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ABSTRACT

An investigation was conducted to determine if students in five junior college curricula could be differentiated by the Strong Vocational Interest Blank (SVIB) scores and if such differentiation could be improved by using several scores in combination rather than single scores separately. The SVIB was administered to 130 students at Alfred Agricultural & Technical School and the resulting means and standard deviations were submitted to analysis. The conventional overlap method of scaling was subsequently compared to the non-conventional multi-scale method to ascertain the latter's differentiating power. However, further studies based on a larger sample are necessary to adequately determine the effectiveness of the multi-scale approach. [Figures 1/4--SVIB Profiles--may not reproduce well due to marginal legibility of the original copy.] (PR)

1970 APGA Convention

STRONG VOCATIONAL INTEREST BLANK SCORES FOR JUNIOR COLLEGE STUDENTS IN FIVE CURRICULA

Stuart E. Smith, Alfred University

The major objective of the study was to determine if students in five different junior college curricula could be differentiated by their Strong Vocational Interest Blank (SVIB) scores. A second objective was to ascertain if differentiation between curriculum groups could be improved by the use of several scales in combination as opposed to differentiation by single scales separately.

It is assumed that the majority of the readers are familiar with the SVIB literature to the extent that they know that many studies have demonstrated the effectiveness of the SVIB (M) to differentiate fairly well adult groups of employed men, and to a lesser extent, students in various four-year college curriculums. The effectiveness of the SVIB (W) to differentiate adult and student groups of women has not been so well demonstrated. Although there is a fairly extensive literature, accumulated over the past 30 years or so, concerning the interests of students in four-year colleges, e.g., the well known studies by Strong (1955), and by Darley and Hagenah (1955), only a few studies have been published which provide data concerning the measured interests of junior college students. Stewart (1966) found that students in one junior college could be differentiated in terms of their interests as measured by the Interest Assessment Scales. Although two recent studies (Taylor & Bondy, 1966; Taylor & Hecker, 1967) of the interests of junior college students have been published, differentiation by specific curriculum was not attempted. So far as the writer can determine, no studies have been published, other than Stewart's, which compare the measured interests of students in various junior college curricula.

Inasmuch as the enrollments in the nation's junior colleges are increasing, and in absolute terms already constitute a substantial number of post-high school students, it would seem desirable to describe the characteristics, including measured interests, of junior college students as well as senior college students. Because junior college students have less time than their 4 year counterparts in which to make decisions about their curriculum choices, it can be argued that the need for better information about curriculum choices is greater for the junior college than for the typical senior college.

PROCEDURE

Sample: The total sample was comprised of 130 junior college students in five different curricula at Alfred Agricultural and Technical College, Alfred, New York.* Men students in three curricula were tested on the SVIB (1966 revision), and women students in two curricula were tested on the SVIB (W). The three men's curricula were (a) Design and Drafting (N = 20), (b) Engineering Science (N = 14) and (c) "Agriculture" (N = 22). The two women's curricula were (a) Nursing (N = 39) and (b) Medical Laboratory Technician (N = 35). The students were in the second year (1968-69) of a two-year program. No attempt was made to

*Acknowledgment is hereby made of the assistance provided by Dr. George Herrick, Director and Dr. Joarl Blankenship, Counselor of Alfred State College in making this study possible.

give the SVIB to those students who had entered these curricula as freshmen in 1967-68 but had dropped out of school or transferred to other curricula.

Analysis of the data: For each of the five groups, means and standard deviations for each of the occupational scales of the SVIB were computed. Tilton's (1937) index of overlap was used to determine the percentage of overlap for each occupational scale for each of the three comparisons between men's groups, and for the two women's groups. Also, on the basis of inspection of the mean profiles, various combinations of several different scales were selected for multi-scale analyses as opposed to a single scale, "one-at-a-time" approach.

Results: The means and standard deviations for each of the three men's groups are presented in Table 1; the means and standard deviations for the two women's groups are presented in Table 2. The mean profiles for each of the four sets of scores are presented graphically in Figures 1, 2, 3, and 4. The percentages of overlap for the men's groups are presented in Table 3; for the two women's groups, overlap percentages are presented in Table 4.

The extent to which the three men's groups and the two women's groups are differentiated by their measured interests is discussed below.

DISCUSSION

Campbell (1968) has stated that "the statistic usually used to measure the differentiation of groups by an interest scale is Tilton's overlap, which gives the percentage of scores in

TABLE 1

SVIB (1966 revision) Means and Standard Deviations for Three Different Curriculum Groups of Junior College Students (Men)

SVIB Occupational Scales	Agriculture (N = 22) Mean	S.D.	Design and Drafting (N = 20) Mean	S.D.	Engineering Science (N = 14) Mean	S.D.
Dentist	37	9	34	14	33	11
Osteopath	33	7	29	9	33	14
Veterinarian	50	5	32	10	34	12
Physician	33	10	29	12	33	15
Psychiatrist	13	7	18	8	23	15
Psychologist	16	6	24	7	25	9
Biologist	25	11	28	9	30	14
Architect	31	10	38	14	29	10
Mathematician	19	10	26	12	23	9
Physicist	21	10	31	11	29	11
Chemist	25	11	40	10	39	12
Engineer	30	10	42	11	38	10
Production Manager	36	10	42	9	38	11
Army Officer	26	11	34	15	39	14
Air Force Officer	28	8	42	12	45	10
Carpenter	38	7	42	12	34	17
Forest Service Man	37	9	23	13	30	14
Farmer	52	6	40	12	39	12
Math-Science Teacher	27	9	35	10	42	7
Printer	42	7	39	10	33	12
Policeman	29	7	25	8	24	13
Personnel Director	13	12	18	14	18	12
Public Administrater	24	12	24	13	28	12
Rehabilitation Couns.	18	9	22	13	23	12
YMCA Secretary	25	11	21	14	25	15
Social Worker	14	12	14	13	17	14
Social Science Teacher	28	9	18	8	19	9
School Superintendent	9	9	4	10	8	12
Minister	1	10	2	12	4	14
Librarian	17	8	21	9	19	10
Artist	33	10	35	13	28	7
Musician Performer	34	8	35	9	32	8
Music Teacher	21	9	20	9	16	10
C.P.A. Owner	15	8	18	9	21	10
Senior C.P.A.	22	9	32	11	33	10
Accountant	19	10	27	7	25	11
Office Worker	24	8	27	7	25	11
Purchasing Agent	37	8	39	7	33	11
Banker	32	7	27	8	25	8
Pharmacist	35	5	29	7	32	8
Mortician	36	5	28	6	25	8
Sales Manager	28	5	24	8	23	8
Real Estate Salesman	39	7	33	6	30	6
Life Ins. Salesman	30	8	20	5	19	9
Advertising Man	28	8	26	9	19	8
Lawyer	31	9	22	7	23	8
Author-Journalist	32	9	29	10	24	6
President - Mfg.	24	8	26	9	20	8
Credit Manager	24	11	25	15	29	11
Chamber of Com. Exec.	27	9	25	10	27	10
Physical Therapist	35	11	34	13	40	11
Computer Programmer	25	8	43	10	49	11
Business Ed. Teacher	27	9	27	12	29	11
Community Rec. Admin.	25	13	21	16	24	15

TABLE 2

SVIB (W) Means and Standard Deviations for Two Different Curriculum Groups of Junior College Students (Women)

SVIB Occupational Scale	Nursing (N = 39)		Medical Lab. Technician (N = 35)	
	Mean	S.D.	Mean	S.D.
Music Teacher	24	13	16	11
Music Performer	36	11	29	9
Artist	33	9	33	9
Author	30	11	28	9
Librarian	23	9	24	8
English Teacher	14	12	12	12
Social-Science Teacher	10	11	11	13
YWCA Staff Member	9	10	8	12
Social Worker	31	9	27	11
Psychologist	16	11	23	10
Lawyer	13	8	17	10
Life Ins. Saleswoman	13	8	12	9
Buyer	23	7	18	9
Bus. Education Teacher	22	9	21	7
Stenographer-Secretary	36	7	32	6
Office Worker	33	9	33	7
Elementary Teacher	32	10	27	10
Housewife	38	8	33	8
Home Econ. Teacher	26	13	26	11
Dietician	28	10	31	8
Phys. Ed. Teacher (H.S.)	30	10	30	9
Phys. Ed. Teacher (Coll.)	14	13	21	13
Occupational Therapist	37	10	33	12
Physical Therapist	37	8	41	9
Nurse	34	9	31	12
Physician	26	9	34	7
Dentist	26	8	32	6
Laboratory Technician	31	10	41	8
Math-Science Teacher	20	10	30	11
Engineer	13	9	26	10
Sister Teacher	24	10	24	9
Speech Pathologist	30	13	31	11
Computer Programmer	23	10	34	8

NCS PROFILE — STRONG VOCATIONAL INTEREST BLANK — FOR MEN

	Occupational Scales	$\bar{X}_1$	$\bar{X}_2$
I	Dentist	37	33
	Osteopath	33	33
	Veterinarian	50	34
	Physician	33	33
	Psychiatrist	13	23
	Psychologist	16	25
	Biologist	25	30
II	Architect	31	29
	Mathematician	19	23
	Physicist	21	29
	Chemist	25	39
	Engineer	30	38
III	Production Manager	36	38
	Army Officer	26	39
	Air Force Officer	28	45
IV	Carpenter	38	34
	Forest Service Man	37	30
	Farmer	52	39
	Math-Science Teacher	27	42
	Printer	42	33
	Policeman	29	24
V	Personnel Director	13	18
	Public Administrator	24	28
	Rehabilitation Couns.	18	23
	YMCA Secretary	25	25
	Social Worker	14	17
	Social Science Teacher	28	19
	School Superintendent	9	8
	Minister	1	[illegible]
VI	Librarian	17	19
	Artist	33	28
	Musician Performer	34	32
	Music Teacher	21	16
VII	C.P.A. Owner	15	21
VIII	Senior C.P.A.	22	35
	Accountant	19	25
	Office Worker	24	25
	Purchasing Agent	37	[illegible]
	Banker	32	29
	Pharmacist	35	32
	Mortician	36	25
IX	Sales Manager	28	23
	Real Estate Salesman	39	30
	Life Ins. Salesman	30	19
X	Advertising Man	28	19
	Lawyer	31	23
	Author-Journalist	32	24
XI	President-Mfg.	24	20
Supp. Occupational Scales			
	Credit Manager	24	29
	Chamber of Com. Exec.	27	27
	Physical Therapist	35	40
	Computer Programmer	25	49
	Business Ed. Teacher	27	29
	Community Rec. Admin.	25	24
	Optometrist		

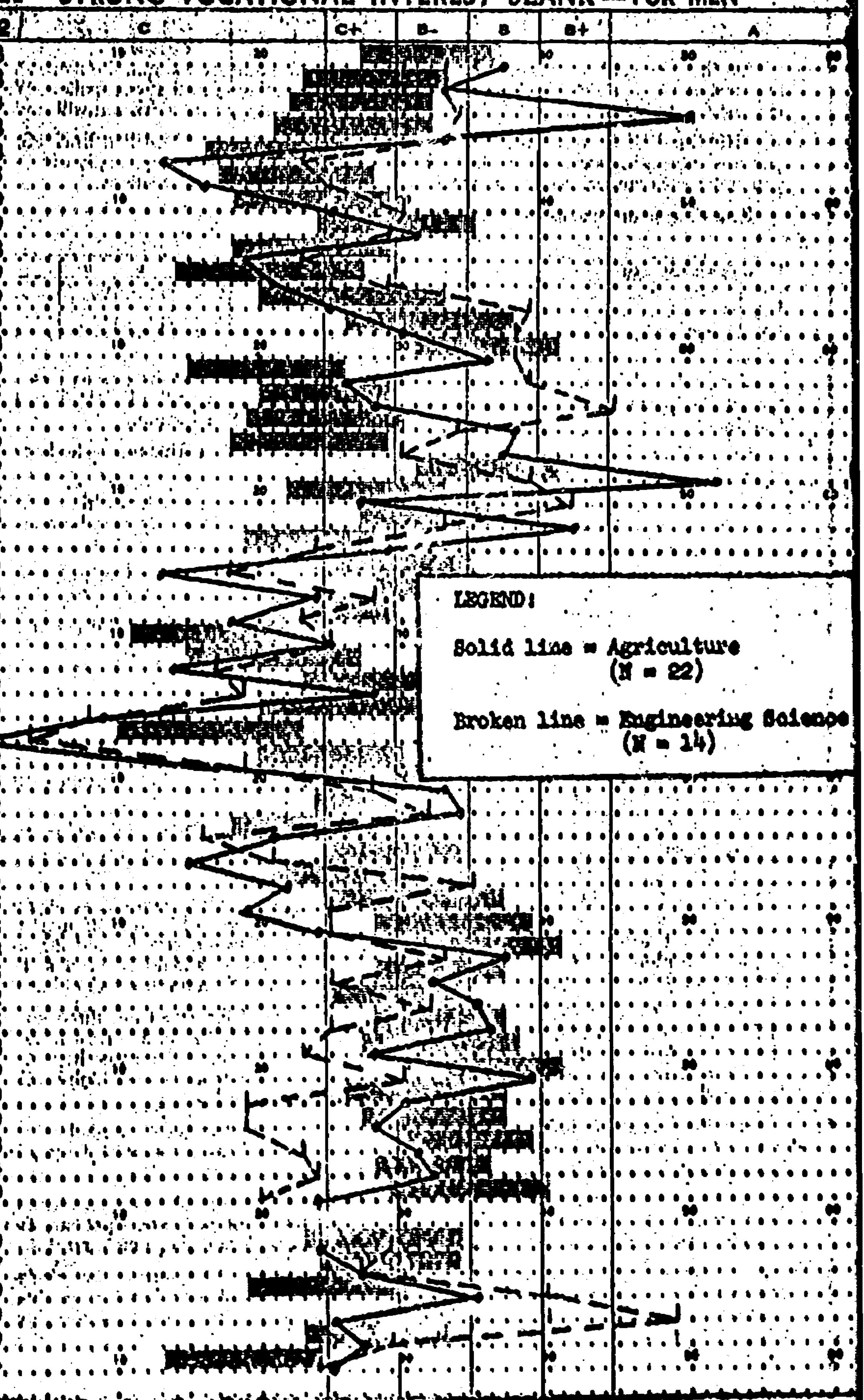


Figure 1: Mean Profiles for 22 Agriculture and 14 Engineering Science Students

NCS PROFILE — STRONG VOCATIONAL INTEREST BLANK — FOR MEN

	Group	Occupational Scales	$\bar{X}_1$	$\bar{X}_2$
1	I	DENTIST	34	33
2		OSTEOPATH	29	33
3		VETERINARIAN	32	34
4		PHYSICIAN	29	33
5		PSYCHIATRIST	18	23
6		PSYCHOLOGIST	24	25
7		BIOLOGIST	28	30
8	II	ARCHITECT	38	29
9		MATHEMATICIAN	26	23
10		PHYSICIST	31	29
11		CHEMIST	40	39
12		ENGINEER	42	38
13	III	PRODUCTION MANAGER	42	38
14		ARMY OFFICER	34	39
15		AIR FORCE OFFICER	42	45
16	IV	CARPENTER	42	34
17		FOREST SERVICE MAN	23	30
18		FARMER	40	39
19		MATH-SCIENCE TEACHER	35	42
20		PRINTER	39	33
21		POLICEMAN	25	24
22	V	PERSONNEL DIRECTOR	18	18
23		PUBLIC ADMINISTRATOR	24	28
24		REHABILITATION COUNS.	22	23
25		YMCA SECRETARY	21	25
26		SOCIAL WORKER	14	17
27		SOCIAL SCIENCE TEACHER	18	19
28		SCHOOL SUPERINTENDENT	4	8
29		MINISTER	2	4
30	VI	LIBRARIAN	21	19
31		ARTIST	35	28
32		MUSICIAN PERFORMER	36	32
33		MUSIC TEACHER	20	16
34	VII	C.P.A. OWNER	18	21
35	VIII	SENIOR C.P.A.	32	35
36		ACCOUNTANT	27	25
37		OFFICE WORKER	27	25
38		PURCHASING AGENT	39	33
39		BANKER	27	25
40		PHARMACIST	29	32
41		MORTICIAN	28	25
42	IX	SALES MANAGER	24	23
43		REAL ESTATE SALESMAN	33	30
44		LIFE INS. SALESMAN	20	19
45	X	ADVERTISING MAN	26	19
46		LAWYER	22	23
47		AUTHOR-JOURNALIST	29	24
48	XI	PRESIDENT-MFG.	26	20
		SUPP. OCCUPATIONAL SCALES		
49		CREDIT MANAGER	25	29
50		CHAMBER OF COM. EXEC.	25	27
51		PHYSICAL THERAPIST	34	40
52		COMPUTER PROGRAMMER	43	49
53		BUSINESS ED. TEACHER	27	29
54		COMMUNITY REC. ADMIN.	21	24
55		OPTOMETRIST		

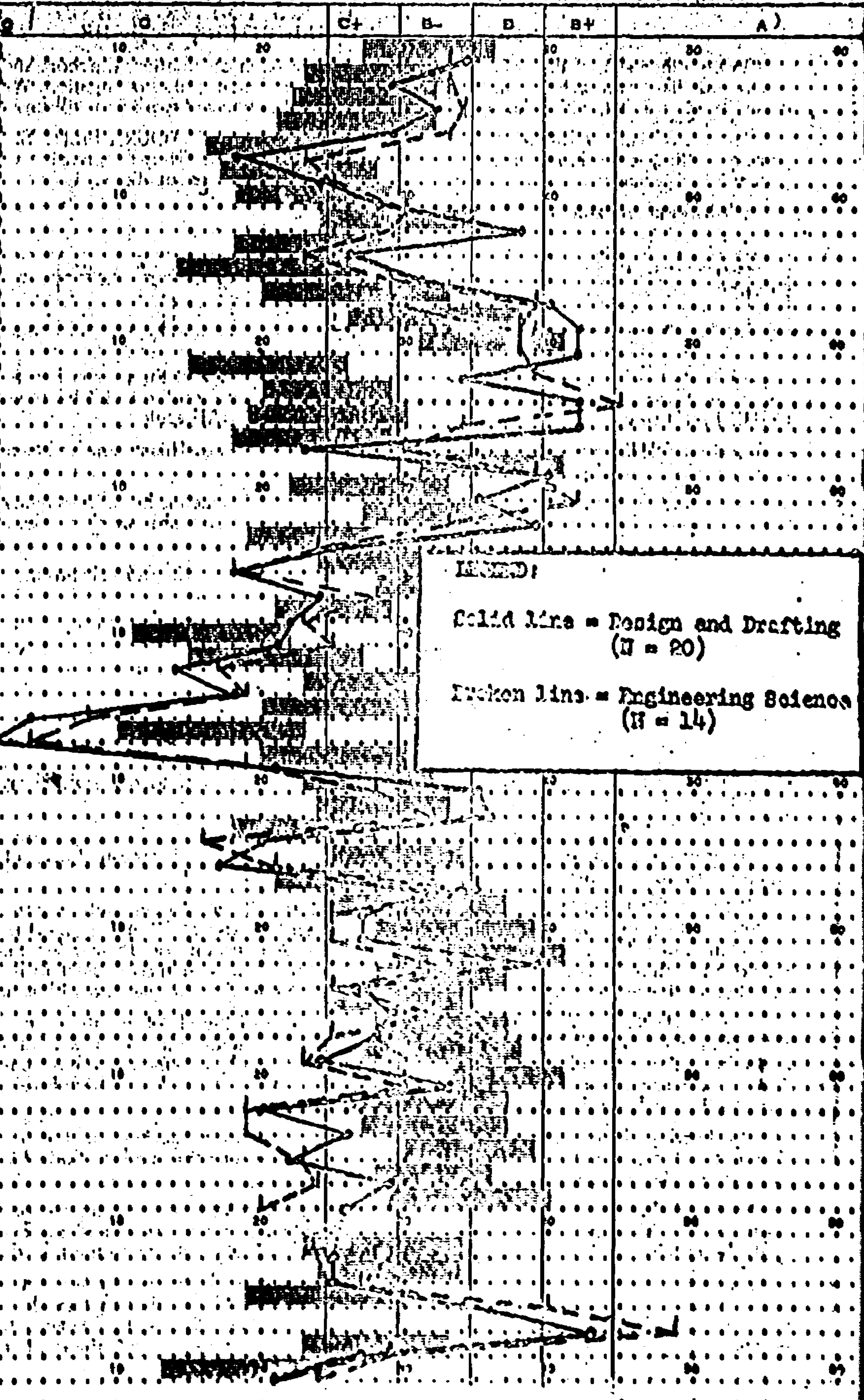


Figure 2: Mean Profiles for 20 Design and Drafting and 14 Engineering Science Students

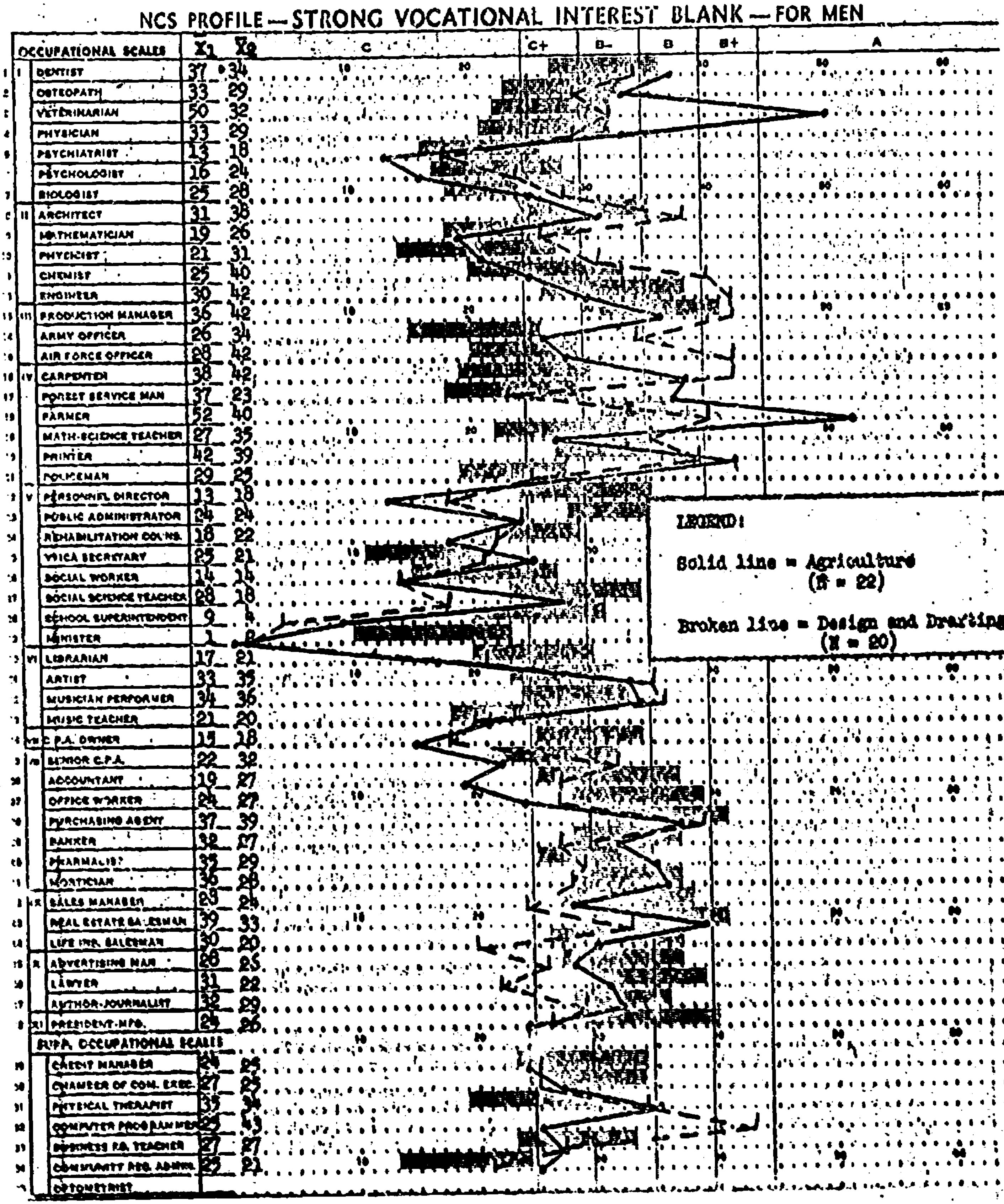
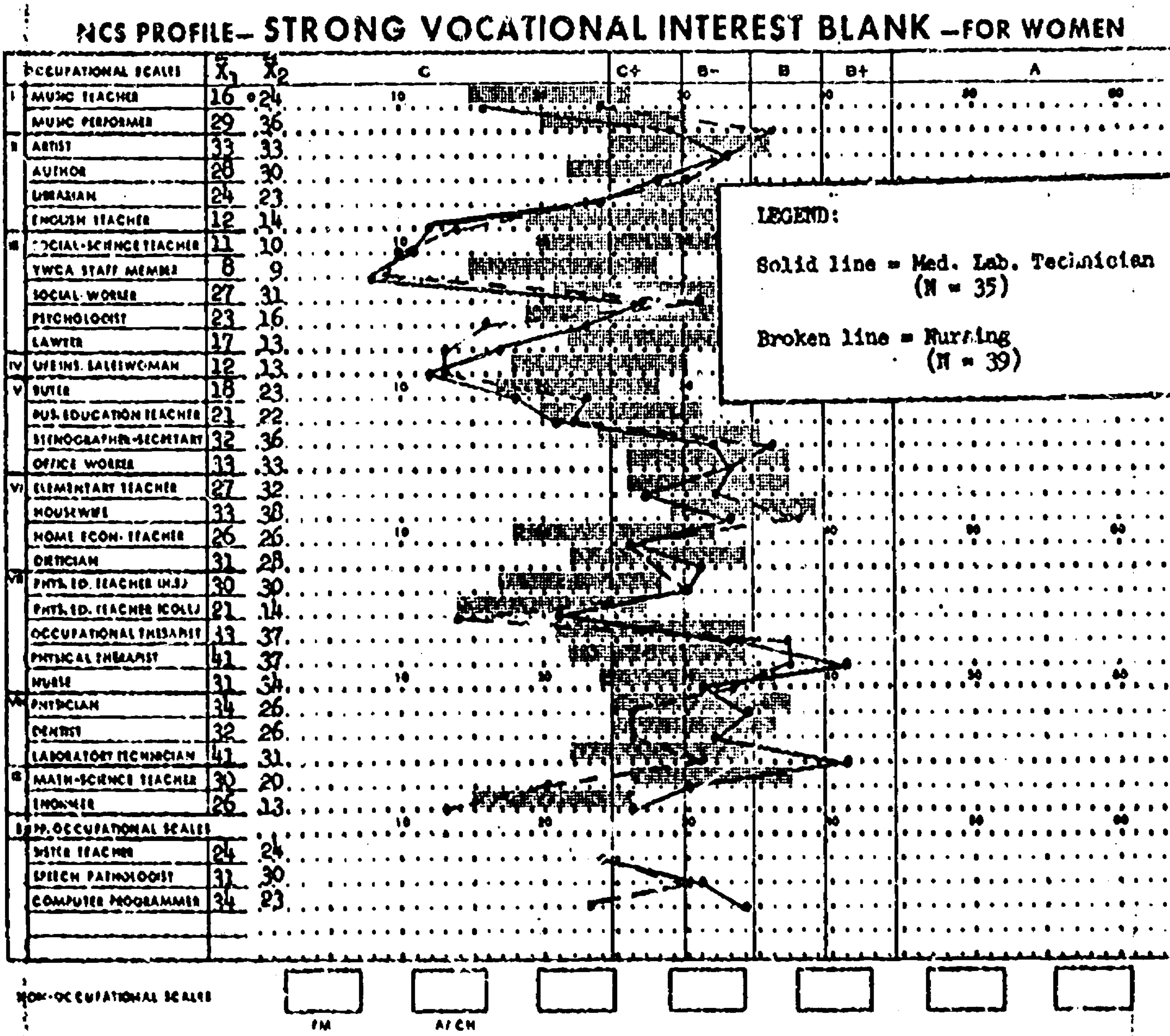


Figure 3: Mean Profiles for 22 Agriculture and 20 Design and Drafting Students



NOTE: Figure 4: Mean Profiles for 35 Medical Laboratory Technicians and 39 Nursing Students

TABLE 3

PERCENTAGES OF OVERLAP BETWEEN THE THREE MEN'S GROUPS

SVIB Occupational Scales	Agriculture vs Engineering Science	Design and Drafting vs Engineering Science	Agriculture vs Design and Drafting
Dentist	84	97	89
Osteopath	100	85	81
Veterinarian	33	93	28
Physician	100	88	86
Psychiatrist	65	78	76
Psychologist	59	95	68
Biologist	84	92	88
Architect	92	71	78
Mathematician	83	89	75
Physicist	69	93	65
Chemist	53	96	44
Engineer	69	84	54
Production Manager	92	84	74
Army Officer	59	87	76
Air Force Officer	35	89	48
Carpenter	87	84	83
Forest Service Man	70	80	53
Farmer	47	97	51
Math-Science Teacher	45	64	66
Printer	62	78	86
Policeman	80	96	81
Personnel Director	84	100	85
Public Administrator	87	87	100
Rehabilitation Couns.	81	97	83
YMCA Secretary	100	89	87
Social Worker	91	91	100
Social Science Teacher	62	95	55
School Superintendent	96	86	80
Minister	91	94	96
Librarian	91	91	86
Artist	77	73	93
Musician Performer	90	81	91
Music Teacher	78	83	96
C.P.A. Owner	74	87	86
Senior C.P.A.	52	88	62
Accountant	76	91	62
Office Worker	96	91	87
Purchasing Agent	85	74	90
Banker	62	90	80
Pharmacist	83	83	62
Mortician	36	92	43
Sales Manager	67	92	73
Real Estate Salesman	46	80	62
Life Ins. Salesman	51	94	74
Advertising Man	66	67	91
Lawyer	62	94	54
Author-Journalist	61	76	87
President - Mfg.	80	72	90
Credit Manager	78	88	97
Chamber of Com. Exec.	100	92	91
Physical Therapist	78	81	97
Computer Programmer	23	76	32
Business Ed. Teacher	92	93	100
Community Rec. Admin.	97	91	78

TABLE 4

PERCENTAGES OF OVERLAP BETWEEN THE TWO WOMEN'S GROUPS

SVIB Occupational Scales	Medical Lab. Technician vs Nursing
Music Teacher	74
Music Performer	73
Artist	100
Author	92
Librarian	95
English Teacher	93
Social-Science Teacher	97
YWCA Staff Member	96
Social Worker	84
Psychologist	71
Lawyer	83
Life Ins. Saleswoman	95
Buyer	75
Bus. Education Teacher	95
Stenographer-Secretary	75
Office Worker	100
Elementary Teacher	80
Housewife	75
Home Econ. Teacher	100
Dietician	87
Phys. Ed. Teacher (H.S.)	100
Phys. Ed. Teacher (Coll.)	79
Occupational Therapist	86
Physical Therapist	80
Nurse	87
Physician	62
Dentist	67
Laboratory Technician	58
Math-Science Teacher	63
Engineer	50
Sister Teacher	100
Speech Pathologist	97
Computer Programmer	55

one distribution which can be matched by scores in the other distribution." Although Strong (1959) used the percentage of overlap measure in reporting on the validity of his scales, and Campbell (1968) has used it to compare the effectiveness of two recently developed scales, there does not seem to be a fixed percentage of overlap which is accepted as the criterion of "good separation." In one discussion of overlap, Campbell (1966, p. 34) states that the Physicist scale separates "rather well" chemists from physicists on the basis of a percentage of overlap of "roughly 55 percent." This percentage of overlap (55%) has been used in this study to indicate "the criterion for good separation." In other words, if on a given scale, Group A's scores overlap Group B's by 55% or less, Group A is said to have different measured interests than Group B.

The Agriculture students have different measured interests from the Design and Drafting students, and from Engineering students. The Agriculture students' scores overlap the Design and Drafting students' scores 55% or less on the following ten scales: Veterinarian, Chemist, Engineer, Air Force Officer, Forest Service Man, Farmer, Social Science Teacher, Mortician, Lawyer, and Computer Programmer. The Agriculture students overlap the Engineering Science students 55% or less on the following ten scales: Veterinarian, Chemist, Air Force Officer, Farmer, Math-Science Teacher,Senior C.P.A., Mortician, Real Estate Salesman, Life Insurance Salesman, and Computer Programmer.

On the basis of percentage of overlap, the Design and Drafting studensts and the Engineering Science students have similar measured interests. As can be seen in Table 3, 23 of the 54 scales overlap 90% or more. The scale with the least overlap (64%) is Math-Science Teacher.

The Medical Laboratory Technician and Nursing students have similar measured interests on 32 of the 34 scales. On the Engineer scale, the overlap is 50%; on Computer Programmer the amount of overlap is 55% (see Table 4).

At this point, it should be noted that the sample sizes, especially for the three men's groups are small. Many of the differences presumably are the result of considerable chance factors. On the other hand, there is some evidence that suggests that the mean scores for these samples are quite stable. The Agriculture and the Design and Drafting means were compared with mean scores obtained for Agriculture and Design and Drafting students who were tested under comparable conditions the previous year (1968). For the two Agriculture groups, on 48 of the 54 scales, the difference between means was 3 points or less; the largest difference was 7 points. In a like fashion, the 1969 Design and Drafting (N = 20) means were compared to a 1968 sample (N = 44). For 48 scales the mean difference was 3 points or less; the largest difference was 6 points.

For the women, no comparison sample of Alfred students was available. A comparison with another two-year college sample of nursing students indicated that the profiles were very similar.

The overlap method of comparison, as used in this study, compares one scale at a time versus a multi-scale or "configural" approach. A multi-scale approach was used with several combinations of scales to ascertain if this method could "differentiate better" than the conventional overlap method between the respective pairs of groups. The results of a study by Dunnette (1957) suggested that scoring keys based upon an inspection of mean differences (versus scoring keys developed by item-analysis) could be developed.

In the present study, the multi-scale analysis was applied only to the Design and Drafting and Engineering Science comparisons. Based essentially upon percentages of overlap, several different combinations of scales were tried. Two such combinations are reported in this paper. A "Design and Drafting key," based upon the differences between the Architect and Biologist scores, was used. For the "Engineering Science key," President, Mfg., and Computer Programmer scales were used.

The Design and Drafting key, developed upon the 1969 sample (N = 20), "correctly identified" 15 (75%) of the 20 Design and Drafting students. The same key, when applied to the Engineering Science scores, "incorrectly identified" 4 of the 14 Engineering Science students as Design and Drafting students. The Engineering Science key was not as effective; 9 (64%) of the 14 Engineering Science students were correctly identified. When the Engineering Science key was applied to the Design and Drafting students, it incorrectly identified 5 of the 15 as Engineering Science students.

The Design and Drafting key was cross-validated on the 1968 sample of Design and Drafting students (N = 44). Twenty-nine (66%) of the 44 students were correctly identified. The Engineering Science key was also applied to the 1968 Design and

Drafting sample. Eleven of the 44 students were incorrectly identified as Engineering Science students. No sample of Engineering Science students was available for cross-validation.

In the writer's view, the differentiation resulting from the application of the two special keys, each based upon only two scales, was fairly good. In other words, although the Design and Drafting students were not differentiated from Engineering Science students on the basis of conventional scale by scale comparisons, a multi-scale, or "configural," approach produced fairly good differentiation. Obviously, studies based on larger samples are needed to determine the effectiveness of the multi-scale approach.

SUMMARY

Means and standard deviations for students in five different junior college curricula were presented. Measures of overlap were also presented. A non-conventional multi-scale approach was discussed.

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