for using such ratings in officer assessment procedures might be reconsidered.

## REFERENCES

- Bottenberg, R.A., & Ward, J.H., Jr.** *Applied multiple linear regression*. PRL-TDR-63-6, AD-413 128. Lackland AFB, Tex.: Personnel Research Laboratory, Aerospace Medical Division, March 1963.
- Norman, W.T.** *Problems of response contamination in personality assessment*. ASD-TN-61-43, AD-262 433. Lackland AFB, Tex.: Personnel Laboratory, Aeronautical Systems Division, May 1961. (a)
- Norman, W.T.** *Development of self-report tests to measure personality factors identified from peer nominations*. ASD-TN-61-44, AD-267 779. Lackland AFB, Tex.: Personnel Laboratory, Aeronautical Systems Division, May 1961. (b)
- Norman, W.T.** *Validation of personality tests as measures of trait-rating factors*. PRL-TDR-62-4, AD-285 184. Lackland AFB, Tex.: 6570th Personnel Research Laboratory, Aerospace Medical Division, April 1962.
- Tupes, E.C.** *Psychometric characteristics of Officer Effectiveness Reports of OCS graduates*. AFPTRC-TN-57-20, AD-098 923. Lackland AFB, Tex.: Personnel Laboratory, Air Force Personnel & Training Research Center, February 1957. (a)
- Tupes, E.C.** *Relationships between behavior trait ratings by peers and later officer performance of USAF Officer Candidate School graduates*. AFPTRC-TN-57-125, AD-134 257. Lackland AFB, Tex.: Personnel Laboratory, Air Force Personnel & Training Research Center, October 1957. (b)
- Tupes, E.C.** *Personality traits related to effectiveness of junior and senior Air Force officers*. WADC-TN-59-198, AD-231 256. Lackland AFB, Tex.: Personnel Laboratory, Wright Air Development Center, November 1959.
- Tupes, E.C., & Christal, R.E.** *Stability of personality trait rating factors obtained under diverse conditions*. WADC-TN-58-61, AD-151 041. Lackland AFB, Tex.: Personnel Laboratory, Wright Air Development Center, May 1958.
- Tupes, E.C., & Christal, R.E.** *Recurrent personality factors based on trait ratings*. ASD-TR-61-97, AD-267 778. Lackland AFB, Tex.: Personnel Laboratory, Aeronautical Systems Division, May 1961.
- Tupes, E.C., & Kaplan, M.N.** *Similarity of factors underlying peer ratings of socially acceptable, socially unacceptable, and bipolar personality traits*. ASD-TN-61-48, AD-266 861. Lackland AFB, Tex.: Personnel Laboratory, Aeronautical Systems Division, June 1961. (a)
- Tupes, E.C., & Kaplan, M.N.** *Relationships between personality traits, physical proficiency, and cadet effectiveness reports of Air Force Academy cadets*. ASD-TN-61-53, AD-264 916. Lackland AFB, Tex.: Personnel Laboratory, Aeronautical Systems Division, September 1961. (b)
- Tupes, E.C., & Dieterly, D.L.** *Adjusted OER scores with inflation effects removed*. AFHRL-TR-68-114, AD-688 537. Lackland AFB, Tex.: Personnel Research Division, Air Force Human Resources Laboratory, November 1968.
- Vanasek, F.J.** *Importance of situational factors in the measurement of officers effectiveness*. PRL-TDR-62-11, AD-289 873. Lackland AFB, Tex.: 6570th Personnel Research Laboratory, Aerospace Medical Division, July 1962.