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ABSTRACT

The Tetreau-Trahan Visual Interest Test (TTVIT) was constructed to counteract the influence of verbal and cognitive factors in the measurement of vocational interests. Two forms were developed--a pictorial test based on color slides of various occupations, as well as a verbal form to be used in comparative studies with samples of persons from different linguistic, cultural, and socioeconomic backgrounds. Item analyses and factorial studies show that the TTVIT is a reliable nonverbal test (alpha coefficients of .82 to .95) yielding scores on scales corresponding to Holland's interests and personality typology. It is now standardized for the high school and college populations of Quebec and Brazil. Given its 20-minute administration time, the possibility of immediately self-scoring and interpreting the responses within an empirically based theoretical framework, and the nonverbal nature of the items which facilitate the prompting of an emotional response, the TTVIT is a practical instrument as well as a tool of cross-cultural interest research allowing for direct comparisons from the same stimuli. (PN)

The Measurement of Vocational Interests through Pictorial Stimuli

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Abstract

In order to counteract the influence of verbal and cognitive factors in the measurement of vocational interests we constructed the TTVIT, a pictorial test based on color slides of various occupations, as well as a verbal form to be used in comparative studies with samples of persons from different linguistic, cultural, and socioeconomic backgrounds. Item analyses and factorial studies show that the TTVIT is a reliable nonverbal test (alpha coefficients of .82 to .95) yielding scores on scales corresponding to Holland's interests and personality typology. It is now standardized for the high school and college populations of Quebec and Brazil and the data provide evidence that it is a well suited instrument for the transcultural study of the origin and development of vocational interests.

Measuring Vocational Interests through Pictorial Stimuli: The TTVIT

Since the pioneering work of Binet and Simon (1905) most of the psychometric tools used for mental measurement have relied upon the verbal method of the paper-and-pencil technique. The advantages of this method for measuring vocational interests have been demonstrated and well recognized (Dupont, Gendre, Berthoud and Descombes, 1979; Super, 1964; Zytowski, 1973). Nevertheless, it seems necessary to observe that this verbal method is highly saturated with cognitive factors; results arelikely to be influenced by cultural and socioeconomic biases inherent to the use of verbal and cognitive factors in personality assessment (Tétreau and Trahan, 1979a, 1979b, 1980).

In the area of cross-cultural interest measurement the problem is compounded by the question of language equivalence, and by the possibility that even with the most adequate translation it cannot be assumed that an instrument measures identical constructs in a different culture (Butcher and Garcia, 1978); although recent research with Hispanic subgroups (Fouad, Note 1; Hansen, Note 2; Harrington, Note 3) tends to confirm the applicability of Holland's model of vocational interests (Holland, 1973), and to support the hypothesis that interests patterns, as measured by the Strong-Campbell Interest Inventory (SCII), are probably more differentially universal than universally different.

On the other hand, it is apparent that within any given linguistic group there is an age-linked threshold under which semantic difficulties are such that, even with the use of a glossary, subjects cannot give meaningful answers to the verval stimuli of interests inventories.

Therefore, in constructing the Tétreau-Trahan Visual Interest Test (TTVIT), it was our purpose to minimize the impact of linguistic factors by using a method based on nonverbal stimuli, i.e. color slides of various occupational tasks allowing for direct cross-cultural and intra-cultural comparisons, without translations or glossaries.

The first question to be dealt with was whether tests constructed with visual nonverbal stimuli would produce unidimensional and homogeneous clusters of responses, each possessing psychometric qualities that would at least compare to those obtained through conventional verbal testing.

Previous attempts at employing pictorial stimuli such as drawings, sketches, and printed photographies for measuring vocational interests have been rather successful (Geist, 1959, 1964, 1968; Giles, 1936; Horneyman, 1971; Jastak and Jastak, 1972, 1981; Weingarten, 1954, 1958). Most of these attempts provided reliable empirical scales which often made use of a forced-choice response mode as with the Kuder inventories. However, none of these instruments have used color slides to derive empirical scales within a solid theoretical framework such as Holland's interests and personality typology (Holland, 1966,1973). More recently, two of our students, Fontaine and Meloche (1976), have used 160 mostly black and white slides on 377 high school and college students to develop four scales whose reliability coefficients range from .79 to .87. Their results clearly established that these scales and individual slides could generate true variance between students, even with the younger ones (13-14 years old). If further evidenced, this latter result would raise the question of finding out at what younger age do individuals start giving meaningful answers to slides representing various occupational activities?!

Following in our students' footsteps we have proceeded to the development of the TTVIT which is now standardized for almost all of the high school and college populations of Quebec, and is in the process of being standardized with comparable populations in Brazil (in this latter case the data of the administration of the test to a sample of 6,300 students are avalaible but have yet to be analysed, and will have been analysed by August 1983).

Test-Structure

As is the case for psychometric instruments of its kind the construction of the TTVIT went through several forms, starting (in 1977) with an initial pool of some 450 black and white and color slides of drawings or real life situations illustrating various occupational tasks. This number was first reduced to 160 (Form NV-M-78), then to 126 (NV-M-79), and 102 (standardized Forms NV-M-81 and NV-M-82 with total N = 7,300). In this reduction process only the color slides of real life situations were kept (Tétreau and Trahan, 1979b). There are also verbal parallel (content symetrical) forms of the test.

The present standardized forms of the TTVIT consist of 102 color slides, each shown for 8 seconds. Each photograph represents a real life occupational activity. The first six slides are used as models, the last six as a verification key. The test structure follows Holland's typing (1966, 1973), RIASEC, and includes 15 items for the six scales of that typing; factorial analyses of responses to Form NV-M-81 and data from a study of its phenomenological validity (Proulx, 1982) tend to confirm Holland typing. The general instruction prompts the subject to respond to the activity suggested in the slide. The response mode used is a 5-point bipolar scale ranging from "dislike very much" to "like very much". Specific instructions ask the subject to respond to each of the slides

shown and to disregard the main character's sex. Answers may be scored by hand or by optic reader and computer. Additional grids could be added to measure other aspects such as academic comfort, rare responses, etc. Administration time including instructions and response to stimuli is around 20 minutes.

Psychometric Qualities

Alpha reliability coefficients obtained with Form NV-102-M-1981 range from .82 to .95 depending on scales. Correlation coefficients between this nonverbal form and its verbal counterpart ranges from .78 to .91; thus these two forms measure essentially the same dimensions.

Several attempts to compare visual and verbal tests tapping interest scales assumed to be equivalent have been made before, usually for validation purposes (Geist, 1964; Pierce-Jones and Carter, 1954; Weingarten, 1958). However, these studies could not differentiate the specific advantages of either the verbal or the nonverbal method of measurement, for the tests used were never strictly content-parallel at the item level. By comparing Form NV-M-81 of the TTVIT with its item-for-item verbal counterpart, the only difference between these two instruments residing in the verbal or nonverbal mode of presentation of the stimuli, Nabahi (1982) has provided a test of some of the differences between verbal and nonverbal methods of interest measurement: The data show that the alpha coefficients and the means obtained with a group of 451 high school and college male and female students are rather systematically, if slightly, higher for the TTVIT than for its verbal version, the differences being noticeably higher in the case of the female students (see Table 1).

Test-retest reliability coefficients (three-week interval) for 134 high school and college students range from .75 to .93 depending on scales and school levels.

Pearson correlation coefficients for a group of 58 10th-graders between relevant scales of the TTVIT and the Kuder Preference Record, Vocational, range from .34 to .78. As for the correlations between the TTVIT scales and the corresponding SCII thematic scales, the coefficients for a group of 148 high school seniors range from .59 to .75 (see Table 2).

As for concurrent validity, the data gathered so far show that the interests patterns differ significantly according to the students' sex, age, school curriculum, grade level, and vocational preferences. Table 3 gives examples of variation according to sex. All these data were collected on Form 102-M-81 of the test. Data processing for Form 102-M-82 which is more recent and whose main characteristic lies in the noticeable improvement of picture quality in most of the slides is on the way.

Transculturality of the TTVIT

There are several studies intending to compare the scores obtained by Montreal francophone high school students with those obtained by comparable samples of francophone students from New Brunswick (Desruisseaux et al, 1981) and with those obtained by Brazilian students (Marocco et al., 1982). Table 4 shows preliminary results for the comparisons between Montreal anglophone and francophone grades 7 to 11 students. It should be nota bene that the forms or the stimuli used are exactly the same.

Sex Role Identification and Sexist Skews

Possible effects of sex role identification and sexist biases can be revealed by experimental manipulation of the main character's sex on the slide. We have constructed two series of 30 slides paired for each occupation but different by the character's sex. One of the two series is already included in the standardized form (102-M-81). Once the six items of verification are removed from the test, 96 items remain to which the 30

slides of the experimental series are added in order to mask them. The new experimental form is then given to 150 Grade 7 to 11 male and female students who are instructed to disregard the sex of the main character (which is the standard instruction) and to a comparable group of students who do not receive that standard instruction. Results of this exploratory research suggest that the standard instruction narrows the gap between the averages obtained by male and female subjects. However, there still remains considerable variations from one item to the next one.

Conclusion

One cannot overlook the value and the proven advantages of vocational interests tests of the paper-and-pencil variety, but because they resort to verbal and cognitive factors these instruments are likely to be influenced by social desirability variables and socio-cultural and economic skews; many subjects, particularly the younger ones, can thus be at a disadvantage. Another weakness of these verbal instruments is that their use in cross-cultural research often relies on translations that accentuate the ambiguity of word-stimuli, words that do not necessarily have the same meaning for all the subjects, even in the original language of the test.

Results from the development of the TTVIT, obtained through traditional item and factorial analysis, and data from our research using its verbal version have contributed to the development of a nonverbal test of vocational interests that can mitigate the influence of verbal and language factors. Given its 20 minutes administration time, the possibility of immediately (self) scoring and interpreting the responses within an empirically based theoretical framework, and given the nonverbal nature of the items which facilitate the prompting of an emotional response, the TTVIT is in fact not only a practical instrument but also a tool of cross-cultural interest research allowing for direct comparisons from the same stimuli.

Notes of Reference

Note 1 FOUAD, N. Cross-cultural interest measurment. Preliminary findings. Paper presented at the 90th Annual Meeting of the American Psychological Association, August 28, 1982.

Note 2 HANSEN, J.C. Use of the Spanish translation of the Strong-Campbell Interest Inventory. Paper presented as part of the symposium "Recent Research Findings and Applications for Counseling for the Strong" at the meetings of the American Psychological Association, Washington, D.C., August, 1982.

Note 3 HARRINGTON, T.F. Cross-cultural applicability of the Holland model of vocational development with Spanish speaking clients. Paper presented of the 87th Annual Convention of the American Psychological Association, September, 1979.

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TABLE 1

Alpha coefficients, Means, and Standard Deviations of TTVIT Scores of Male (N = 255) and Female (N = 196) High School and College Students

Scale		Both Sexes		Verbal		Visual	
		Verbal	Visual	Boys	Girls	Boys	Girls
	∝	.91	.93	.90	.84	.92	.89
R	M	33.71	34.73	38.36	27.67	40.64	27.04
	SD	11.74	13.22	11.91	8.26	12.67	9.44
	∝	.87	.90	.88	.87	.91	.90
I	M	41.48	42.57	42.34	40.36	43.51	41.34
	SD	11.98	12.69	11.92	12.00	12.57	12.84
	∝	.89	.91	.90	.88	.91	.90
A	M	40.15	41.77	37.42	43.71	38.54	45.97
	SD	12.85	13.56	12.28	12.62	13.02	13.12
	∝	.87	.88	.87	.79	.86	.82
S	M	38.75	39.36	33.24	45.91	33.83	46.56
	SD	11.86	11.94	10.01	10.14	9.72	10.68
	∝	.84	.84	.87	.80	.86	.83
E	M	37.25	38.19	38.69	35.37	38.77	37.44
	SD	9.82	9.66	10.42	8.67	9.95	9.24
	∝	.89	.90	.88	.90	.89	.91
C	M	35.93	36.36	34.92	37.26	33.82	39.66
	SD	11.26	11.59	10.35	12.26	10.13	12.53

TABLE 2

Pearson Correlation coefficients between TTVIT Scales and SCII Thematic Scales for 148 High School Seniors

	SCII-R	SCII-I	SCII-A	SCII-S	SCII-E	SCII-C
TTVIT-R	.71	.10	-.09	.03	.23	.06
TTVIT-I	.33	.63	.18	.35	.29	.36
TTVIT-A	-.02	.27	.75	.40	.14	.07
TTVIT-S	-.13	.24	.31	.70	.28	.28
TTVIT-E	.12	.33	.29	.48	.59	.50
TTVIT-C	-.03	.13	.00	.44	.39	.64

All coefficients between corresponding scales are significant at .01 level

TABLE 3

Means obtained on the TTVIT Scales
by Four Samples of Students

Sample	N	R	I	A	S	E	C
College, boys	459	45.0	42.6	44.0	39.6	41.7	37.6
College, girls	593	35.1	42.1	53.8	50.3	42.0	42.5
High School, boys	1,860	50.2	42.8	37.3	33.8	38.1	33.9
High School, girls	1,659	30.7	40.7	48.2	51.6	40.6	48.8

TABLE 4

Means and Standard Deviations obtained on the TTVIT
by 300 Anglophone and 3,000 Francophone Students from Quebec

Scale		Anglophones	Francophones	R. C.
R	M	36.02	41.04	5.55^{xx}
	SD	13.06	14.5	
I	M	41.86	41.80	.08
	SD	10.82	11.15	
A	M	41.65	42.42	1.07
	SD	10.27	12.20	
S	M	42.01	42.18	.22
	SD	11.02	13.04	
E	M	39.49	39.26	.40
	SD	8.17	9.73	
C	M	38.92	40.89	2.66^{xx}
	SD	10.61	13.12	

xx = $p < .01$