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ABSTRACT

The Ohio Vocational Interest Survey (OVIS) has been used as an interest measurement tool measuring student interests toward jobs dealing with data, people and things. The purpose for the present paper was to determine the consistency of the OVIS for measuring these three dimensions through factor analysis. The research findings demonstrated which factors are measured by the instrument. Factor analytic limitations are also described in order to assist the test user's interpretation. (Author)

THE OHIO VOCATIONAL INTEREST INVENTORY: A FACTOR ANALYSIS

by

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ABSTRACT

The Ohio Vocational Interest Survey (OVIS) has been used as an interest measurement tool measuring student interests toward jobs dealing with data, people and things. The purpose for the present paper was to determine the consistency of the OVIS for measuring these three dimensions through factor analysis. The research findings demonstrated which factors are measured by the instrument. Factor analytic limitations are also described in order to assist the test user's interpretation.

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Most theories of scaling, reliability and test construction assume that the items being measured are unique; i.e., they are dominated by one factor. A possibility exists among many measurement instruments that a factor inherent in a collection of items might be either peculiar or specific to that collection of items. An example of similar and unique factor loadings would be the high correlation of arithmetic problem solving and spelling. One may conclude that common factors exist between tests of arithmetic problem solving and reading while tests of arithmetic problem solving and spelling essentially measure specific factors. The preceeding example was provided for explanation purposes only and was not based upon empirical data. The point to be emphasized is that one is seldom interested in measuring specific factors; rather, one is interested in measuring the common factors that extend to a variety of items. The purpose of factor analysis is to provide the test user with a statistical tool for determining whether specific or common factors are inherent to an instrument.

The present paper provides test users with a factor analytic analysis of the Ohio Vocational Interest Survey (OVIS) (1970). Readers may find this presentation useful for both interpreting OVIS' results to students and for interpreting research findings. This paper is concerned with presenting

the factor structure of the OVIS and should not be misinterpreted as a treatise on factor analysis, however a brief presentation of factor analytic limitations are later discussed.

Description of OVIS

The OVIS (1970) was developed as an interest inventory to provide students with a forced-choice with free-response inventory having both normative and ipsative data. The inventory is based upon twenty-four (24) rationally derived interest scales (clusters) defined by the job classification system of the Dictionary of Occupational Titles (DOT). One unique aspect of the OVIS is that the inventory does not claim to measure a singular factor, vocational interest, but rather measures a three dimensional factor structure of student interests toward jobs requiring principle involvement with either data, people or things (D'Costa & Winefordner). This present study will provide OVIS test users with the aforementioned interpretive information and will also determine which constructs are common for the instrument.

Method

Conducting any factor analysis requires that a large sample of students be selected and administered the instrument. A large northeast Ohio city school district was selected to provide the necessary population. The students in all of the city junior high schools were pooled and six-

hundred thirty-nine (639) eighth and ninth graders were randomly selected to serve as subjects. Ohio tests all junior and senior high school students with the OVIS, and therefore this random selection of students increased the generalizability of the results to all similar city school districts. The researchers used the scores of all 639 students on the twenty-four interest scales as the data to be computed for the factor analysis. The possible range of scores for each interest scale on the OVIS is 11 - 55 where 33 is considered to be average interest. The results of the factor analysis are presented in the following section. Orthogonal factor rotation was employed for this analysis.

Results

The results of the factor analysis provided two significant findings which were: (1) the internal consistency of the OVIS for eighth and ninth grade students is r = .95, and (2) The OVIS provides a four factor structure for eighth and ninth graders.

As expected, twenty-four interest scales accounted for 100 percent of the variance; however, setting the beta weights (eigen values) to be a minimum of 1.00 (at least 1% of the variance is accounted), four distinct factors emerged which accounted for 74.3 percent of the variance. The four factors were subjectively titled: social service, applied organizational skills, semi-skilled manual labor, and creative arts. Table 1 presents the four factors and the correlation of each

factor with each interest scale. Table 2 presents each factor and the interest scales which are significantly correlated with that factor. A subjective minimum correlation of r = .50 or greater between the interest scale and the factor was utilized in order to determine the variables which constitute the particular factor.

INSERT TABLES 1 and 2

Each factor accounted for the following percentage of variance: (1) social service - 47 percent; (2) organizational skills - 16 percent; (3) semi-skilled manual labor - 7 percent; (4) creative arts - 5 percent. Interestingly, not only did social service account for the most variance but there appeared to be an overriding social variance among all of the factors. The researchers therefore concluded that the OVIS measures four distinct factors for eighth and ninth graders, rather than three; and that most eighth and ninth grade student interests are toward socially-oriented occupations.

Discussion

This factor analysis of the OVIS (1970) provides the test user with information which will be helpful for interpretation of the instrument. There is obviously a high coefficient of internal consistency for the instrument and that most students in the eighth and ninth grades will demonstrate some social characteristics. The results should make test users aware

that students in the eighth and ninth grades will demonstrate some interest in socially-oriented occupations. Generally the data, people, things factors are measured by the instrument; however, these factors are generally inherent throughout the four factor structure. The test user should be aware of the factors and what are their components.

One must be careful to generalize only to similar groups of eighth and ninth grade students. There are problems that can occur and questions which must be subjectively answered when using factor analysis. The reader should keep in mind that many times factor analysis will demonstrate different results for different populations and, therefore, replication is highly recommended. A second limitation is the subjective cut-off of $r = .50$ for determining common factor scales, the cut-off could have been higher or lower. A third limitation is the determination of which type of rotation, orthogonal vs. oblique, to be used. In order to account for the third limitation, this study was also performed utilizing oblique factor analysis with demonstration of the same results, therefore providing additional validity for the findings. The reader should generalize these results only to similar populations of eighth and ninth grade students in city junior high schools. Test users should interpret the clusters to the students but may also provide students with information that these clusters are really an aspect of some factor structure which they may also consider.

The results of this study have given information to test users regarding the interpretation of the OVIS. Having completed this factor analysis of the OVIS, the investigators now recommend that comparative analyses (factor matching) be completed to determine the commonalities of the OVIS for contingent groups. This would compare the factor structures for the groups according to race, sex, and grade. The researchers further recommend that factor analysis be completed for other grades since the test is normed for seventh through eleventh grade students. This initial factor analysis of the OVIS when combined with future studies will provide most of the information necessary for utilization and research validation of the instrument.

References

Ohio Vocational Interest Survey, New York: Harcourt Brace Jovanovich, Inc., 1970.

D'Costa, A. & Winefordner, D. W. A Cubistic Model of Vocational Interests, Vocational Guidance Quarterly, 17, 4, 1969, 242-249.

TABLE 1

CORRELATIONS OF EACH FACTOR WITH EACH INTEREST SCALE

	Interest Scale	1 Social Service	2 Applied Organizational Skills	3 Semi-Skilled Manual Labor	4 Creative Arts
1.	Manual Work	.047	.537*	.682*	.018
2.	Machine Work	.223	.797*	.370	.047
3.	Personal Services	.519*	.060	.685*	.246
4.	Caring for People or Animals	.769*	.085	.277	.223
5.	Office Work	.679*	.014	.271	.227
6.	Inspecting and Testing	.221	.500*	.634*	.218
7.	Crafts and Precise Operations	.125	.833*	.328	.104
8.	Customer Services	.676*	.175	.429	.302
9.	Nursing and Related Technical Services	.890*	.005	.098	.147
10.	Skilled Personal Services	.477	.023	.502*	.478
11.	Training	.417	.500*	.316	.395
12.	Literary	.533*	.295	.011	.612*
13.	Numerical	.378	.726*	.115	.095
14.	Appraisal	.207	.862*	.052	.169
15.	Agriculture	.164	.482	.509*	.223
16.	Applied Technology	.003	.918*	.025	.168
17.	Communications and Promotions	.561*	.498	.046	.482
18.	Management and Supervision	.370	.636*	.086	.324
19.	Artistic	.413	.287	.141	.632*

(CONTINUED)

TABLE 1 (Continued)

	Interest Scale	1	2	3	4
20.	Sales Representative	.309	.754*	.205	.261
21.	Music	.124	.139	.134	.838*
22.	Entertainment and Performing Arts	.281	.170	.179	.805*
23.	Teaching, Counseling and Social Work	.639*	.267	.064	.457
24.	Medical	.761*	.287	.012	.168

* Significant item for the particular factor

TABLE 2

SIGNIFICANT INTEREST SCALES FOR EACH FACTOR

1 Social Service	2 Applied Organizational Skills	3 Semi-Skilled Manual Labor	4 Creative Arts
Personal Services	Manual Work	Manual Work	Literary
Caring for People and Animals	Machine	Personal Services	Artistic
Clerical	Inspection and Testing	Inspection and Testing	Music
Customer Service	Crafts	Skilled Personal Services	Arts and Entertainment
Nursing	Training	Agriculture	
Literary	Appraisal		
Promotion and Communication	Applied Technology		
Teaching, Counseling and Social Work	Management		
Medical	Sales Representative		