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**TESTING FOR THE EXISTENCE OF THE PILOT PERSONALITY PROFILE
IN COLLEGIATE PROFESSIONAL PILOT CANDIDATES**

Ronald J. Ferrara

This study explored the existence of the so-called pilot's personality profile in collegiate professional pilot candidates, based on selected factors of the Edwards Personality Preference Schedule (EPPS). The EPPS was administered to 185 professional pilot candidates enrolled in the professional pilot curriculum at Middle Tennessee State University. Results were used to construct a profile which was compared to the college norm developed by Edwards and to the personality profile previously identified for pilots. The results suggested that, although there were significant differences in the profiles, the degree and direction of these differences were not consistent with that which has previously been identified as the pilot's personality profile. Therefore, the results failed to support the hypothesis that the professional pilot candidates at Middle Tennessee State University would display the pilot's personality profile.

INTRODUCTION

Investigators have conducted numerous studies in an attempt to define what has come to be known as the pilot's personality profile. Personality factors have been measured and profiles developed for pilots that have been remarkably consistent (Alkov, 1983; Ashman & Tefler, 1983; Fry & Reinhardt, 1969; Ives, 1993; Jennings, 1967; Novello & Youssef, 1974a, 1974b; Reinhardt, 1970). These studies suggested that pilots did indeed display an identifiable personality profile, distinct from that of the general population, consistent among military and civilian pilots, and that gender differences were minor between male and female pilots. In a study of collegiate flight students, Adams (1985) suggested that collegiate male flight students differed significantly from the college norm on certain personality measures.

The personality profile exhibited by pilots in the above studies was consistent with the popular perception of the accomplished pilot. Historically the pilot has been viewed as a "he man" or active masculine personality type seeking mastery, control, autonomy, and achievement. The aviation community as a whole has traditionally accepted that this type

of personality profile defined the successful pilot.

If pilots do indeed display an identifiable personality profile, it would be useful to identify those pilot candidates who also display such a profile. Doing so

Table 1
Comparison of Three Pilot Personality Studies Using EPPS

SUBSCALE	NOVELLO		ALKOV		ASHMAN	
	HIGH	LOW	HIGH	LOW	HIGH	LOW
Achievement	X		X		X	
Deference		X		X		X
Order		X		X		X
Exhibition	X		X			
Autonomy				X		
Affiliation		X		X		X
Intracception						
Succorance		X		X		X
Dominance	X		X		X	
Abasement		X				X
Nurturance		X				X
Change	X		X		X	
Endurance		X		X		
Heterosexuality	X		X		X	
Aggression			X		X	

(Ashman and Tefler, October, 1983, p. 942).

Pilot Personality Profile

Table 2
Means of the EPPS Variables for Professional Pilot Candidates
and Numerical Differences From the College Norm

(N = 163)

FACTOR	MEAN	VARIANCE	SD	DIFFERENCE
Achievement	15.018	15.586	3.948	+0.638
Deference	11.000	14.469	3.804	-0.800
Order	10.043	22.251	4.717	-0.197
Exhibition	15.577	11.480	3.388	+1.237
Autonomy	13.067	18.088	4.253	-0.273
Affiliation	13.067	18.363	4.285	-2.583
Intracception	14.043	17.362	4.167	-2.677
Succorance	9.840	17.851	4.225	-1.790
Dominance	16.135	18.994	4.358	+0.305
Abasement	13.933	21.471	4.634	+0.273*
Nurturance	13.632	23.999	4.899	-1.588
Change	16.534	19.781	4.448	+0.184
Endurance	15.166	21.287	4.614	+2.516*
Heterosexuality	17.742	27.834	5.276	+1.732
Aggression	14.331	21.865	4.676	+2.631

* = score differing in a direction opposite than previous studies

might be a valuable tool in recruitment, training, and retention in the air transport industry.

Review of the Literature

The concept of a pilot's personality profile has been developed and refined in studies of military pilots (Alkov, 1983; Ashman, 1983; Fry & Reinhardt, 1969; Reinhardt, 1970) and civilian pilots (Adams, 1985; Novello & Youssef, 1974a, 1974b). Many of these studies made use of the EPPS as the test instrument in developing the profile. In these studies pilots tended to score significantly higher on the factors of Achievement, Exhibition, Dominance, Change, and Heterosexuality. Likewise they tended to score lower on the factors of Deference, Order, Affiliation, Succorance, Abasement, Nurturance, and Endurance (see Table 1). Flying, it appears, appeals to those with a high desire for autonomy, independence, dominance, heterosexuality, and achievement, both male and female (Novello & Youssef, 1974b). These results were not based on significant statistical differences but on numerical differences in raw scores.

Although the results of these studies are not identical, there is a consistency displayed that supports the contention that there is an identifiable pilot's personality profile. Given the strong evidence for the existence of an identifiable pilot's personality, it is reasonable to assume that such a profile can also be identified in those desiring to be pilots as well as those already certificated.

Purpose of the Study

The ultimate purpose of this study was to evaluate various personality or need factors with a view toward increasing the effectiveness of professional pilot candidate selection through more efficient screening and recruitment of

those candidates. The immediate purpose was to determine if professional pilot candidates in a traditional collegiate flight education setting exhibited the factors associated with the pilot's personality profile.

RESEARCH METHODOLOGY

The research instrument used in this study was the EPPS, a 224-item, forced-choice inventory that provides a profile of 15 needs derived from Murray's theory of human needs (Ashman, 1983). This instrument has also been used to establish norms for both male and female college students and the general population. The EPPS is generally considered a reliable instrument in terms of internal consistency and profile stability ($r=.74$) (Edwards, 1959).

Procedure

The EPPS was administered to 185 professional pilot candidates enrolled in the professional pilot curriculum at Middle Tennessee State University. The schedule was administered as a part of various randomly selected flight-related classes over a 24-month period. Of the 185 schedules administered, 163 were considered

usable. Of the 22 nonusable responses, 18 were incomplete and four subjects refused to sign the required consent form.

Statistical Analysis

The results were analyzed by means of a two-tailed t-test. A two-tailed, rather than a directional test, was used due to the potential for misusing directional hypotheses. As Glass and Stanley (1970) have stated, "To be perfectly legitimate, for example, one who hypothesizes that $p=0$ against $p>0$ must look the other way and refuse to budge from the belief that $p=0$ even if a sample of 1,000 yields an r of $-.99$ " (p. 289).

The profile scores of the pilot candidates were compared to the college norms developed by Edwards. The level of significance was set at $p<.05$.

RESULTS

Research Question: Do collegiate professional pilot candidates exhibit the pilot's personality profile as defined by differences in test scores on specified factors measured by the EPPS?

This question was examined by testing the hypothesis that the scores of professional pilot candidates would differ significantly from the norm of college students developed by Edwards on those variables used to define the pilot's personality profile.

Equation 1

$$H_0: \mu_1 - \mu_2 = 0$$

μ_1 : mean scores of professional pilots

μ_2 : norm for college students

Table 3

T Test Comparing the Means of Professional Pilot Candidates to Edwards College Sample

FACTOR	PRO PILOT CANDIDATE (a)		EDWARDS COLLEGE SAMPLE (b)		t VALUE
	MEAN	SD	MEAN	SD	
Achievement	15.018	3.948	14.38	4.36	1.934
Deference	11.000	3.804	11.80	3.71	-2.549*
Order	10.043	4.717	10.24	4.34	-0.519
Exhibition	15.577	3.388	14.34	3.59	4.389*
Autonomy	13.067	4.253	13.31	4.53	-0.687
Affiliation	13.607	4.285	16.19	4.36	-7.278*
Intracception	14.043	4.167	16.72	5.01	-7.607*
Succorance	9.84	4.225	11.63	4.65	-5.072*
Dominance	16.135	4.358	15.83	5.02	0.833
Abasement	13.933	4.634	13.66	5.14	0.705
Nurturance	13.632	4.899	15.22	4.76	-3.931*
Change	16.534	4.448	16.35	4.88	0.495
Endurance	15.166	4.614	12.65	5.25	6.503*
Heterosexuality	17.742	5.276	16.01	5.68	3.940*
Aggression	14.331	4.676	11.70	4.73	6.798*

(a) n = 163

(b) n = 1509

alpha = .05

df = 1670

critical t value = 1.96

* = significance at the .05 level

$$t = \frac{X_1 - X_2}{S(x_1 - x_2)}$$

Data analysis indicated that the mean scores of the professional pilot candidates differed from the college norms developed by Edwards on all 12 of the variables used to define the pilot's personality profile. The direction of the differences in the scores was generally in the direction expected if the pilot's personality profile is distinct from the collegiate personality profile. The differences in the factors of abasement and endurance were not consistent with previous studies (see Table 2). Table 2 indicates arithmetic differences only and does not import statistical significance.

Testing the Null Hypothesis

Using the Edwards data as the norm for college students, the scores of the professional pilot candidates were statistically compared to the college norms. The results indicated that there were significant statistical differences on the following variables: Deference,

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Exhibition, Affiliation, Intraception, Succorance, Nurturance, Endurance, Heterosexuality, and Aggression.

When compared to the collegiate norms, the professional pilot candidates scored significantly higher on four variables (Aggression, Exhibition, Heterosexuality, and Endurance) and significantly lower on five factors (Nurturance, Succorance, Affiliation, Deference, and Intraception). These results are depicted in Table 3.

The results of this analysis, when compared to the pilot's personality profile developed by Novello and Youssef (1974a), indicated that there were similarity of results in seven and dissimilarity of results in eight of the variables on the EPPS.

Both groups scored significantly higher than the norm on the variables of Exhibition and Heterosexuality.

In addition, both groups scored significantly lower on the variables of Deference, Affiliation, Succorance, and Nurturance.

Both studies indicated no difference in the variable of Autonomy (see Table 4).

Findings

The null hypothesis was rejected for nine variables. Significant statistical differences were found at the .05 level for the variables of Deference, Exhibition, Affiliation, Intraception, Succorance, Nurturance, Endurance, Heterosexuality, and Aggression. The null hypothesis was not rejected for the remaining variables.

Conclusions

Although the professional pilot candidates did indeed demonstrate a personality profile distinct from that of the collegiate norm developed by Edwards, the configuration of this profile in terms of specific variables and the direction of deviations was not consistent with what has been identified as the pilot's personality profile. The results of this study, therefore, do not support the hypothesis that the professional pilot candidates at Middle Tennessee State University exhibited the pilot's personality profile.

Notably, the present study found no statistically significant differences in the variables of Achievement, Dominance, Change, Order, and Abasement. All of these

factors were previously identified as components of the pilot's personality profile. Likewise, where previous studies found significantly lower scores for pilots on the variable of Endurance, the present study found significantly higher scores for Endurance.

An additional inconsistency was found in the variable of Intraception, where professional pilot candidates scored significantly lower than the college norm. Previous studies had indicated no difference from the population norm on this factor.

Table 4
Comparison of Professional Pilot Candidate Profile to the Profile Developed by Novello and Youssef

FACTOR	PILOT CANDIDATES			NOVELLO AND YOUSSEF		
	HIGH	LOW	NO DIFFERENCE	HIGH	LOW	NO DIFFERENCE
ACH			X	X		
Def		X			X	
Ord			X		X	
Exh	X			X*		
Aut			X			X*
Aff		X			X*	
Int		X				X
Suc		X			X*	
Dom			X	X		
Aba			X		X	
Nur		X			X*	
Cha			X	X		
End	X				X	
Het	X			X*		
Agg	X					X

* indicates results consistent between studies

Unlike most of the previous studies, the present study compared the collegiate professional pilot candidates to the collegiate norms developed by Edwards rather than to the general population norms. Although this comparison may, to some degree, have reflected differences in vocational choice rather than success in vocation, it was a more valid measure for this study and it may explain the inconsistency in the results. The use of collegiate norms significantly reduced the differences in the mean score between the groups, suggesting that the differences in the profiles were due, at least in part, to the differences between the collegiate and general population norms as much as to the existence of a speci-

fic pilot's personality profile. Although this study does not disprove the existence of the pilot's personality profile, it does raise some question concerning the validity of the norms chosen to develop such a profile.

Further study should be undertaken concerning the validity of the relationship between specific personality or need variables and success or failure in collegiate flight education. In addition, research should be undertaken to identify those need or personality variable's most appropriate for successful pilots in today's changing air transportation industry in order to develop effective recruitment and retention criteria. □

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