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A FACTOR ANALYTIC STUDY OF ATTRITIONS  
FROM NAVAL AVIATION TRAINING

Wayne L. Waag, et al

Naval Aerospace Medical Research Laboratory  
Pensacola, Florida

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Wayne L. Wang, LT Richard H. Shannon, MSC, USN,  
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NAVAL AEROSPACE MEDICAL RESEARCH LABORATORY  
PENSACOLA, FLORIDA

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13. ABSTRACT Students who do not successfully complete naval aviation training are asked to complete an open-ended questionnaire concerning their reasons for entering and leaving the program, their likes and dislikes about the program, and characteristics of their instructors. The purpose of the present study was: 1) to develop an objectively structured questionnaire from an analysis of responses of a large sample of attritions to this open-ended questionnaire; 2) to identify the most salient factors emerging from response to the newly developed questionnaire; and 3) to compare attritions from the pilot and NFO training program on these response factors.  An objectively structured questionnaire was developed, administered to a sample of 221 attritions, and the data analyzed by a series of principal components factor analyses. For each of six major content areas, a small number of well-defined and easily-interpretable factors emerged. Loadings from the pilot-NFO dichotomy revealed differences on a substantial number of factors.  Based on the findings of this study, it is recommended that the newly-developed questionnaire be revised and implemented on a continuing basis.			

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## SUMMARY PAGE

### The Problem

Students who do not successfully complete naval aviation training are asked to complete an open-ended questionnaire concerning their reasons for entering and leaving the program, their likes and dislikes about the program, and characteristics of their instructors. The purpose of the present study was: 1) to develop an objectively structured questionnaire from an analysis of responses of a large sample of attritions to this open-ended questionnaire; 2) to identify the most salient factors emerging from responses to the newly developed questionnaire; and 3) to compare attritions from the pilot and NFO training programs on these response factors.

### Findings

An objectively structured questionnaire was developed, administered to a sample of 221 attritions, and the data analyzed by a series of principal components factor analyses. For each of six major content areas, a small number of well-defined and easily-interpretable factors emerged. Loadings from the pilot-NFO dichotomy revealed differences on a substantial number of factors.

### Recommendations

Based on the findings of this study, it is recommended that the newly-developed questionnaire be revised and implemented on a continuing basis.

## INTRODUCTION

Each year a significant portion (approximately 30%) of all aviation students separate or attrite from naval aviation training (1). It is considered an important concern to monitor the reasons for attrition and the attitudes of these departing students, since nearly half are voluntary withdrawals, or DORs. Upon leaving the program, most students are processed through the Aerospace Psychology Department at the Naval Aerospace Medical Research Laboratory. Here they are asked to complete a questionnaire dealing with their reasons for leaving the flight program and various other attitudinal aspects of their experience in the flight program. Historically, the purpose of the questionnaire, which evolved from an interview procedure, has been threefold: 1) to obtain feedback information as needed for use at the Training Command policy level; 2) to obtain criterion data for research purposes; and 3) to provide an emotional outlet (catharsis) for the student (2). The current questionnaire is presented in Appendix A.

The main objectives of the present study were: 1) the development of an objectively structured questionnaire from a content analysis of responses of a large sample of attritions to the questionnaire currently in use; and 2) the identification of the most salient factors emerging from responses to the newly developed questionnaire. A further aim was the comparison of attritions from the pilot and NFO flight training programs. Specifically, the present study focused on six major content areas:

- (1) Reasons for entering the flight program.
- (2) Reasons for leaving the flight program.
- (3) Factors liked best about the flight program.
- (4) Factors liked least about the flight program.
- (5) Characteristics of the best instructor (s) in the flight program.
- (6) Characteristics of the poorest instructor (s) in the flight program.

## METHOD

The sample group for the initial phase of this study included 485 students who attrited from the flight training program between January 1970 and June 1972. Of these, 74.6% were pilot trainees, while 24.8% were NFO

trainees. The status of the remaining 0.6% was unknown. All responses to the six major content areas of interest were recorded and collated. From this systematic review of all the responses, a structured questionnaire was developed. The resulting instrument is presented in Appendix B.

The new questionnaire was then administered to a sample of 221 students attriting between January 1973 and April 1973. Of these, 49.8% were pilot trainees, while 46.1% were NFO trainees. The remaining 4.1% had changed from one flight program to the other. Of the sample, there were 150 DORs, 12 flight failures, 11 ground school failures, 38 not physically qualified, and 4 not aeronautically adapted. The remaining 6 were unknown. For each content area, an inter-correlation matrix of items was computed. The pilot-NFO dichotomy was included as an item within the correlational analysis of each content area. A principal components analysis was performed for each content area and rotated to a normalized variance criterion. From these analyses, the most salient dimensions within each content area were identified.

## RESULTS AND DISCUSSION

The major findings are presented according to each of the major content areas.

### Reasons for Entering the Program

From reasons identified during the initial analysis, 17 items were written. As the instructions in Appendix B indicate, respondents were asked to rate each item on a 5-point scale according to its influence on their decision to enter the flight program. For this analysis, as well as subsequent ones, those attritions who had transferred from one flight program to the other (pilot to NFO or NFO to pilot) were eliminated in order to clarify possible pilot-NFO trainee differences. The resulting intercorrelation matrix for this analysis was based on 211 attritions. No restrictions were enforced according to type of attrition (DOR, failure, etc.).

From the matrix of intercorrelations, five factors were extracted accounting for 61.03% of the total variance. The rotated matrix of factor loadings is presented in Table 1. Only loadings of .30 or greater are shown. The number preceding each item refers to the actual item number as found on the questionnaire in Appendix B.



TABLE 1

## Rotated Matrix of Factor Loadings for Reasons for Entering the Flight Program

Item	I	II	III	IV	V
16 For prestige and social opportunities				65	
17 Opportunity for educational benefits				43	
18 Career opportunities better than civilian life	31		-39	59	
19 Wanted to fly					81
20 For adventure and excitement				32	62
21 Fulfill military obligation			90		
22 Security of military life	44			59	
23 Wanted to be a naval officer	75				
24 Interested in what the Navy does	77				
25 For pay, allowances, and fringe benefits				83	
26 Entered military to avoid draft			89		
27 Opportunity to develop self-discipline and confidence		81			
28 Wanted to serve country	39	50			
29 Opportunity to think about what I really wanted to do in life	-39	50		33	
30 Planned to make Navy a career	70		-34		
31 Wanted to do something challenging		56			45
32 Physical training and development		75			
Pilot vs NFO	33				-63
Percent of Variance	13.64	12.81	10.95	13.64	9.97

Factor I was identified as a "strong orientation toward naval career". Those items loading highest on this factor reflect a long-range commitment toward the pursuit of a career as a naval officer. Intrinsic interest in a naval career rather than benefits are emphasized. The desire to serve one's country loaded positively on this factor, while the item 29 concerning "time to think" loaded negatively. In other words, if scores were computed, an individual scoring high on this factor might be described as one dedicated to the military way of life and the pursuit of a naval career. He is resolute in his conviction that a military career is for him. Individuals from a family having a past history of military service would be likely to score highly on this factor.

Factor II was defined as Self-Development. Those items loading highest on this factor emphasize the development of self-discipline and confidence as well as physical development. The flight training program is viewed as a challenging means whereby one can serve his country. In contrast to Factor I, the item concerning time to think produced a relatively high loading. An individual scoring high on this factor might be characterized as the athletic stereotype who is highly concerned about his own physical and personal development but who has given little thought to his life's ambitions.

Factor III was defined as Military Obligation. Those items loading highest on this factor reflect entrance into the flight program as a means of avoiding the draft and fulfilling their military obligation. Two items concerning a naval career loaded negatively on this factor. It is apparent that an individual scoring high on this factor had entered the flight program for the sake of expediency.

Factor IV emphasizes reasons wherein Benefits are involved. Those items loading highest on this factor concern extrinsic rewards as a result of entering the program. These include pay, educational benefits, prestige, etc. Items concerning adventure and time to think also load positively on this factor, although the magnitudes are relatively low. In any case, an individual scoring high on this factor is one who had entered the program as a consequence of its many external rewards.

Factor V concerns the Desire to Fly. In addition to the principal item, "wanted to fly," two others loaded significantly on this factor. These items concerned adventure--excitement and the view of the program as challenging. It is likely that this factor represents the "romantic" stereotype of aviation. The individual who scores high on this factor enters the program primarily because he wants to fly. Aviation represents a challenging endeavor--one replete with excitement and adventure. As might be expected, pilots loaded highly on this factor.

#### Reasons For Leaving The Flight Program

From reasons identified during the initial analysis, 38 items were written. Respondents were asked to rate each item according to its influence on their decision to leave the flight program. Intercorrelations among items were computed only for DORs, since all other separations involved involuntary separation. The resulting sample size was 142. From the intercorrelation matrix, six factors were extracted, accounting for 58.95% of the total variance. Items 34, 35, 36, and 37, were eliminated from the analysis, since they represented reasons for involuntary separation. The rotated matrix of factor loadings is presented in Table 2.

TABLE 2

## Rotated Matrix of Factor Loadings of Reasons for Leaving the Program

Item	I	II	III	IV	V	VI
37 Not aeronautically adapted due to psychological problems		64				
38 Had difficulty in learning ground school material				50	-32	
39 Motion sickness while airborne		57				
40 Shift in career interest from military or flight program to civilian life	60				39	
41 Too much nervousness and anxiety generated by flight program		34				66
42 The combination of ground and flight material came too fast, unable to keep pace		50		52		33
43 Wife unhappy with my flying			83			
44 Unable to perform well while flying the aircraft		75				
45 Do not like obedience and discipline instilled by fear orientation	54					54
46 Extreme apprehension when anticipating upcoming flights or during the flight		76				
47 Dissatisfied with pipeline assignment				42		
48 Did not like flying		35			65	
49 Do not like military discipline	84					
50 Military life not for me	89					
51 Lost interest in flight program					64	
52 Wife unhappy with military life			89			
53 Unable to adjust to military life	74					
54 Disliked rigid rules and regulations	86					
55 Not able to function well in this type of pressurized environment	51					71
56 Separation from family			76			
57 Length of flight training program too long				58		
58 Dissatisfied with program (pilot/NFO) assignment	42			39		
59 Academics too technical				73		
60 Do not like taking orders and being told how to think	74					

TABLE 2 (Continued)

Rotated Matrix of Factor Loadings of Reasons for Leaving the Program		I	II	III	IV	V	VI
61	Personal or financial problems			57			
62	Treated poorly and unjustly by instructors						39
63	Had difficulty in learning flight material		46		65		
64	Shift in career interest from pilot to NFO or NFO to pilot program				48		
65	Prefer freedom of civilian life	83					
66	Fear of flying		51			51	
67	Shift in career interest from flight program to surface or staff Navy	-39				37	39
68	Too much pressure in the program	35					75
Pilots vs NFO			-47				36
Percent of Variance		17.38	9.96	8.56	8.48	5.91	8.66

Factor I represents a strong dislike of what might be termed Military Authoritarianism. Those items loading highest on this factor emphasize an inability to accept the rules, regulations, and discipline inherent within the military way of life. There is a preference for the freedom of civilian life and a shift in interest to a civilian career. A shift in career interest to the surface Navy has a negative loading suggesting that an individual scoring high on this factor simply wants out of the military. He voices a strong dislike of the authoritarian characteristics of the military establishment.

Factor II might be defined as Expressed Anxiety. Those items loading highest on this factor reflect anxiety and apprehension toward flight. An individual scoring high on this factor is not aeronautically adapted. He cannot perform well during flight, is likely to experience motion sickness, and feels apprehension prior to and during flight. In other words, he simply expresses a fear of flying.

Factor III might be defined as Personal Problems. The two items loading highest on this factor indicate the wife to be unhappy about flying and the military. Two other items relating to separation from family and personal-financial problems also have high loadings on this factor.

Factor IV reflects dissatisfaction with Ground School/Academics. Those items loading highest on this factor indicated either dislike or difficulty with the academic material. Items relating to program and pipeline assignment also loaded significantly on this factor. An inspection of the zero-order correlations of these items with the pilot-NFO dichotomy revealed NFOs to voice significantly more discontent with their program assignment. Similarly, those items concerning strictly ground school material were rated most highly by NFOs. In other words, Factor IV is seen primarily as an NFO factor, since the training program is so laden with academic/technical material. The failure to obtain a high pilot/NFO loading on this factor is a result of the high loadings of items 42 and 63. Item 42 emphasizes the combination of ground and flight material while item 63 emphasizes flight material. In both cases, these were rated more highly by pilots. In any case, the essence of this factor appears to be dissatisfaction with ground school.

Factor V might be defined as Loss of Interest. Items loading highest on this factor reflect loss of interest in the flight program and dislike of flying. Shifts of career interest to either civilian life or the Surface Navy also load on this factor. Interestingly enough, fear of flying also loads highly on this factor. Such findings suggest that fear of flying is at least contributory to such expressed reasons as "loss of interest" or "did not like flying." Such an interpretation is consistent with commonly held views, especially within the Training Command, as to why people voluntarily separate from the program.

Factor VI is concerned with Pressure generated by the program. Items loading highest on this factor emphasize an inability to cope with the pressures of the flight program. Such pressure is seen to result in poor performance as well as the generation of nervousness and anxiety. In other words, an individual scoring high on this factor simply cannot live up to the demands of the program. NFOs rated these items more highly than did pilots. While pressure generated by the flight program may represent one of the major reasons why students DOR, the possibility remains that it may represent one of the better screening devices. Individuals unable to cope with such pressure are unlikely to become proficient aviators.

#### Things Liked Best About the Program

Twenty-one items were written from those things liked best about the program. Intercorrelations among items were computed for all pilot/NFO trainees regardless of reason for attrition. The resulting sample size was 178. Only two factors were extracted which accounted for 52.10% of the total variance. Since Factor I was obviously a general factor, the matrix of unrotated loadings is presented. These are given in Table 3.

TABLE 3

## Rotated Matrix of Factor Loadings of Things Liked About the Flight Program

Item	I	II
69 Development of self-discipline and self-confidence	71	
70 Survival training	62	.37
71 Academic or ground training	72	
72 Pay and allowances	64	
73 AOC training	73	
74 Training aids and programmed texts	60	
75 Interest taken in personal health and general welfare	71	
76 Physical training	69	
77 Prestige of being an officer	59	.61
78 Church services	53	
79 Fringe benefits ("O" Club, food, uniforms, etc.)	54	.48
80 Treatment by ground and flight instructors	74	.38
81 Comradeship of peers	66	
82 Quality of ground or flight instruction	77	.33
83 Feelings of accomplishment and self-esteem	76	
84 Flight training (actual flying in aircraft)	61	.44
85 Getting commissioned, being a naval officer	51	.44
86 Challenge and competition	75	
87 Serve country	71	
88 Leadership of class officers and NCOs	72	
89 Career opportunities	52	.47
Pilot vs NFO		.54
Percent of Variance	42.24	9.94

As indicated, Factor I represents a general factor. All items except the pilot/NFO dichotomy loaded quite highly. An individual scoring high on this factor might be described as one who agrees that all characteristics described by these items are indeed favorable. One scoring low finds little about the program which he likes. Factor II reflects two major trends. One set

of items loading highly on this factor concerns benefits derived from the program. The other set is decidedly related to flying and the training program. Interestingly enough, items comprising these two major sets load in opposite directions. The substantial pilot/NFO loading provides insight into this pattern of loadings. Pilots tend to emphasize things concerning the actual flying and training program, whereas NFOs are more interested in the benefits which characterize the program. These findings are consistent with those dealing with reasons for entering the program. Simply stated, pilots enter the program to fly, whereas NFOs enter for other benefits. The pilot training program appears to provide inherent rewards which are not found in the NFO program.

#### Things Liked Least About the Program

From those things liked least about the program which were identified during the initial phase, 37 items were written. The sample size for this content area was 168 attritions. From the resulting intercorrelation matrix, five factors were extracted accounting for 53.06% of the total variance. The matrix of rotated factor loadings is presented in Table 4.

Factor I might be conceptualized as a dislike of Military Authoritarianism and is quite similar to the first factor extracted for reasons for leaving the program. Those items loading highest on this factor emphasize distaste for rigid discipline which is demanded by the flight program. Attritions express a sense of loss of individuality and a feeling they are treated somewhat less than human, especially within the Indoctrination Battalion. Also, loading highly on this factor are items concerned with pressure in the program. An individual scoring high on this factor is one who finds himself in a highly pressurized environment in which his freedom is restricted. He is either unable or unwilling to accept such regimentation. In other words, he simply dislikes the military organization.

Factor II might be defined as Quality of Organization within the program. Those items loading highest on this factor emphasize dissatisfaction with various aspects of instruction within the flight training program. Most prominent are those items concerning ground and flight instructors. Poor quality and lack of standardization appear to be the most important complaints. Dissatisfaction with the classroom phases of training also emerges. Several items concerning the structure of the training program also loaded highly on this factor. Disorganization, incompetence, and poor communication were the major dislikes.

TABLE 4

## Rotated Factor Matrix of Things Liked Least About the Flight Program

Item	I	II	III	IV	V
90 Poor, inconsistent, and contradictory communication with those in authority	43	46			
91 Pressurized environment, someone constantly observing and commenting on one's performance	75				
92 Lack of free time to relax	78				
93 Flight training (actually flying in aircraft)				61	
94 Pipeline assignment				57	
95 Loss of individuality, initiative, and freedom of choice	81				
96 Treated like animals, not treated properly or as a rational human being	79				
97 Social life			59		35
98 Too much pressure, never enough time	75				
99 Lack of instructor standardization		67			
100 Academic or ground training		47		50	
101 Instilling of fear and the punitive nature of military training	80				
102 The heat				58	33
103 Treatment by the ground and flight instructors		59		40	
104 Disorganization and incompetence within the program	42	60		48	
105 Lack of fleet seats after receiving one's wings		36		48	
106 Indoctrination battalion	75				
107 Program is not evenly paced, poor scheduling		54			
108 Military life in general	72				
109 Harassment by the Drill Instructors and candidate officers	83				
110 Selection testing program by the Navy recruiter			67		
111 Quality and attitude of ground and flight instructors		74		30	
112 Flight pools		32		55	
113 Emphasis on petty and unimportant things	71				
114 The food		39	35		



TABLE 4 (Continued)

Rotated Factor Matrix of Things Liked Least About the Flight Program						
Item		I	II	III	IV	V
115	Family separation	42				
116	Boredom, routine, not enough stimulation	43		31		
117	Rules and regulations	73				
118	Recruiting methods by the Navy Recruiter			80		
119	Poor communication/information concerning the flight program			61		
120	Physical training					.60
121	Training aids and programmed texts		63			
122	Emphasis on officer first and pilot/NFO second	40			40	
123	Classroom-study environment not conducive to learning		59			
124	AOC training	49			58	
125	Psychological testing at NAMI				34	45
126	Long waits in ready room waiting to fly		32		55	40
Pilot vs NFO				30		.51
Percent of Variance		21.85	11.02	7.14	9.60	4.25

Factor III emphasizes dissatisfaction with Recruiting Methods. Items loading highest on this factor concerned methods used by the recruiter and the selection testing program. Items concerning social life, food, and boredom also load on this factor. The key seems to be item 119 indicating poor information about the flight program. It appears that an individual scoring high on this factor feels he has been sold a "bill of goods." The realities of the flight program do not meet the glamorous expectations which are generated by the recruiter. The promises of excitement, adventure, and a "swinging" social life are simply not fulfilled. As indicated, such complaints are voiced most often by the NFO trainee.

Factor IV emphasizes a dislike of the structure of the Flight Training Program. Dissatisfaction with both ground and flight phases of training is voiced. Dislike of pipeline assignment, flight pools, and lack of fleet seats are also prominent. It appears that this factor actually represents a generalized dissatisfaction with the entire program. The high loading of item 124--AOC

training--suggests that such a general dislike of the training program may be more pronounced among Aviation Officer Candidates. An individual scoring high on this factor is likely to be one who finds little reward from aviation training.

Factor V might be defined as Physical Training. The essence of this factor appears to be an action orientation. The pilot/NFO dichotomy also loads on this factor. An individual scoring high on this factor is likely to be a pilot trainee who enjoys the physical training phases of the program. On the other hand he dislikes testing at NAMI and long waits in the readyroom, which he most likely views as a waste of time. In other words, he might be described as a very action-oriented individual.

### Qualities of the Best Instructors

From those qualities identified during the initial analyses, 22 items were written. The sample size for this content area was 54. From the resulting matrix of intercorrelations, three factors were extracted accounting for 68.80% of the total variance. The rotated factor matrix is presented in Table 5.

Factor I is a general factor which, alone, accounted for over 55% of the variance. All items, except the pilot-NFO dichotomy, loaded highly on this factor. This was expected since all items do reflect positive qualities.

Items loading on Factor II fall into two conceptually different clusters. One cluster concerns the instructor's willingness to explain and demonstrate. Emphasized are adequate explanation and enabling the student to correct his own mistakes. The second cluster of items, which all load in the opposite direction, reflect what might be termed professionalism. Emphasized are competence, consistency and friendliness. It appears that attritions feel that those instructors exhibiting such a professional attitude may not be those who are the most helpful in their instructional techniques.

Factor III is clearly a pilot-specific factor and emphasizes the airborne capabilities of the pilot. Accordingly, the best instructor is one who is a good pilot, understands students problems in learning to fly and gives good briefs. Being happy with his job is of little concern.

TABLE 5

## Rotated Matrix of Factor Loadings of Qualities of Best Instructors

Item	I	II	III
1 Understood the students problems in learning to function properly while airborne	.73		.42
2 Conscientious	.73		
3 Continually explaining and demonstrating	.74	.49	
4 Sincere interest in student	.87		
5 Explained things well	.82	.33	
6 Helpful in showing how to correct mistakes	.86	.45	
7 Allowed student time to make own corrections	.74	.39	
8 Good briefs and debriefs	.79		.31
9 Gave encouragement to student	.79		
10 The attitude that both you and the instructor were trying together to improve your abilities and techniques	.82		.31
11 Firm yet easygoing	.81		
12 Patient	.83		
13 One who put me at ease	.73		
14 Calm, taught in a relaxed manner	.65		
15 Friendly	.74	-.40	
16 Happy with job	.48		-.50
17 Competent and organized	.78	-.37	
18 Standardized and consistent instruction	.78	-.34	
19 Helped professionally and personally	.82	-.37	
20 Good pilot	.67		.44
21 Good leader	.78		
22 Professional-knows his job well	.74		
Pilot vs NFO			.71
Percent of Variance	55.71	6.78	6.30

### Qualities of the Worst Instructors

From those qualities identified during the initial analysis, 25 items were written. The sample size for this content area was 52. From the resulting intercorrelation matrix, three factors were extracted accounting for 71.70% of the total variance. The rotated factor matrix is presented in Table 6.

Again, Factor I was found to be a large general factor which, by itself, accounted for over 58% of the total variance. Likewise, the pilot-NFO dichotomy did not load significantly on this factor. Two clusters of items loaded on Factor II. As indicated by the high pilot-NFO loading, this is clearly a pilot-specific factor. Accordingly, pilot attritions did not view incompetence and unprofessionalism as characteristics of the worst instructors. On the other hand, they did view lack of understanding, no encouragement, and destructive criticism as traits of poor instructors. In other words, indifference appears to be one quality of poor instructors.

Factor III is also pilot-specific and indicates a reluctance on the part of the instructor to enable the student to make and correct his own mistakes. Such reluctance to keep off the controls most likely reflects a lack of instructor confidence and impatience with the student. Consequently, the instructor is seen as only trying to accumulate flight time with little concern for the student.

Considering the qualities of both the best and worst instructors, several conclusions appear to be warranted. The data suggest that the most effective instructors are not necessarily those who are judged the most competent, standardized, and organized. The best instructors are those who understand the student's problems, allow them to make mistakes, and, most importantly, enable the student to learn from these mistakes. While competence and professionalism are necessary qualities of the good instructor, they are not sufficient. It is the student who should be the focus of attention. The instructor is not there for his own benefit, but rather for the student's.

### IMPLICATIONS

The findings of this study indicate that each of the content areas is reducible to a relatively small number of dimensions. The emergence of clear and easily interpretable factors indicates that the sample of attritions responded consistently to the questionnaire. Since many of the items were similar, a failure to obtain consistency would have indicated carelessness or random responding.

TABLE 6

## Rotated Matrix of Factor Loadings of Qualities of Worst Instructors

Item	I	II	III
23 A screamer	.81		
24 Divorced from student's interest and feelings	.76	.37	
25 Lacked understanding of student's problems in learning to function properly while airborne	.73	.40	
26 Pointed out mistakes without offering suggestions	.81		
27 Did not instruct through example, or demonstrate how to correct mistakes very much	.85		
28 Gave destructive criticism	.78	.45	
29 Smart aleck, sarcastic	.83		
30 Offered no encouragement or reinforcement	.80	.30	
31 Wouldn't keep his hands or feet off controls	.59		.56
32 Would not allow the student to correct his own mistakes	.82		.31
33 Interested only in getting his flight hours	.72		.44
34 Egotistical, preoccupied with himself	.75		
35 Jumpy and edgy	.30		
36 Lacked patience	.87		
37 Was not conscientious	.82		
38 Had no motivation to instruct	.85		
39 Poor attitude	.83		
40 Was not standardized or consistent in his instruction	.79		
41 Did not care if the student learned or not	.82		
42 Poor pilot, could not fly aircraft	.64	-.53	
43 Incompetent and disorganized	.77	-.45	
44 Poor briefs and debriefs	.69		
45 Instructing was just a job	.78		
46 Unprofessional, does not know his job	.75	-.44	
47 Poor leader	.78		
Pilot vs NFO		-.58	-.51
Percent of Variance	58.46	8.24	4.99

As indicated earlier, one of the goals of the present research was to compare pilot and NFO attritions for each of the content areas. Although differences did emerge, it seems that they arose mainly as a result of the program in which they entered. As expected, pilots loaded highly on the factor Desire to Fly. Surprisingly, the NFO attritions tended to be more career-oriented than the pilot attritions. For the DORs, Fear of Flying was rated more highly by the pilot attritions as a reason for leaving. Again, such findings seem to primarily reflect differences in the two flight programs.

In terms of what attritions liked best about the program, pilots emphasized activities associated with actual flying, while NFOs seemed to be more concerned with the benefits of the program. On the opposite side of the coin, NFOs tended to dislike the recruiting methods and physical training more often than did the pilot attritions. Although several pilot/NFO differences emerged concerning qualities of instructors, again these were specific to the program. In summary, it appears that most differences between pilot and NFO attritions can be attributed to the characteristics and demands of their respective flight program.

Although the present study considered each of the six content areas, admittedly the most important concerned reasons why DORs in particular attrite from the program and what they dislike about the program. Unfortunately the present study as well as those in the past suffer from one major drawback. They are based solely on attritions who have separated from the program under the assumption that reasons for discontent from these individuals are different from individuals who remain in the program. Until such parametric data is obtained, findings to date must remain tentative at best. The possibility remains that reasons for discontent which eventually lead to the decision to DOR may be equally prominent among those aviators who are successful and eventually complete the program.

## REFERENCES

1. Aerospace Psychology Division. Naval air training student aviator statistics 1960-1966. SR 68-1. Naval Aerospace Medical Institute, Pensacola, Florida, May, 1968.
2. Ambler, R. K., & Burnette, E. R. Reasons for voluntary withdrawal from naval aviation training. SR 63-2. U. S. Naval School of Aviation Medicine, Pensacola, Florida, March, 1963.

APPENDIX A  
DOR QUESTIONNAIRE



THIS MATERIAL IS STRICTLY CONFIDENTIAL AND WILL BE USED  
ONLY FOR RESEARCH

Service No. \_\_\_\_\_ Rank \_\_\_\_\_ Date \_\_\_\_\_

1. Last Name \_\_\_\_\_ First \_\_\_\_\_ Middle \_\_\_\_\_
2. Leaving from AOCS FI Prep. VT-1 VT-2 VT-3 VT-10 OTHER (Circle One)
3. Were you a PILOT TRAINEE OR NFO/NAO student? (Circle One)
4. Original AOCS or FI Prep. CLASS No. \_\_\_\_\_
5. Date of Birth \_\_\_\_\_
6. Birthplace \_\_\_\_\_ 7. Hometown \_\_\_\_\_
8. If an officer, how did you earn your commission? \_\_\_\_\_
9. At what location did you take the aviation selection test? \_\_\_\_\_
10. How long were you on active duty before coming to Pensacola? Mos. \_\_\_\_\_
11. College Degree(s) \_\_\_\_\_ Hours of Graduate study \_\_\_\_\_
12. Major course of study \_\_\_\_\_
13. Name of college attended \_\_\_\_\_
14. Approximately how many hours did you have in the air prior to entering the program?  
A. Solo Flight \_\_\_\_\_ B. Dual Instruction \_\_\_\_\_ Passenger \_\_\_\_\_
15. How was your overall Basic Flight Performance in Naval air training? (Check One)  
Average \_\_\_\_\_ Below Average \_\_\_\_\_ Above Average \_\_\_\_\_
16. Down on what hops? \_\_\_\_ 17. How many SPDS's \_\_\_\_ 18. No. of last hop flown \_\_\_\_
19. Married \_\_\_\_\_ Single \_\_\_\_\_ If married, how many children \_\_\_\_\_
20. Reason for leaving program:  
Dropped own request ( ) Ground school failures ( )  
Flight failure ( ) Disciplinary ( )  
Not physically qualified ( ) Not aeronautically adapted ( )  
Other ( )

1. Just checking a category of attrition does not tell the full story of why you are being separated from training. Often many factors are involved. Please write a comprehensive essay of the factors involved in your separation from training. We are interested in your perception of the situation. Do not use the words "motivation" or "motivated" in your discussion. If you feel that you were not motivated, please try to give the reasons. (Use back of page for additional space.)

(ATTENTION MEDICAL DROPS AT BEGINNING OF TRAINING! Please tell us where you passed your previous physical and why in your opinion the inconsistency, if any, occurred.)

2. What did you like BEST about the program, and why?

3. What did you like LEAST about the program, and why?

4. Had you originally planned a career in the Navy? Yes \_\_\_\_\_ No \_\_\_\_\_

If your answer was no, indicate your reasons for joining the program and your present career plans.

5. If you have had any flight instruction in aircraft of the training command, describe the characteristics of your best and worst instructor. Indicate the stage of training.

**APPENDIX B**

**SURVEY OF ATTRITIONS WITHIN THE PILOT/NFO PROGRAM**

## **SURVEY OF ATTRITIONS WITHIN THE PILOT/NFO PROGRAM**

We are interested in measuring some of your attitudes toward the Pilot/NFO training program. The answers you give are strictly confidential and will be used for research purposes only.

The survey is divided into eight parts. They include:

- I. Biographical information
- II. Reasons for entering flight program
- III. Reasons for leaving flight program
- IV. Factors liked about the flight program
- V. Factors not liked about the flight program
- VI. Qualities of the best instructor(s) in the flight program
- VII. Qualities of the worst instructor(s) in the flight program
- VIII. Additional comments

Each of these parts is comprised of individual statements. You are to mark each item on the answer sheets which are provided. Specific instructions precede each of the eight parts.

The success of this survey will depend upon your full cooperation and effort. The results of this survey should provide pertinent information for future decision-making.

**(PLEASE DO NOT MARK ON THIS TEST BOOKLET)**

**Aerospace Psychology Department  
Naval Aerospace Medical Research Laboratory  
Naval Aerospace Medical Institute  
Naval Aerospace and Regional Medical Center  
Pensacola, Florida 32512**

## 1. Biographical Information

Please fill out your Name, Social Security Number, Jacket Number, and Date of Birth on the answer sheet. When you have finished, please mark your answers to each of the following questions.

1. What is your present rank?
  - A. Aviation Reserve Officer Candidate (AVROC)
  - B. Aviation Officer Candidate (AOC/NAOC/NFOC)
  - C. Ensign/Second Lieutenant
  - D. Lieutenant junior grade/First Lieutenant
  - E. Lieutenant/Captain
2. What was your classification when you first entered the program?
  - A. AOC/NAOC/NFOC
  - B. AVROC
  - C. OI-received commission before entering the program (USN); except for AVROC
  - D. OI (USMC)
  - E. OI or Cadet (USCG)
3. Which flight program did you enter?
  - A. Pilot trainee from beginning
  - B. NFO trainee from beginning
  - C. Transferred from Pilot to NFO
  - D. Transferred from NFO to Pilot

Questions 4-7 concern the training stage from which you attrited. Mark ONLY one of the following.

4. Preflight/Ground School/Primary
  - A. Indoctrination (INDOC)
  - B. Aviation Officer Candidate School (AOCS)
  - C. Environmental Indoctrination (EI): (Physical training, survival, aviation physiology, aerodynamics, engineering, etc.)
  - D. VT - 1
  - E. VT - 10
5. Basic Pilot Training
  - A. VT2/3
  - B. VT 4
  - C. VT 5
  - D. VT 7
  - E. VT 9/19
6. Advanced Pilot Training
  - A. Advanced Jet
  - B. Advanced Prop
  - C. Advanced Holo (Including VT-6)
7. Advanced NFO Training
  - A. BJN at Glyneo
  - B. RIO at Glyneo
  - C. ATDS at Glyneo
  - D. ASAC/AELW at Glyneo
  - E. NAV at Corpus
8. What is the highest degree you have received?
  - A. Bachelors
  - B. Masters
  - C. Doctorate
  - D. Other (specify on back of answer sheet)

Questions 9-11 concern your college major. Please answer each question

9. My major was:
    - A. Physical Science (physics, chemistry, math)
    - B. Natural Science (biology, oceanography, geology)
    - C. Behavioral Science (psychology, sociology, anthropology)
    - D. Social Science (history, political science, economics, geography)
    - E. None of the above
  10. My major was:
    - A. Engineering (including architecture)
    - B. Business Administration
    - C. Agriculture
    - D. Technical specialty not covered above (specify on back of answer sheet)
    - E. None of the above
  11. My major was:
    - A. Humanities (language, literature, art, drama, philosophy)
    - B. Music
    - C. Education other than physical education
    - D. Physical Education
    - E. None of the above
- Note: IF YOUR COLLEGE MAJOR WAS NOT FOUND IN THE ABOVE LIST, PLEASE WRITE IT ON THE BACK OF THE ANSWER SHEET.

12. Upon entering the program, I was:
  - A. Single
  - B. Married
13. I am presently:
  - A. Single
  - B. Married
14. How many children do you have?
  - A. None
  - B. One
  - C. Two
  - D. Three
  - E. Four or more
15. What is the administrative reason for your leaving the flight program?
  - A. Dropped own request (DOR)
  - B. Flight failure
  - C. Ground school failure
  - D. Not physically qualified (NPQ)
  - E. Not Aeronautically Adapted (NAA)

In the event the reason is not given above, leave blank and specify the reason on the back of the answer sheet.

Proceed to the next page.

## II. Reasons for Entering Flight Program.

We are interested in learning why you entered the flight program. Listed below are a variety of reasons. You are to rate each item according to the following scale:

- A. Of NO influence to me in entering the flight program
- B. Little influence
- C. Moderate influence
- D. Strong influence
- E. Very strong influence

16. For prestige and social opportunities.
17. Opportunity for educational benefits.
18. Career opportunities better than civilian life.
19. Wanted to fly.
20. For adventure and excitement.
21. Fulfill military obligation.
22. Security of a military life.
23. Wanted to be a naval officer.
24. Interested in what the Navy does.
25. For pay, allowances, and fringe benefits.
26. Entered military to avoid the draft.
27. Opportunity to develop self-discipline and confidence.
28. Wanted to serve country.
29. Opportunity to think about what I really wanted to do in life.
30. Planned to make the Navy a career.
31. Wanted to do something challenging.
32. Physical training and development.

In the event you have reasons which were not listed above, please specify them on the back of the answer sheet and rate them according to the above scale.

## III. Reasons for Leaving Flight Program

We are interested in your reasons for leaving the flight program. You are to rate each of the following items according to the following scale:

- A. Of NO influence to me in leaving the flight program.
- B. Little influence
- C. Moderate influence
- D. Strong influence
- E. Very strong influence

33. Passed entrance physical previously at recruiting station; failed the physical at NAS Pensacola.
34. Not Physically Qualified (NPQ) due to organic or visual problems.
35. NPQ due to seizures.
36. Unable to pass required physical training tests (calisthenics, swim, obstacle course, etc.)
37. Not aeronautically adapted (NAA) due to psychological problems.
38. Had difficulty in learning ground school material.
39. Motion sickness while airborne.
40. Shift in career interest from military or flight program to civilian life.

41. Too much nervousness and anxiety generated by flight program.
42. The combination of ground and flight material came too fast, unable to keep up pace.
43. Wife unhappy with my flying.
44. Unable to perform well while flying the aircraft.
45. Do not like obedience and discipline instilled by fear orientation.
46. Extreme apprehension when anticipating upcoming flights or during the flight.
47. Dissatisfied with pipeline assignment.
48. Did not like flying.
49. Do not like military discipline.
50. Military life not for me.
51. Lost interest in flight program.
52. Wife unhappy with military life.
53. Unable to adjust to military life.
54. Disliked rigid rules and regulations.
55. Not able to function well in this type of pressurized environment.
56. Separation from family.
57. Length of flight training program is too long.
58. Dissatisfied with program (pilot, NFO) assignment
59. Academics were too technical.
60. Do not like taking orders and being told how to think.
61. Personal or financial problems.
62. Treated poorly and unjustly by instructors.
63. Had difficulty in learning flight material.
64. Shift in career interest from pilot to NFO or NFO to pilot program.
65. Prefer freedom of civilian life to military life.
66. Fear of flying.
67. Shift in career interest from flight program to surface or staff Navy.
68. Too much pressure in the program.

In the event you have reasons which were not listed above please specify them on the back of the answer sheet and rate them according to the above scale.

Note: IN THE EVENT YOU WERE NPQ UPON ARRIVAL AT PENSACOLA, DO NOT COMPLETE SECTIONS IV, V, VI, OR VII. GO DIRECTLY TO SECTION VIII ON PAGE 4.

**IV. Things Liked About the Flight Program**

We are interested in determining the things you liked best about the flight program. You are to rate each of the following items according to the following scale:

- A. Of NO consequence to me within the flight program
- B. Liked a little
- C. Liked moderately
- D. Liked substantially
- E. Liked very substantially

- 69. Development of self-discipline and self-confidence
- 70. Survival training.
- 71. Academic or ground training.
- 72. Pay and allowances.
- 73. AOC training.
- 74. Training aids and programmed texts.
- 75. Interest taken in personal health and general welfare.
- 76. Physical training.
- 77. Prestige of being an officer.
- 78. Church services.
- 79. Fringe benefits ("O" Club, food, uniforms, etc.)
- 80. Treatment by the ground and flight instructors.
- 81. Comradeship of peers.
- 82. Quality of ground or flight instruction.
- 83. Feelings of accomplishment and self-esteem.
- 84. Flight training (actual flying in the aircraft).
- 85. Getting commissioned, being a naval officer.
- 86. Challenge and competition.
- 87. Serve country.
- 88. Leadership of class officers and NCO's.
- 89. Career opportunities.

In the event you liked other things about the flight program, please specify them on the back of the answer sheet and rate them according to the above scale.

**V. Things Disliked About the Flight Program**

We are interested in determining those things which you disliked about the flight program. You are to rate each of the items below according to the following scale:

- A. Of NO consequence to me within the flight program
- B. Disliked a little
- C. Disliked moderately
- D. Disliked substantially
- E. Disliked very substantially

- 90. Poor, inconsistent, and contradictory communication with those in authority.
- 91. Pressurized environment, someone constantly observing and commenting on one's performance.
- 92. Lack of free time to relax.
- 93. Flight training (actual flying in the aircraft).
- 94. Pipeline assignment.
- 95. Loss of individuality, initiative, and freedom of choice.

96. Treated like animals, not treated properly or as a rational human being.

97. Social life.

98. Too much pressure, never enough time.

99. Lack of instructor standardization.

100. Academic or ground training.

101. Instilling of fear and the punitive nature of military training.

102. The heat.

103. Treatment by the ground and flight instructors.

104. Disorganization and incompetence within the program.

105. Lack of fleet seats after receiving one's wings.

106. Indoctrination battalion.

107. Program is not evenly paced, poor scheduling.

108. Military life in general.

109. Harassment by the Drill Instructors and Candidate Officers.

110. Selection testing program by the Navy Recruiter

111. Quality and attitude of ground and flight instructors.

112. Flight pools.

113. Emphasis on petty and unimportant items.

114. The food.

115. Family separation.

116. Boredom, routine, not enough stimulation.

117. Rules and regulations.

118. Recruiting methods used by the Navy Recruiter.

119. Poor communication/information concerning the flight program.

120. Physical training.

121. Training aids and programmed texts.

122. Emphasis on officer first and pilot/NFO second.

123. Classroom/study environment not conducive to learning.

124. AOC training.

125. Psychological Testing at NAMI.

126. Long waits in the ready room waiting to fly.

In the event you disliked other things about the flight program, please specify them on the back of the answer sheet and rate them according to the above scale.

Note: PLEASE FILL OUT THE REMAINDER OF THE QUESTIONNAIRE ON THE SECOND ANSWER SHEET.

**VI. Qualities of the Best Instructors in the Flight Program**

We are interested in determining what you consider to be the qualities of the best instructors you have had in the flight program.

- A. Not evident to me in the best instructor
- B. A little evident
- C. Moderately evident
- D. Substantially evident
- E. Very substantially evident

**IN THE EVENT YOU HAVE HAD NO INSTRUCTIONAL TRAINING (EITHER GROUND OR FLIGHT) DO NOT FILL OUT SECTIONS VI AND VII AND GO DIRECTLY TO SECTION VIII.**

1. Understood the student's problems in learning to function properly while airborne. (Use the radar, navigate, fly the aircraft, etc.)
2. Conscientious.
3. Continually explaining and demonstrating.
4. Sincere interest in student.
5. Explained things well.
6. Helpful in showing how to correct mistakes.
7. Allowed student time to make own corrections.
8. Good briefs and debriefs.
9. Gave encouragement to the student.
10. The attitude that both you and the instructor were trying together to improve your abilities and techniques.
11. Firm yet easygoing.
12. Patient.
13. One who put me at ease.
14. Calm, taught in a relaxed manner.
15. Friendly.
16. Happy with job.
17. Competent and organized.
18. Standardized and consistent instruction.
19. Helped professionally and personally.
20. Good pilot.
21. Good leader.
22. Professional; knows his job well.

In the event there are other qualities of the best instructor which were not listed, please specify them on the back of the answer sheet and rate them according to the above scale.

**VII. Qualities of the Worst Instructors in the Flight Program**

We are also interested in determining what you consider to be the qualities of the worst instructor you had in the flight program. You are to rate each of the below items according to the following scale.

- A. Not evident to me in the worst instructor
- B. A little evident
- C. Moderately evident
- D. Substantially evident
- E. Very substantially evident

23. A screamer.
24. Divorced from student's interests and feelings.
25. Lacked understanding of the student's problems in learning to function properly while airborne (use the radar, navigate, fly the aircraft, etc.)
26. Pointed out mistakes without offering suggestions
27. Did not instruct through example, or demonstrate how to correct mistakes very much.
28. Gave destructive criticism.
29. Smart aleck, sarcastic.
30. Offered no encouragement or reinforcement.
31. Wouldn't keep his hands or feet off the controls.
32. Would not allow the student time to correct his own mistakes.
33. Interested only in getting his flight hours.
34. Egotistical, preoccupied with himself.
35. Jumpy and edgy.
36. Lacked patience.
37. Was not conscientious.
38. Had no motivation to instruct.
39. Poor attitude.
40. Was not standardized or consistent in his instruction.
41. Did not care if the student learned or not.
42. Poor pilot, could not fly the aircraft.
43. Incompetent and disorganized.
44. Poor briefs and debriefs.
45. Instructing was just a job.
46. Unprofessional; does not know his job.
47. Poor leader.

In the event there are other qualities of the worst instructor which were not listed, please specify them on the back of the answer sheet and rate them according to the above scale.

**VIII. Filling out this forced-choice questionnaire may not tell the complete story of why you are separating from the Navy, the reasons you liked/disliked the program, or the qualities of the best/worst instructor. If you feel the questionnaire is not comprehensive enough, please write additional comments on the back of the answer sheet.**