A COMPARISON OF SCORES OBTAINED THROUGH NORMAL AND VISUAL ADMINISTRATIONS OF THE OCCUPATIONAL INTEREST INVENTORY*

H. W. Stoker, R. P. Kropp, and W. L. Bashaw
Florida State University

This is a report of one of a series of studies which have been designed in part to ascertain the feasibility of administering via television group tests and inventories of the type which are commonly used in the public schools. Inasmuch as the amount of instruction executed through the media of television is increasing it is relevant to inquire whether testing might also be done by television in such a way as to obtain the same, or perhaps more valid, results than are afforded by the usual methods of administration. This report deals with a description of an attempt to obtain, through a simulated television administration, results from an occupational interest inventory which are comparable to those obtained under normal administrative conditions.

Problem

The problem dealt with here is a study of the relationships between criterion measures and sets of rankings of occupational groups for subjects (Ss) who were administered the same occupational interest inventory under three sets of conditions--one control and two experimental. The control administration (C) was conducted under those conditions recommended in the manual for the inventory; i. e., pencils, answer sheets, and booklets were distributed to subjects, the directions were read, etc. Both experimental administrations consisted of projecting the items of the inventory onto a screen one item at a time and the Ss read and responded to the items as they appeared. The difference between the two experimental administrations was the intra-item exposure time. The intra-item exposure time for the experimental-normal (XN) administration was determined by allotting to each item

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twelve seconds which is equivalent to dividing the time allowed for completing the inventory under normal conditions by the number of items in the inventory. The intra-item exposure time for the experimental-paced (XP) administration was determined by reducing to two-thirds the time allotted for each item in the XN administration.

Although the major purpose of the study was to determine a feasible method of administering tests and inventories by television, due to the expense and awkwardness of actually administering experimental tests by television, data were collected in a simulated situation. Items from the inventory were reproduced on slides and projected on a 3' x 5' screen. The slide format conformed to the format of a TV screen. The illumination level maintained in the testing room was comparable to that maintained for TV viewing.

Criterion measures (CM) were collected from all Ss. They were presented with descriptions of jobs in each of the six occupational categories included in the standardized inventory and were asked to indicate their preferences by ranking the six occupational groups.

Procedure

Subjects

The Ss consisted of all eleventh grade students in a white Florida high school. There were 91 Ss in all, two were discarded because they supplied incomplete data.

Instrument

The Occupational Interest Inventory (OII), Advanced Form, was used in both normal and experimental administrations.*

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*The Occupational Interest Inventory is published by the California Test Bureau, Monterey, California. The authors are indebted to the California Test Bureau for their gracious permission to use the OII for experimental purposes.

Experimental Conditions

Under the experimental condition the items from the OII were presented one item per exposure. On the XN administration the item exposure time was twelve seconds. On the XP administration the item exposure time was eight seconds. There was no inter-item exposure interval.

Testing Schedule

The order in which tests were administered was: CM, C, XN, and XP. A rest period and two "word games" were used between administrations of various conditions in an attempt to reduce response set. The measures were obtained for all Ss during a four-hour period.

Not all Ss were tested under the XP condition. Ss were randomly divided in two groups at the conclusion of the XN administration. Forty-four Ss underwent the XP condition.

Experimental Directions

Special directions were prepared for the experimental conditions which consisted of the "regular" instructions for the instrument and "special" instructions about the mode of item presentation. Sample items were presented. Ss were not informed of the amount of time they would have for each item. They were informed that each item would be presented once and only once during an administration. No questions were permitted when the test was in progress.

No unusual circumstances arose during either the control or experimental administrations.

Results

A coefficient of concordance (W) was computed on the ranks for each of the 89 Ss who completed the criterion scale and the C and XN administrations of the OII. The distribution of these values appears in Table 1. Note that Ss who subsequently took the XP administration appear separately in the frequency column appearing in the table. Each coefficient was tested for significance by the method outlined by Siegel (1956).

Table 1

Distributions of Coefficients of Concordance for Ss on CM, and C and XN Administrations of OII

W Interval[a]	Frequency[b]	Frequency[c]	Total Frequency
.95 - .99	6	10	16
.90 - .94	13	7	20
.85 - .89	12	6	18
.80 - .84	4	11	15
.75 - .79	1	4	5
.70 - .74	3	4	7
.65 - .69	1	0	1
.60 - .64	1	1	2
.55 - .59	1	0	1
.50 - .54	1	1	2
.45 - .49	0	0	0
.40 - .44	1	0	1
.35 - .39	0	0	0
.30 - .34	0	1	1

a $W \geq .65$ is significant at .05 level
b Ss who subsequently took XP administration
c Ss who did not take XP administration

A coefficient of concordance was computed on the ranks for each of the forty-four Ss who completed the CM and all three administrations of the OII. The distribution of W's, each based on four sets of ranks, appears in Table 2.

Rank order coefficients were computed between pairs of ranks on CM, C, XN and XP for each S. The distributions of these coefficients appear in Table 3.

Sign tests were computed between rank correlations for various combinations of the four obtained measures. A summary of these comparisons appears in Table 4.

Table 2

Distributions of Coefficients of Concordance for Ss
Who Completed CM and C, XN, and XP Administrations of OII

W Interval[a]	Frequency	W Interval[a]	Frequency
.95 - .99	4	.60 - .64	1
.90 - .94	12	.55 - .59	2
.85 - .89	10	.50 - .54	1
.80 - .84	7	.45 - .49	0
.75 - .79	5	.40 - .44	1
.70 - .74	0	.35 - .39	
.65 - .69	1	.30 - .34	

a $W \geq .55$ significant at .05 level

Table 3

Distributions of Rank Coefficients between
Pairs of Ranks of Combinations of CM, C, XN, and XP

Rho Interval	Rho Coefficients					
	(CM)(C)	(CM)(XN)	(CM)(XP)	(C)(XN)	(C)(XP)	(XN)(XP)
.96 -1.00	10	6	4	40	12	24
.91 - .95	11	14	5	16	11	5
.86 - .90	11	13	6	11	8	2
.81 - .85	16	13	4	3	4	3
.76 - .80	4	7	6	3	2	2
.71 - .75	9	9	2	2		
.66 - .70	3	3	1	1	1	1
.61 - .65	5	6	4	3	2	2
.56 - .60	7	8	4	2	1	
.51 - .55	3	1	1	2	1	
.46 - .50	5	3	2		1	1
.41 - .45	1		1	1		2
.36 - .40	1	2	1	1		
.31 - .35			1			
.26 - .30						
.21 - .25	1	1	1	1		
.16 - .20	1	2	1			
below .16	1	1		3	1	2

Table 4

Sign Tests for Selected Comparisons

Comparison	Number	Differences	Probability
CM vs. C, with CM vs. XN			
$r_{(CM)(XN)} > r_{(CM)(C)}$	42		
$r_{(CM)(C)} > r_{(CM)(XN)}$	38	4	.73
$r_{(CM)(C)} = r_{(CM)(XN)}$	9		
CM vs. C with CM vs. XP			
$r_{(CM)(C)} > r_{(CM)(XP)}$	24		
$r_{(CM)(XP)} > r_{(CM)(C)}$	17	7	.35
$r_{(CM)(XP)} = r_{(CM)(C)}$	3		
C vs. XN with C vs. XP			
$r_{(C)(XN)} > r_{(C)(XP)}$	22		
$r_{(C)(XP)} > r_{(C)(XN)}$	13	9	.18
$r_{(C)(XP)} = r_{(C)(XN)}$	9		

Discussion

The data in Table 1 reveal that 78 per cent of the W's computed on rank orders of occupations given by each subject on the CM, C, and XN administrations were equal to or greater than .80; and that 92 per cent of the W's were significant at least at the .05 level. The distribution of W's in Table 2, which were calculated on CM and the C, XN and XP administration of the OII, reveal that 75 per cent of them were equal to or greater than .80; and that 95 per cent were significant at least at the .05 level of confidence. Thus, one might generalize that high relationships existed among the sets of occupational ranks which Ss produced.

The data in Table 3, which presents distributions of rho coefficients between pairs of ranks obtained under different administrative conditions, reveal that the following percentages of rho coefficients exceeded .80: between CM and C, 54 per cent; between CM and XN, 52 per cent; between CM and XP, 43 per cent; between C and XN, 79 per cent; between C and XP, 79 per cent; and between XN and XP, 77 per cent. Thus, it seems that CM rankings relate less strongly to the sets of rankings obtained by various administrations of the OII than the latter sets relate to each other. Thus, one might conclude that rankings obtained by use of CM did not serve as good predictions of rankings obtained on the OII which, due to its length and prior validation, was surely more reliable and valid. Consequently, one must assume that the W's which appear in Tables 1 and 2 underestimate the strength of relationship between various administrations of the OII owing to the introduction of the somewhat irrelevant CM rankings. The percentages of rho's that exceeded .80 suggest that the C, XN, and XP administrations of the OII are somewhat interchangeable.

The most pertinent sign test was the comparison of (C) (XN) with (C) (XP) which, although not significant, revealed that the coefficients between (C) (XP) were generally lower than those between (C) (XN). Inasmuch as the C administration corresponded to the administration of the OII under normal conditions, it appears that of the two projected administrations of the OII the XN administration was superior. The item exposure interval on the XN administration was the same as that on the C administration if all Ss used all the time available for the C administration and divided their time equally over all items. The XP administration, in which item exposure time was reduced 33 per cent from the XN administration, yielded rankings which generally related less strongly to C rankings for each S than did his XN rankings.

The data and comments which appear above must be regarded as merely suggestive. On the one hand, no information was collected or available that dealt with the rho coefficients between rankings for normal administrations of the OII; consequently, there is no backdrop against which to evaluate the obtained distributions of coefficients between C, X, and XN. On the other hand, all four sets of data were collected in a four-hour period. Data collected in such a short period might be useful in determining the coefficient of equivalence for a test such as the OII but such a coefficient is far less meaningful than a coefficient of stability because scores from such an instrument are commonly used in long-range vocational planning by the S.

Summary

The purpose of this study was to determine the relationships obtained by Ss who were administered the Occupational Interest Inventory under normal administration conditions and two experimental conditions which involved administering the OII by projecting one at a time each of its items on a 3' x 5' screen. The item exposure time on one experimental administration was equal to the time allotted for the OII when administered under normal conditions divided by the total number of items. The item exposure time on the other experimental administration was two-thirds that of the former and it was regarded as the "paced" administration. In addition Ss were asked to complete a criterion scale which involved their ranking, according to preference, the occupations for which scores are obtained on the OII. The data revealed that the criterion measure was relatively invalid.

Coefficients of concordance were computed on occupational rankings yielded on the criterion measure, and the control and normally-timed experimental administrations; a separate set of coefficients was computed on the above sets of rankings and the rankings from the experimental-paced administration. The distribution of W's revealed that at least three-quarters of them were equal to or greater than .80, and approximately 90 per cent of all W's were significant at least at the .05 level of confidence. The W's were regarded as underestimates of the relationships between OII rankings obtained under various conditions because the rankings yielded by the criterion measure entered into the calculation of W coefficients and it was subsequently learned that rankings on the criterion measure were not highly associated with OII rankings. Rho coefficients between pairs of rankings revealed that 75 to 80 per cent of all coefficients computed between pairs of control and the two experimental rankings were equal to or greater than .80. A sign test revealed that rho coefficients between the control and experimental normally-timed rankings were generally greater, but not significantly so, than the coefficients between the control and experimental paced rankings on the OII.

The analysis lends support to the belief that vocational interest inventories such as the OII yield similar sets of rankings when the items are administered by projecting them on a screen as when the items are presented in booklet form. No evidence was presented that dealt with the distribution of coefficients based on two normal administrations of the OII; consequently the evaluation of obtained distributions

of coefficients computed on control and experimental normally timed administrations, and control and experimental paced administrations in terms of the distribution of coefficients between two normal administrations was not possible.

Reference

Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw Hill, 1956, Chapter 9.