1954

Stability and Validity of the Strong Vocational Interest Blank in the Prediction of Success in Veterinary Medicine Curriculum

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I. Introduction

That indices of mental ability alone do not predict scholastic achievement adequately is a well-known fact. It would seem a reasonable hypothesis, then, that non-intellective influences, notably motivation or interest, are operative. This being the case, consideration of a measure of interest along with the more customary employment of some measure of academic aptitude could be hoped to enhance prediction of scholastic success. Further, selection only on the basis of ability to complete the curriculum is a short-sighted goal for administrators, especially in professional curricula such as Veterinary Medicine. They might well be equally concerned about choosing those students who will be compatible with the requirements of veterinary medicine upon graduation and subsequent entry into actual practice. A high degree of interest in veterinary medicine is probably necessary for satisfaction and stability in the vocation. Thus the utilization of a measure of interest would be an aid in vocational counseling even though it may prove to be statistically unrelated to scholastic success.

Investigation of the stability of interests is also of importance to the fields of student selection and counseling, for if interests tend to undergo major changes with training and/or the passage of time, selection or counseling based upon such measures can have little or no validity.

II. The Problem

The present study was undertaken to fulfill three objectives. First, to determine the effectiveness of the veterinary scale of the Strong Vocational Interest Blank in the prediction of academic success in a curriculum of Veterinary medicine. Second, to determine the effect of training upon the interest scores. Third, to investigate other possible correlates with academic success in veterinary medicine.

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III. Procedure

A. *Criterion Group*

The Strong Vocational Interest Blank was administered to 61 men who were freshmen in the veterinary division of Iowa State College in the fall of 1949, and the blank was then scored for the veterinary scale. Other data available on this group included can-tile score on the American Council on Education Psychological Examination, and pre-veterinary grade point averages.

B. *Criteria of Success*

The measure of success employed was cumulative grade point average in the veterinary course over a four-year-period, which was thought to be a more valid index than is usual in other curricula since the students in this course follow a rather rigidly prescribed course of study. As a result, most of the subjects were taking the same course from the same instructor at the same time which would tend to place all students under a uniform competi-tive burden.

The indices of interest score, pre-veterinary grade point average, and ACE score were correlated with the criteria by the Pearson product-moment method.

C. *Comparison Group*

It became apparent during the early phases of the investiga-tion that the correlation between veterinary interest scores and scholarship in the veterinary group was quite low; this was ascribed to the homogeneity of interest within this group. That there was homogeneity is illustrated by the fact that the lowest letter vet-erinary interest rating in the group was B-, and only two of the 61 subjects held ratings this low.

Therefore, it was decided to compare the interests of the veter-inary group with those of a non-veterinary group. In order to do this, a random sample of 50 males from other divisions of the college was drawn from the files of the Iowa State College Testing Bureau. Grade point average, veterinary score on the Strong Blank and ACE score were also available for the members comprising this sample.

Many members of the criterion group were veterans which tended to make them older than the average student group, and since age may be related to interest, an attempt was made to select appropriately older men for the comparison group.

Members of the comparison group were distributed nearly evenly in the various divisions of the college with 17 in engineering, 16 in science and 15 in agriculture.

All members of the criterion group had had one or more years of pre-veterinary schooling. Accordingly, the vast majority of the comparison group was selected on the basis of having completed at least one or more years of college.

Table 1.

Comparative Data on Veterinary and Non-Veterinary Group.

Group	N	Mean Age	Mean ACE Score[1]	Mean Vet. Interest Score[2]	Mn. Gr.Pt. Average
Veterinary	47	23.68	61.19	49.62	2.82[a]
Non-veterinary	50	20.60	60.49	27.72	2.36

[1]Centiles
[2]Standard Scores
[a]Pre-Veterinary training only

Discriminate function analysis was employed in comparing the criterion and the non-veterinary groups. In the initial analysis the three variables: interest score on the veterinary scale, ACE score, and pre-veterinary grade point average, were included. In subsequent analyses the variables were paired in all possible combinations.

In order to test the efficiency of prediction afforded by the various combinations of variables, the weighting factors derived were applied to the three principle indices for each member of the criterion group. It was thus possible to determine the percentage of correct classification which each combination of variables would yield when this group was treated as applicants. However, while an idea of the relative effectiveness of each combination may be gained through this technique, it must be recognized that its application to a new group would reduce the accuracy of prediction.

D. *Stability of Interest*

The original group graduated in 1953, and of those still in school, 39 were retested on the Strong Blank at that time.

A comparison of the results of this test with scores obtained when the subjects were freshmen was made to determine the effects of the training program upon veterinary interest.

To ascertain the effects of level of academic achievement upon interest score, the groups were divided by quartiles, and the differences in the means on each of the two administrations were com-

pared by *t*-tests. In addition, a correlation between four-year grade point average and score on the 1953 testing was computed by the Pearson product-moment method. Finally, the direction of interest change was correlated with membership in the upper and lower halves of the grade distribution by the phi coefficient.

A Pearson product-moment correlation was computed for the two Strong administrations to test for reliability of the instrument and change in the group as a whole.

IV. Results

A. *Relationship between the Variable and Scholastic Achievement*

The correlation between veterinary achievement as measured by cumulative four-year grade point average and interest scores on the Strong veterinary scale was .058. This is much lower than the correlation of .30 reported by Layton (Layton, 1952) between veterinary interest scores and freshman grades in veterinary school at the University of Minnesota. However, Layton's group was unusual in that they were enrolled in a newly inaugurated program. Since the School of Veterinary Medicine at Iowa State College is long-established, student-faculty relations should be well stabilized.

To account for the extremely low relationship between interest and scholastic achievement we would suggest the hypothesis that those students without a minimal amount of veterinary interest do not enroll in veterinary school. Like other professional student groups, veterinary students are very homogeneous in terms of interest. Due to this great similarity of veterinary interest, it seems likely that differences in other motives such as social approval and competition for good grades becomes more important in their effect on achievement. Futher, it seems apparent that long-established habits of work are more influential than any other single factor. This is evidenced by the high correlations customarily found between academic achievement and previous academic achievement. In this study the correlation between pre-veterinary grade point average and four-year grade point average in veterinary school was .43, statistically significant at the .01 level of confidence.

A correlation of .325 was found between centile score on the ACE and four-year grade point average in veterinary school. This correlation is statistically significant at the .01 level of confidence, and is higher than that reported by Owens (Owens, 1950) of .02 between raw ACE scores and freshman veterinary grades for 111 men.

B. *Prediction Based on Comparison with Non-Veterinary Group.*

The results of the discriminate function analysis employing all three variables are indicated in Table II.

Table 2

Combinations of Variables and Their Predictive Efficiency

	ACE,GPA[1]	Combinations of Variables ACE	GPA	GPA	alone
Weighting Factors	Strong	Strong	Strong	ACE	Strong
GPA	.02348585		.02550306	.02437129	
ACE	.00013936	.00030739		.00005200	a
Strong	.00210579	.00223358	.00199098		
Critical V-score for Acceptance	.15083400	.10785199	.14491522	.05981385	39 b
Application to Veterinary Group % correctly accepted	94	91	87	70	91 b

[1]Strong score in standard score form, ACE score in centiles.
aNot derived for single factor
bStandard score

The data included in Table II indicate that an equation employing all three variables proved most effective in this case, correctly accepting 94% of the veterinary student group included in this study. As previously mentioned, the application of these factors to a new group of applicants to the veterinary division would probably reduce the accuracy of prediction. A further study on this subject with the next beginning class is anticipated.

C. *Stability of Interest*

A test-retest correlation of .675 was obtained by correlating the 1949 and 1953 interest scores of the criterion group. This correlation was statistically significant at the .01 level of confidence and compares favorably with the odd-even reliability coefficient of .72 reported by Hannum at the time of standardization of the veterinary scale on the Strong (Hannum, 1950).

A statistically non-significant correlation of .059 between four year grade point average and the interest score on the 1953 test, confirmed that there is no general relationship between scholastic success and veterinary interest score in an already selected group.

A T-test comparison of the test-retest scores by scholarship groupings indicated that the level of academic achievement had no differential effect upon the amount of change in interest score.

A phi-coefficient of .099 indicated that membership in the upper or lower half of the graduating class was not related to the direction of change in interest score.

V. CONCLUSIONS

The following conclusions were drawn from the results of this study:

1. Within a group of veterinary students there is no significant relationship between measured interest in veterinary medicine and academic achievement in a veterinary medicine curriculum.

2. When veterinary students are compared with students in other curricula it is possible to derive indices which predict curricular membership in veterinary medicine with a high degree of accuracy.

3. Prediction of curricular membership in veterinary medicine is best made by a combined consideration of veterinary interest score, pre-veterinary grade point average, and ACE score.

4. Academic training in veterinary medicine does not significantly affect measured interest in veterinary medicine. Neither does level of achievement in the veterinary medicine curriculum affect degree or direction of change in measured interest.

5. The test-retest correlation of the veterinary scale of the Strong Vocational Interest Blank over a four-year period is acceptably high, being .675.

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