

PROPERTY OF  
CIVIL AERONAUTICS  
ADMINISTRATION

ANALYSIS OF THE DESIRE TO FLY (D-F) INVENTORY

by

L. S. Kogan  
M. J. Wantman  
J. W. Dunlap

A report on research conducted at the University of Rochester, Rochester, New York, by means of a grant-in-aid from the National Research Council Committee on Selection and Training of Aircraft Pilots, from funds provided by the Civil Aeronautics Administration.

October 1945

CIVIL AERONAUTICS ADMINISTRATION  
Division of Research  
Report No. 50  
Washington, D. C.

TO THE CHAIRMAN  
OF THE COMMITTEE  
ON SELECTION AND TRAINING OF AIRCRAFT PILOTS

National Research Council  
Committee on Selection and Training of Aircraft Pilots  
Executive Subcommittee

M. S. Viteles, Chairman

E. C. Andrus

C. W. Bray

D. R. Brimhall

J. W. Dunlap

J. C. Flanagan

W. E. Kellum

W. R. Miles

P. J. Rulon

Copyright 1945

National Research Council

All rights reserved. No part of this report may be reproduced in any form without permission in writing from the National Research Council Committee on Selection and Training of Aircraft Pilots.

LETTER OF TRANSMITTAL

NATIONAL RESEARCH COUNCIL

2101 Constitution Avenue, Washington, D. C.  
Division of Anthropology and Psychology  
Committee on Selection and Training of Aircraft Pilots

October 23, 1945

Dr. Dean R. Brimhall  
Asst. to Administrator for Research  
Civil Aeronautics Administration  
Room 5835, Commerce Building  
Washington 25, D. C.


Dear Dr. Brimhall:

Attached is a report entitled Analysis of the Desire to Fly (D-F) Inventory, by L. S. Kogan, M. J. Wantman, and J. W. Dunlap. This report is submitted by the Committee on Selection and Training of Aircraft Pilots with the recommendation that it be included in the series of technical reports being issued by the Division of Research, Civil Aeronautics Administration.

The Standard Testing Program, organized through the Committee on Selection and Training of Aircraft Pilots, in 1942, furnished materials for an item analysis, for the development of scoring keys, and for investigating the validity of the Desire to Fly (D-F) Inventory, as a predictor of success in flight training. Findings in these three areas are presented in the report.

The study described in this report is another example of the extent to which the skill of numerous psychologists and the resources of many universities have been utilized through the operation of the National Research Council Committee on Selection and Training of Aircraft Pilots. The Standard Testing Program involved the voluntary cooperation of 46 psychologists throughout the country who not only contributed their services in administering tests and in gathering data but, to some extent, also made available the physical facilities of the laboratories to which they were attached at no cost to the Civil Aeronautics Administration. Without question, the research returns from funds allotted by the Civil Aeronautics Administration have been considerably extended through such contributions by individuals, universities, and other scientific agencies cooperating in the research program sponsored by the Committee on Selection and Training of Aircraft Pilots.

Cordially yours,

  
Morris S. Viteles, Chairman  
Committee on Selection and  
Training of Aircraft Pilots  
National Research Council

MSV:rm

MSV:rm  
100-113-45

## EDITORIAL FOREWORD

The report on the Desire to Fly (D-F) Inventory is the second of a series prepared from data accumulated in the Standard Testing Program. The latter, as indicated in the Editorial Foreword to CAA Technical Series Report No. 42, was organized on the basis of plans prepared, in part, by G. R. Wendt, Wesleyan University, and J. W. Dunlap, University of Rochester. The Standard Testing Program was administered at the University of Rochester by J. W. Dunlap, as Director of Research for the Committee, with the aid of M. J. Wantman and other members of the University of Rochester staff. The research project involved the voluntary cooperation of 46 psychologists in various parts of the country. These psychologists tested a total of 2333 elementary and 717 secondary Civilian Pilot Training students and made available the results of examinations on a standard battery of tests for comparison with criterion data obtained from the Civil Aeronautics Administration and through the cooperation of coordinators in the Civilian Pilot Training Program.

The questions in the D-F Inventory were written largely by the staff of the Director of Research of the Committee on Selection and Training of Aircraft Pilots. Questions were submitted in draft form to the Executive Subcommittee for criticisms and, on the basis of comments from members of the Executive Subcommittee, the inventory, including 235 questions, was prepared in final form by G. R. Wendt, J. W. Dunlap, Director of Research, and the latter's staff, for try-out in the Standard Testing Program.

The Committee staff at the University of Rochester was largely responsible for the statistical treatment of the data embodied in the report, which was written by L. S. Kogan, M. J. Wantman, and J. W. Dunlap.

## CONTENTS

	Page
EDITORIAL FOREWORD . . . . .	v
SUMMARY . . . . .	ix
INTRODUCTION . . . . .	1
METHODS . . . . .	1
RESULTS . . . . .	2
Proportion of the Population Answering Yes-No to the Items	2
Correlations of the Items with the Pass-Fail Criterion . .	3
Construction of D-F Scoring Keys . . . . .	4
Correlations with the Criterion and other Tests in the	
Standard Testing Program . . . . .	6
Analysis of Areas in the D-F Inventory . . . . .	9
SUMMARY AND CONCLUSION . . . . .	9
APPENDIX A: Sample Questions from the Desire to Fly (D-F)	
Inventory and Answer Sheet for D-F Inventory . .	11
APPENDIX B: Validity Coefficients and Intercorrelations	
Among the Scoring Keys Constructed for Use	
with the Desire to Fly (D-F) Inventory for	
Samples A, B, and C . . . . .	17
APPENDIX C: Validity Coefficients and Intercorrelations of	
Keys Constructed for Use with the Personal History	
(P-H) Inventory for Samples A, B, and C . . . . .	23

The Desire to Fly (D-F) Inventory was included in the battery of tests administered in the Standard Testing Program. The inventory contains 235 questions dealing with personal characteristics, opinions, habits, attitudes, and preferences. In selecting items for the test an attempt was made to secure those items which appeared to have a direct relation with the motives behind the student's desire to fly.

The inventory was administered to 1401 students, of whom 990 had had no previous flight training, and 411 were in primary flight training at the time the tests were administered. The nine hundred and ninety "no-flight-hour" students were further divided, on the basis of odd or even registration numbers, into Sample A containing 505 subjects and into Sample B containing 485 subjects. Sample C consisted of the 411 students who were taking flight training at the time of testing. From item analyses various scoring keys were devised and the resulting inventory scores correlated with the Pass-Fail criterion and with other test scores. The findings may be briefly summarized as follows:

1. An analysis of the distributions of items answered "No" by various percentages of the populations of both Samples A and B indicated that the items are fairly stable in the sense that each was answered "No" by approximately the same proportion of cases in each sample.
2. On the basis of fourfold correlation coefficients ( $\phi$ 's) only a small number of the 235 items in either sample correlated higher than .10 with the Pass-Fail criterion. The correlation between item  $\phi$ 's of the two samples was .233, suggesting that the item validities were quite unstable from Sample A to Sample B even though the composition of both samples tended to be fairly homogeneous.
3. On the basis of the item analyses various keys for scoring the D-F Inventory were developed for Samples A and B. The correlations tended to be highest when the keys were applied to the samples from which they were derived. The keys based on items maintaining like signs in both samples (Key A:B) tended to predict slightly better in Sample C than those based on a combination of the two samples (Key A+B). Key A:B (same sign) correlated highest in Samples B and C, and second highest in Sample A, and may be assumed to be the "best" D-F key.
4. Correlations of inventory scores with B.I., M.A.T., and M.C. were low.
5. An analysis of scores on groups of items which appeared to assess the same areas was attempted. The total number of items obtaining validity coefficients at the 1% level of significance in both samples was only 3. Fifteen items maintained a level of 20% or below in both samples. These items were not concentrated in any one area.

## ANALYSIS OF THE DESIRE TO FLY (D-F) INVENTORY

### INTRODUCTION

The Desire to Fly (D-F) Inventory consists of 235 questions to be answered with "Yes" or "No." The questions, dealing with personal characteristics, opinions, habits, attitudes, and preferences, can be grouped into 14 areas: (1) family and friends, (2) remuneration, (3) adventure, (4) patriotism, (5) interest, (6) "nothing to live for," (7) social pressure, (8) fighting spirit, (9) comfort, (10) escape, (11) trouble-maker, (12) non-intellectual, (13) belief-in-self, and (14) general personality items. An attempt was made to choose items which would have a direct association with the motives behind the student's application for flight training. Appendix A contains sample questions and a copy of the answer sheet.

This inventory was included in the test battery employed in the Standard Testing Program conducted in the Spring of 1942.<sup>1</sup> Subsequently, criteria became available against which to evaluate this pencil-and-paper test as a predictor of success or failure in flight training.

The aims of this analysis of the D-F Inventory were: (1) to determine the selective efficiency of each item in terms of the criterion of passing or failing in flight training, (2) to develop scoring keys yielding maximum prediction of the criterion, (3) to investigate whether the questions tended to be answered "Yes" or "No" by a similar percentage of people in different samples, and (4) to determine the relationship between scores on the D-F Inventory and the scores on other tests in the battery of the Standard Testing Program.

### METHODS

Criterion data (success or failure in Civilian Pilot Primary Flight Training) were obtained on 1401 of the students to whom the test had been

---

<sup>1</sup>The Standard Testing Program was conducted at the University of Rochester, Rochester, New York, during the early months of 1942. The project was directed by Dr. J. W. Dunlap, then Director of Research for the NRC Committee on Selection and Training of Aircraft Pilots. Approximately 2333 elementary flight students and 717 secondary students were tested on the following battery of tests: (1) the Inventory of Personal Data for Prospective Pilots (B.I.), (2) the Otis Self-Administering Test of Mental Ability, (3) the Test of Mechanical Comprehension (M.C.), (4) the Test of Aviation Information (A.I.), (5) the Personal History Inventory (P-H), and (6) the Desire to Fly Inventory (D-F). (This testing program preceded the CAA National Testing Service program discussed in CAA Division of Research Technical Reports Nos. 9, 19, 23, and 39 previously published in this series.)

A report on the Personal History Inventory (P-H), based on data obtained in the Standard Testing Program, is found in: Kogan, L. B., Wentman, E. J., and Dunlap, J. W. Analysis of the personal history inventory. Washington, D. C.: CAA Division of Research. Report No. 42, February 1945.

administered. Of this total group 500 had had no previous flight training. The remaining 411 cases were in primary flight training at the time the tests were administered.

The 990 "no-flight-hour" students were divided into two samples according to whether their registration numbers were odd or even. Sample A was made up of 505 of the "no-flight-hour" cases and Sample B of 485. Sample C was made up of the remaining 411 cases who were in flight training at the time of the test.

Separating the total population into three groups in this manner made it possible to develop maximized scoring keys for the inventory on one of the samples and to cross-validate these keys on samples which had not been employed in the original validation.

The general statistical method employed in the analysis of these data consisted in the calculation of fourfold product-moment correlations (phi-coefficients)<sup>2</sup> between the answers to a particular item (Yes-No) and the Pass-Fail criterion. Such item analyses were performed separately for Samples A and B, and several scoring keys were constructed made up of items at different levels of predictive significance. These keys were then applied to the original samples and to the two "alien" samples,<sup>3</sup> and biserial correlations were computed between the resulting total scores and the criterion.

The analysis also included a comparison of the percentages of Samples A and B responding "No" to each of the items.

## RESULTS

Proportion of the Population Answering Yes-No to the Items. In Table 1 are presented the distributions of items answered "No" by various percentages of the populations of both Samples A and B. (Only "No" responses were tabulated since inspection revealed that only a small number of questions had been omitted. The percentage of "Yes" responses may be approximated by subtracting the recorded "No" percentage from 100.)

Examination of Table 1 reveals that the items are scattered throughout the range of percentages with a mean percentage "No" response of approxi-

---

<sup>2</sup>Fourfold product-moment correlations between answers on each item (Yes-No) and Pass-Fail in primary flight training were obtained by calculating chi-squares for each of these comparisons and converting them into phi's by dividing each chi-square by its N and taking the square root of the resulting quotient (see Kelley, T. L. Statistical method. New York: Macmillan Co., 1924. Ch. X, p. 259. Also Guilford, J. P. Fundamental statistics in psychology and education. New York: McGraw-Hill, 1942. Ch. XII, p. 246). The significance of the association was determined by evaluating the chi-squares in terms of their P-values.

<sup>3</sup>"Alien" samples are the samples other than the sample on which the particular key was developed.

mately 50% for each sample. The correlation between the item-percent values for the two samples was .995. These data indicate that the items are highly stable in the sense that each item was answered "No" by approximately the same proportion of cases in each sample.

Correlations of the Items with the Pass-Fail Criterion. Table 2 presents the distributions of the fourfold correlation coefficients (phi's) as derived from the item analysis of the 235 items for Samples A and B. It can be seen that only a small number of the 235 items in either sample correlate higher than  $\pm .10$  with the Pass-Fail criterion.

TABLE 1  
DISTRIBUTION OF PER CENT ANSWERING "NO" TO THE  
235 ITEMS IN THE D-F INVENTORY

<u>Per Cent</u>	<u>f Sample A</u>	<u>f Sample B</u>
95 and above	15	16
90-94	14	16
85-89	17	12
80-84	15	13
75-79	7	11
70-74	11	9
65-69	7	12
60-64	10	9
55-59	12	11
50-54	13	12
45-49	7	6
40-44	6	6
35-39	9	11
30-34	7	8
25-29	19	15
20-24	14	14
15-19	17	18
10-14	15	16
5-9	33	13
0-4	7	6

$M = 50.2\%$                       50.5%  
 $\sigma = 30.3\%$                       30.5%  
 $N_{\text{sample}} = 505$                       485  
 $N_{\text{items}} = 235$                       235  
 $r_{AB} = .995$

The P-values, in the last column of Table 2 may vary slightly from sample to sample because of the difference in size of the samples. The correlation between the item phi's of the two samples, shown at the bottom of Table 1, is  $r = .233$ , indicating that the phi coefficients (item validities) are quite reliable from Sample A to Sample B despite the fact that both samples consist of "first-year" students drawn from the same (randomly selected) pool. This reliability might be attributed to the un-

TABLE 2

DISTRIBUTION OF PHI'S OF SAMPLE A AND SAMPLE B  
FOR ITEMS OF THE D-F INVENTORY

Item Phi	f Sample A	f Sample B	P-Level
.20-.21	1	0	Less than .01
.19-.19	0	0	Less than .01
.16-.17	0	11	Less than .01
.14-.15	1	1	Less than .01
.12-.13	2	3	.01 or less
.10-.11	8	4	.01 - .03
.03-.09	6	6	.04 - .08
.06-.07	22	21	.12 - .19
.04-.05	31	22	.26 - .38
.02-.03	33	34	.50 - .66
.00-.01	35	40	.83 - 1.00
-.02-(-.01)	29	33	.65 - .85
-.04-(-.03)	27	32	.37 - .51
-.06-(-.05)	21	17	.18 - .27
-.08-(-.07)	10	13	.07 - .12
-.10-(-.09)	4	4	.03 - .05
-.12-(-.11)	2	2	.02 - .01
-.14-(-.13)	1	2	Less than .01
-.16-(-.15)	0	0	Less than .01
-.18-(-.17)	2	0	Less than .01

$M_{\phi} = .01$                       .00  
 $\sigma_{\phi} = .05$                       .05  
 $N_{\text{sample}} = 505$                       485  
 $N_{\text{items}} = 235$                       235

TAB. 233

reliability of the Pass-Fail criterion.

The distributions of the phi-coefficients without regard to sign ("absolute" phi-coefficients) are presented in Table 3. The mean of the phi-coefficients in this case is in the neighborhood of .04. The number of correlations of .10 or higher is 17 for Sample A and 12 for Sample B. It can be easily seen that over half of the items correlate .04 or less with the criterion.

Construction of D-F Scoring Keys. On the basis of the foregoing item analyses, various keys were constructed for scoring the D-F Inventory as a whole. The keys differ with respect to the sample on which the key was developed and on the level of significance of the items of the key. The inventories for the "alien" and the original samples were then rescored

samples: Key A:B (same sign, 50%) included items maintaining the same sign in both samples and with a P-level of approximately 50% or less in each sample. The numbers of items scored by each key are listed in the second column. The underlined correlations are those based on the "alien" samples.

It is apparent and expected that the correlations are highest when the keys are applied to the samples from which they were derived. None of the keys correlated very highly with the criterion when applied to the "alien" samples, especially in the case of Sample C which consisted of students with previous flight training.

The keys based on items maintaining like signs in both samples (Keys A:B) tended to predict slightly better in Sample C than those based on a combination of the two samples (Keys A+B).

Correlations with the Criterion and other Tests in the Standard Testing Program. The intercorrelations among certain of the D-F scoring keys,<sup>5</sup> the correlations with the Pass-Fail criterion and with the other tests employed in the Standard Testing Program are given in Table 5. The number of cases is slightly lower than for the original samples because not all of the cases

TABLE 4  
VALIDITY COEFFICIENTS\* FOR SAMPLES BY SELECTED KEYS

Key	Nitems	Sample A	Sample B	Sample C
A (1%)	12	.571	<u>.131</u>	<u>.022</u>
A (5%)	24	.585	<u>.155</u>	<u>-.062</u>
A (10%)	29	.602	<u>.152</u>	<u>-.079</u>
A (20%)	67	.663	<u>.201</u>	<u>.007</u>
A (35%)	213	.705	<u>.172</u>	<u>.118</u>
B (1%)	7	.300	.477	<u>-.004</u>
B (5%)	17	.259	.596	<u>-.033</u>
B (10%)	29	.253	.672	<u>.023</u>
B (20%)	65	.210	.748	<u>.044</u>
B (35%)	215	<u>.146</u>	.758	<u>.063</u>
A+B (1%)	13	.471	.521	<u>.005</u>
A+B (5%)	75	.603	.552	<u>.109</u>
A:B (same sign)	117	.576	.613	<u>.201</u>
A:B (same sign, 50%)	111	.539	.595	<u>.187</u>
Nsample		505	485	411
Npassing		453	428	374

\*Correlations are biserial with respect to Pass-Fail.

<sup>5</sup>Intercorrelations among all the scoring keys for the P-H Inventory and with the criterion are presented in Appendix C, Tables 10, 11, and 12.

TABLE 3  
DISTRIBUTION OF ABSOLUTE PHI-COEFFICIENTS FOR  
235 QUESTIONS IN THE D-F INVENTORY

<u>Absolute Phi</u>	<u>fSample A</u>	<u>fSample B</u>	<u>P-Level</u>
.20	1	-	Less than .01
.19	-	-	Less than .01
.18	-	-	Less than .01
.17	2	-	Less than .01
.16	-	1	Less than .01
.15	-	-	Less than .01
.14	1	2	Less than .01
.13	1	1	Less than .01
.12	2	2	.01
.11	5	3	.01-.02
.10	5	3	.03
.09	7	4	.04-.05
.08	5	12	.07-.08
.07	15	16	.12
.06	23	20	.18-.19
.05	25	19	.26-.27
.04	34	26	.37-.38
.03	29	33	.50-.51
.02	34	36	.65-.66
.01	29	37	.83-.85
.00	17	20	1.00

$M_{\text{absolute phi}} = .043$       .039  
 $\sigma_{\text{absolute phi}} = .033$       .030  
 $N_{\text{sample}} = 505$       435  
 $N_{\text{items}} = 235$       235

by means of these keys and the intercorrelations among the various keys and the Pass-Fail criterion computed.<sup>4</sup>

Table 4 presents the criterion (biserial) correlations of the various keys for all samples. The keys marked A were derived from Sample A; those marked B, from Sample B. The per cent (in parentheses) following the latter A or B indicates the level of significance of the items scored when that key is employed. For example: Key A (5%) indicates a key derived from Sample A including all items at or below a P-level of 5%. Keys marked A+B were derived from combining Samples A and B into one total sample. Keys designated by A:B represent items maintaining the same sign in both samples. For ex-

<sup>4</sup>Intercorrelations of all scoring keys constructed for use with the D-F Inventory are presented for each sample in Appendix B, Tables 7, 8, and 9.

**SAMPLE B**

**SAMPLE C**

[illegible]

## ANALYSIS

SIGNIFICANCE OF DIFFERENCES

Description of Area	Items	Sample	1%	Level of Significance		
				5% or less	10% or less	20% or less
1. Family and Friends	16	A	2	4	4	6
		B	1	2	3	4
		A:B	1	2	2	2
2. Remuneration	9	A	1	1	1	2
		B	-	-	-	1
		A:B	-	-	-	-
3. Adventure	19	A	-	1	2	7
		B	1	2	3	4
		A:B	-	-	-	-
4. Patriotism	23	A	-	2	4	8
		B	1	2	2	6
		A:B	-	1	2	3
5. Interest	20	A	2	4	4	4
		B	-	3	4	7
		A:B	-	1	-	2
6. "Nothing to live for"	16	A	-	2	2	4
		B	-	2	3	3
		A:B	-	-	-	-
7. Social Pressure	12	A	-	-	-	1
		B	-	-	1	4
		A:B	-	-	-	-
8. Fighting Spirit	23	A	1	1	1	4
		B	-	-	1	4
		A:B	-	-	-	-
9. Comfort	19	A	-	1	2	5
		B	1	1	2	7
		A:B	-	-	-	1
10. Escape	25	A	4	6	6	11
		B	1	1	3	7
		A:B	1	1	2	2
11. Trouble-maker	14	A	1	1	1	4
		B	1	2	4	5
		A:B	-	-	-	-
12. Non-Intellectual	9	A	-	-	-	2
		B	-	-	-	3
		A:B	-	-	-	1
13. Belief-in-Self	19	A	1	1	2	7
		B	1	1	2	6
		A:B	1	1	1	2
14. Personality	11	A	-	-	-	2
		B	-	-	1	4
		A:B	-	-	-	2
Grand Total	235	A	12	24	29	68
		B	7	17	29	65
		A:B	3	6	7	15

took all of the tests in the battery.

Of the D-F keys, the Key A:B (same sign) correlates highest in Samples B and C and second highest in Sample A. Assuming this key as the "best" D-F key, we find that it correlates between .105 and .220 with the BI., between .172 and .211 with the M.A.T., and between .239 and .290 with the M.C. In the previous analysis of the Personal History Inventory the correlations of this D-F key with P-H scores based on keys derived from these same samples range between .158 and .298.

All of the correlations of the D-F with the other tests were below .300, suggesting that the D-F assesses an area relatively independent of the areas measured by other tests in the battery. The only test correlating over .200 with the criterion in Sample C is the M.C. The D-F is at least as efficient in the prediction of Pass-Fail as the other three tests in Sample C.

Analysis of Areas in the D-F Inventory. An analysis of scores on groups of items which seem to be measuring the same area was attempted. A preliminary analysis of these areas is presented in Table 6. The numbers of items in each area are shown as well as the numbers of items at and below the 1%, 5%, and 10%, and 20% levels of significance in each sample. In the bottom row of Table 6 are presented the numbers of items in each area which maintain the same level of significance in both samples. A count of the 1% items in the bottom rows (Grand Total) reveals that only three items were at the 1% level of significance in both samples. Similarly, only 15 items maintained a level of 20% or below in both samples.

#### SUMMARY AND CONCLUSION

The Desire to Fly (D-F) Inventory was administered as part of the battery of tests in the Standard Testing Program to 1401 flight students, 411 of whom were in training (had had some flight hours) at the time the tests were taken.

These trainees were divided into three groups for statistical analysis of the data: Groups A and B were random halves of the "no-flight-hour" trainees and Group C consisted of those who were in training when they took these tests.

The test items were analyzed in terms of their association with the Pass-Fail criterion. Five separate scoring keys were developed from these analyses, each key composed of items at or below a specific level of significance. The validity of these keys was then determined by computing the correlation between total score (on each key) and the criterion.

Analysis of the data revealed: (1) that the proportion of the population answering each item in a given way was approximately the same in Sam-

ples A and B; (2) that only a small number of the items correlated higher than  $\pm .10$  with the criterion; (3) that the correlations between item validities (phi-coefficients) were unstable from Sample A to Sample B; (4) that the "best" keys were significantly predictive of success in flight training for students who had no flight training previous to their CPT flight instruction; (5) that none of the keys possessed sufficient validity in the case of Sample C — those trainees who had had previous flight training — to be of predictive significance; and (6) that the D-F assesses a different area than any of those measured by the Test of Mental Ability, the Test of Mechanical Comprehension, the Biographical Inventory, and the Personal History Inventory.

APPENDIX A

SAMPLE QUESTIONS FROM THE DESIRE TO FLY (D-F) INVENTORY  
AND ANSWER SHEET FOR D-F INVENTORY

## APPENDIX A

### SAMPLE QUESTIONS FROM DESIRE TO FLY INVENTORY

1. Have any members of your family signed up in the Civilian Defense Program?
27. Do you think people don't "understand" you?
46. Would you feel safe in flying a plane when very tired?
60. Do you know how to handle a rifle or other type of gun?
64. Have you been homesick within the past four years?
85. Were you ever excluded from a team for insubordination?
101. Have you ever built gas-powered model planes?
159. Have you been a member of any organizations interested in flying?
170. Have you ever refused a challenge to fight?
234. Do you believe you can handle a plane better than most German pilots?

Name \_\_\_\_\_ Age \_\_\_\_\_ Name of College \_\_\_\_\_

How many hours of dual instruction have you had? \_\_\_\_\_

How many hours of solo flying have you had? \_\_\_\_\_

Schooling 9, 10, 11, 12, 13, 14, 15, 16, 17.  
(circle highest grade)

Y N		Y N		Y N		Y N		Y N		Y N		Y N		Y N	
1		31		61		91		121		151		181		211	
2		32		62		92		122		152		182		212	
3		33		63		93		123		153		183		213	
4		34		64		94		124		154		184		214	
5		35		65		95		125		155		185		215	
Y N		Y N		Y N		Y N		Y N		Y N		Y N		Y N	
6		36		66		96		126		156		186		216	
7		37		67		97		127		157		187		217	
8		38		68		98		128		158		188		218	
9		39		69		99		129		159		189		219	
10		40		70		100		130		160		190		220	
Y N		Y N		Y N		Y N		Y N		Y N		Y N		Y N	
11		41		71		101		131		161		191		221	
12		42		72		102		132		162		192		222	
13		43		73		103		133		163		193		223	
14		44		74		104		134		164		194		224	
15		45		75		105		135		165		195		225	
Y N		Y N		Y N		Y N		Y N		Y N		Y N		Y N	
16		46		76		106		136		166		196		226	
17		47		77		107		137		167		197		227	
18		48		78		108		138		168		198		228	
19		49		79		109		139		169		199		229	
20		50		80		110		140		170		200		230	
Y N		Y N		Y N		Y N		Y N		Y N		Y N		Y N	
21		51		81		111		141		171		201		231	
22		52		82		112		142		172		202		232	
23		53		83		113		143		173		203		233	
24		54		84		114		144		174		204		234	
25		55		85		115		145		175		205		235	
Y N		Y N		Y N		Y N		Y N		Y N		Y N		Y N	
26		56		86		116		146		176		206			
27		57		87		117		147		177		207			
28		58		88		118		148		178		208			
29		59		89		119		149		179		209			
30		60		90		120		150		180		210			

## DIRECTIONS FOR USE OF THE ANSWER SHEET WITH THE D-F INVENTORY

There are 235 questions to be answered "YES" or "NO" in the D-F Inventory. The numbers on the reverse side of this answer sheet correspond to the numbers of the questions in the booklet. Next to each number on the answer sheet appear two pairs of light lines. The space between the first pair of lines is for a response of "YES," while the space between the second pair of lines is for a response of "NO." Blacken in the appropriate space according to whether you wish to answer a given question "YES" or "NO." The symbols "Y" and "N" are a reminder that the space between the first pair of lines is for "YES" answers and the space between the second pair of lines is for "NO" answers.

Do not omit any questions. Check frequently the number of the question in the booklet with the number on the answer sheet. Work as rapidly as you can; do not ponder over any question. Be sure your marks are between the lines, and are legible.

EXAMPLE (The heavy marks show how one man answered these questions.)

	Y	N		Y	N
1			31		
2			32		
3			33		
4			34		

Question No. 1, "Has any member of your family signed up in the Civilian Defense Program?", was answered "Yes" by this man.

Question No. 2, "Has any near relative of yours lost his life while serving his country?" The response was "No."

APPENDIX B

VALIDITY COEFFICIENTS AND INTERCORRELATIONS AMONG THE  
SCORING KEYS CONSTRUCTED FOR USE WITH THE  
DESIRE TO FLY (D-F) INVENTORY  
FOR SAMPLES A, B, AND C

TABLE 7

VALIDITY COEFFICIENTS AND INTERCORRELATIONS OF D-F KEYS  
(Sample A)

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 (16)		.57	.59	.60	.66	.71	.30	.26	.25	.21	.15	.47	.60	.58	.54
2 (58)			.78	.74	.54	.40	.48	.42	.38	.31	.17	.62	.54	.35	.35
3 (10)				.94	.72	.55	.42	.40	.44	.31	.21	.63	.62	.42	.44
4 (20)					.76	.51	.44	.44	.48	.34	.23	.64	.64	.45	.48
5 (85)						.72	.37	.37	.42	.37	.28	.51	.72	.54	.58
6 (18)							.33	.29	.37	.40	.35	.40	.66	.73	.76
7 (58)								.70	.61	.44	.27	.70	.48	.41	.36
8 (40)									.81	.58	.39	.75	.56	.47	.44
9 (20)										.70	.49	.68	.60	.52	.50
10 (58)											.69	.51	.66	.62	.63
11 (18)												.30	.53	.71	.72
12 (58)													.61	.53	.65
13 (18)														.79	.75
14 (58)															.90
15 (18)															

0.9 9.0 17.2 20.3 42.4 124.0 5.3 12.4 21.4 39.4 110.6 7.1 18.9 17.9 62.9

0.3 1.5 2.4 2.7 4.4 7.7 1.1 1.7 2.2 3.8 6.7 3.2 8.6 10.1 5.5

Total = 505; N<sub>passing</sub> = 453

Correlations are biserial with respect to Pass-Fail

TABLE 8

VALIDITY COEFFICIENTS AND INTERCORRELATIONS OF D-F KEYS  
(Sample B)

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Pass-Fail*															
2. A (1%)	.18		.16	.15	.20	.17	.48	.60	.67	.75	.76	.52	.55	.61	.40
3. A (5%)	--		.78	.74	.55	.37	.45	.43	.43	.32	.15	.60	.49	.29	.30
4. A (10%)			--	.94	.70	.46	.40	.40	.45	.33	.22	.57	.54	.35	.35
5. A (20%)				--	.74	.47	.44	.47	.49	.37	.22	.59	.55	.36	.39
6. A (85%)					--	.71	.39	.40	.45	.43	.35	.50	.70	.53	.53
7. B (1%)						--	.31	.30	.36	.43	.44	.39	.66	.72	.77
8. B (5%)							--	.73	.69	.48	.39	.73	.50	.39	.40
9. B (10%)								--	.84	.63	.48	.77	.57	.47	.45
10. B (20%)									--	.73	.56	.73	.61	.52	.52
11. B (85%)										--	.75	.51	.76	.69	.71
12. A+B (1%)											--	.43	.65	.50	.51
13. A+B (5%)												--	.62	.51	.55
14. A+B (same sign)													--	.95	--
15. A+B (same sign, 50%)														--	--
Mean	0.9	8.9	17.2	20.3	42.2	123.4	5.3	12.3	21.4	38.9	112.1	6.8	18.1	17.4	64.2
$\sigma$	0.3	1.4	2.2	2.5	4.0	6.8	1.2	1.9	2.5	4.3	7.5	3.2	6.9	10.6	5.6

$N_{\text{total}} = 48$ ;  $N_{\text{passing}} = 428$

\*Correlations are biserial with respect to Pass-Fail

TABLE 9

VALIDITY COEFFICIENTS AND INTERCORRELATIONS OF D-F KEYS  
(Sample C)

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pass-Fail*	---	.00	-.06	-.08	-.01	.12	.00	-.03	.02	.04	.06	.01	.11	.20	.19
1. A (1%)		---	.80	.77	.59	.45	.50	.50	.50	.40	.32	.61	.51	.33	.43
2. B (5%)			---	.94	.77	.56	.48	.53	.51	.47	.41	.61	.58	.39	.52
3. C (10%)				---	.79	.60	.49	.55	.54	.51	.43	.63	.59	.43	.55
4. A (20%)					---	.74	.41	.44	.46	.49	.42	.53	.69	.51	.65
5. A (50%)						---	.35	.35	.37	.46	.51	.41	.66	.74	.85
6. B (1%)							---	.75	.67	.48	.38	.71	.45	.36	.41
7. B (5%)								---	.81	.63	.51	.75	.52	.53	.50
8. B (10%)									---	.71	.55	.68	.35	.42	.51
9. B (20%)										---	.71	.58	.68	.57	.68
10. B (85%)											---	.44	.56	.70	.65
11. A+B (1%)												---	.60	.48	.53
12. A+B (5%)													---	.77	.80
13. A+B (same sign)														---	.96
14. A:B (same sign, 50%)															---
Mean	0.9	9.0	17.0	20.2	41.8	122.2	5.3	12.3	21.4	39.9	110.6	7.0	18.6	17.9	63.1
$\sigma$	0.3	1.5	2.3	2.7	4.2	7.7	1.2	1.7	2.4	4.0	7.1	3.1	9.2	9.6	5.1

N<sub>total</sub> = 411; N<sub>passing</sub> = 374

\*Correlations are biserial with respect to Pass-Fail

### APPENDIX C

#### VALIDITY COEFFICIENTS AND INTERCORRELATIONS OF KEYS CONSTRUCTED FOR USE WITH THE PERSONAL HISTORY (P-H) INVENTORY FOR SAMPLES A, B, AND C

The following tables present a recalculation of the intercorrelations presented in Report No. 42. They involve a slightly greater number of cases than were presented in Report No. 42. The validity of these keys (in terms of Pass-Fail) may be compared directly to the validity of the D-F keys.

TABLE 10

# VALIDITY COEFFICIENTS AND INTERCORRELATIONS OF P-H KEYS (Sample A)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															

Overall	0.0	2.0	5.5	10.4	24.0	59.0	7.6	10.4	14.6	24.5	55.6	6.6	19.3	22.5	42.5
6	0.3	0.9	1.3	1.8	3.0	5.5	1.3	1.7	1.9	2.8	4.4	2.8	7.1	8.1	4.3

Overall = 12.4 passing

\*Correlations are biserial with respect to Pass-Fail

TABLE 11

VALUITY COEFFICIENTS AND INTERCORRELATIONS OF P-E KEYS  
(Sample B)

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Pass-Fail*	--													
2. A (1%)	.12	--												
3. A (5%)	--													
4. A (10%)														
5. A (20%)														
6. A (85%)														
7. B (1%)														
8. B (5%)														
9. B (10%)														
10. B (20%)														
11. B (85%)														
12. A+B (1%)														
13. A+B (5%)														
14. A:B (same sign)														
15. A:B (same sign, 50%)														

Mean

0.9 2.5 5.4 10.1 23.7 58.1 7.5 10.2 14.4 24.4 55.2 6.2 8.1 21.4 31.5

 $\sigma$ 

0.3 1.0 1.4 1.8 3.0 5.6 1.4 1.8 2.2 3.3 5.2 2.6 7.0 8.9 10.0

 $N_{\text{total}} = 493; N_{\text{passing}} = 433$ 

\*Correlations are biserial with respect to Pass-Fail

TABLE 12

VALIDITY COEFFICIENTS AND INTERCORRELATIONS OF P-H KEYS  
(Sample C)

Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pass-Fail*	---	.13	.06	.17	.21	.20	.07	.05	.06	.05	.17	.07	.13	.20	.17
A (1%)		---	.79	.63	.39	.33	.20	.14	.17	.12	.14	.12	.39	.24	.24
A (5%)			---	.79	.56	.49	.22	.20	.19	.12	.20	.19	.47	.34	.36
A (10%)				---	.76	.54	.24	.25	.33	.23	.25	.34	.57	.40	.42
A (20%)					---	.74	.34	.36	.40	.30	.41	.39	.74	.61	.63
A (85%)						---	.44	.46	.48	.48	.56	.43	.74	.84	.87
B (1%)							---	.76	.72	.61	.53	.59	.56	.50	.54
B (5%)								---	.84	.65	.54	.54	.59	.51	.53
B (10%)									---	.76	.60	.67	.62	.55	.59
B (20%)										---	.69	.60	.64	.62	.65
B (50%)													.66	.62	.65
A+B (1%)													.52	.52	.54
A+B (5%)													.52	.52	.54
A+B (same sign)													.52	.52	.54
A+B (same sign, 50%)													.52	.52	.54
Mean	0.9	2.7	5.7	10.6	24.3	59.5	7.6	10.4	14.5	24.7	55.7	6.7	19.5	23.2	42.2
$\sigma$	1.0	0.9	1.2	1.5	2.6	4.8	1.2	1.5	1.8	2.6	4.1	2.2	6.2	7.3	3.7

$N_{\text{total}} = 412$ ;  $N_{\text{passing}} = 375$

\*Correlations are biserial with respect to Pass-Fail