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A CROSS-CULTURAL FACTORIAL STUDY OF AN ACADEMIC INTEREST INVENTORY

C. W. Snyder, Jr.
University of Queensland

A. R. Baggaley
University of Pennsylvania

M. J. Ziyane
Temple University

ABSTRACT

An academic interest inventory was factor analyzed in three samples: an American senior high school group, an American college freshman group, and a Swazi (African) senior high school group. Five factors were identified in each of the samples independently analyzed; the five factors were interpreted as "commercial," "verbal-social studies-cultural," "nurturant," "medical," and "mechanical" interests. The items marking these factors were statistically significantly similar across the samples, indicating substantial stability in the structure of academic interests within and across cultures.

INTRODUCTION

The Milwaukee Academic Interest Inventory (MAII; Baggaley, 1963) was developed to aid in the counseling of college freshmen and sophomores and college-bound high school seniors[1]. It has been used to differentiate among academic curricula (Baggaley & Campbell, 1967) and to study longitudinal changes in the interests of secondary school students (Baggaley, 1974). It has also been compared factorially with the Strong Vocational Interest Blank and the Kuder Preference Record (Baggaley, 1968). The purpose of the present study was to compare the factorial composition of the inventory for two American samples of subjects with that of subjects in a newly developing African country.

The 150 items of the inventory have twice been factor analyzed in American samples who took the inventory in 1971. One sample comprised 382 tenth-grade students at Cheltenham High School, a Northeastern (U.S.A.) suburban high school. The other sample involved 2,660 entering freshmen at Temple University, an urban university in the same metropolitan area. More recently data became available from a national examination of 902 Form V (twelfth-grade) students in Swaziland, a small country in Southeastern Africa. Although the Swazi culture is quite distinct from the American middle-class culture of the earlier samples, the Swazi educational system is highly westernized, and students make similar kinds of academic choices.

Some modification of the inventory was required for use in Swaziland. The alterations and the administration of the trial-tested inventory were carried out by Swazi professionals within the national education examination program. The cultural face-lift of the inventory was easily accomplished to make the inventory more consistent with and relevant to Swazi student experiences. Only

five items of the original inventory were deleted; twenty others required modification. For example, the item "I would like to help run community chest drives" was changed to "I would like to help run community charity fund raising campaigns," and so forth for the other items. The basic format and structure of the inventory was left intact.

Student support for the use of the inventory in Swaziland was evident from the reception given the trial testing programs. Within the schools, guidance is handled on a piece-meal basis by a limited number of teachers who have taken a personal interest in helping their students. Guidance activities are not coordinated, and the available information is sparse and scarce. The inventory was welcome assistance. Political support for the larger program came in the form of Cabinet approval for the establishment of a Swaziland National Employment Service (Cieutat, Snyder, & Nkonyane, Note 1), which would provide complete guidance services for all secondary and tertiary students and school-leavers. The present study was designed to analyze the cross-cultural generalizability of the academic interest inventory. To the extent that the Swaziland National Employment Service can borrow and modify such guidance tools rather than invest the very limited resources in development costs, then the services can be implemented more efficiently and resources utilized more effectively.

PROCEDURE

The data from the three samples were subjected to principal-factor analyses, with squared multiple correlations used as the diagonal entries. Various numbers of factors were orthogonally rotated and checked for interpretability. For all samples the most interpretable set comprised six factors. However, the sixth factor in each case involved the few items on the inventory dealing with mathematics and puzzles; the proportion of covariance accounted for seemed too small to afford a stable factor based on these few items. Therefore further discussion will be limited to the five largest factors in each sample.

The index of factor matching used was the salient-variable similarity index (Cattell & Baggaley, 1960). This index yields the probability of agreement for a pair of factors specified in advance. From the 145 variables common to the three analyses the *10 highest* were selected on each factor as being "salient." According to the index, the probability of getting *two or more* salient-variables matched across the specified comparison factors with regard to factor loading is .04; the probability of getting *three or more* matches by chance is .002.

Table 1

Number of Matches between Pairs of Factors

Factor	Cheltenham vs. Temple	Temple vs. Swaziland	Swaziland vs. Cheltenham
Commercial	7	5	7
Verbal-Social Studies-Cultural	5	4	3
Nurturant	8	7	6
Medical	7	4	5
Mechanical	9	8	8

RESULTS AND DISCUSSION

All selected factors across the three solutions yielded statistically significant matches.

A factor that seems to be "commercial" in nature involved the largest factor (in terms of covariance accounted for) in the Temple sample, the fourth factor in the Swaziland sample, and the third factor in the Cheltenham sample. In all three samples the highest-loading item was "I would like to manage a business office." Other items loading highly in all three samples involved managing stores, keeping financial records, and studying about money, banking, and insurance. The factors in the two American samples were quite similar; seven of the ten salient items were identical. The Swaziland factor differed somewhat from the Temple factor; there were five matches when it was paired with the Temple factor, but seven matches when compared to the Cheltenham factor.

A relatively large factor in all three samples involved content concerning verbal expression, social studies, and cultural activities. The Swaziland factor was the largest in its analysis, the Cheltenham factor was second largest, and the Temple factor was fourth largest. On all three factors the highest loading item was "I would like to learn more about the social and political institutions in big cities." Another item loading highly on all three factors was "I like to debate." However, there are only three matching items between the Cheltenham and Swaziland samples. There were five matches between Cheltenham and Temple and four matches between Swaziland and Temple. Thus this

factor seems to be more heterogeneous than the other four factors described herein. When twelve factors were rotated in the Cheltenham analysis, this factor seemed to fractionate into smaller factors. One of these involved "cultural" content, e.g., liking to visit art galleries and attend dramatic plays and to enjoy poetry. The other two factors concerned verbal expression (debating, arguing politics, doing public speaking) and social studies. When the items loading highest on the largest Swaziland factor are classified by content on this basis, one finds that all of the four highest involve social studies. Presumably this circumstance furnishes the reason why the Swaziland factor matches poorly with the Cheltenham and Temple factors, each of which is more varied in content. Further research may clarify the nature of this factor, but tentatively it is best regarded as a rather heterogeneous "verbal-social studies-cultural" factor.

The largest factor in the Cheltenham sample involves "nurturant" activities. The second Temple factor shows eight matches with it. The fifth Swaziland factor shows seven matches with the Temple factor and six matches with the Cheltenham factor. Many of the highly-loading items contain the words "child" or "children," e.g., "I like to read to children," "I would enjoy taking a group of children on a picnic," and "I like to walk hand in hand with a child." However, at a lower level in the two American samples appear items concerning working with physically-handicapped and mentally-retarded persons, so the more general term "nurturant" seems appropriate to describe this factor.

A "medical" factor appears as the third largest Temple factor, the fourth largest Cheltenham factor, and third Swaziland factor. There are seven matches between the two American factors, but the Swaziland factor shows only five matches with the Cheltenham factor and four matches with the Temple factor. The main difference lies in the fact that items concerning scientific research appear in the American lists but are absent from the Swaziland list. Evidently American youth associate medicine and research more closely than do Swaziland youth. Other items appearing on this factor are "I would like to learn more about how animals grow," "I would like to work in a hospital," and "In my work I would like to help sick people get well."

A "mechanical" factor appears as the second largest factor in the Swaziland analysis and as the fifth factor in each of the American analyses. However, the matches are very close; nine matches between the two American samples and eight matches between each of the American samples and the Swaziland sample. One of the highest loading items in all three analyses is "I would like to design machines." Other high-loading items are "In my work I would like to read blue-print drawings," "I would like to make mechanical drawings with instruments," and "I enjoy taking apart and putting together machines." The nature of this factor seems unusually clear.

Thus the five largest factors were remarkably similar in the three analyses. However the percentage of total covariance extracted by these five factors varied considerably. In the Cheltenham sample it was 39.2, in the Temple sample 27.1, and in the Swaziland sample 23.4. In interpreting this variation one should recall that the Cheltenham students were probably the most heterogeneous of the samples. They were also about three years younger than the Temple students when they filled out the inventory. The Swazi students tended to be older than their American high school counterparts and would have had more circumscribed experiences. In spite of these differences in degree, the fact

that the pattern of factors was so similar leads to an optimistic conclusion about the feasibility of this guidance device, which was standardized in a Western culture, being used productively in the newly developing societies.

FOOTNOTES

[1]The inventory is published by Western Psychological Service, 12031 Wilshire Boulevard, Los Angeles, California 90025, U.S.A. Permission was granted by the publisher to adapt the inventory for research use in Swaziland.

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