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ABSTRACT

The relationship between the Scholastic Aptitude Test of Ontario (S.A.T.O.) administered to twelfth grade students and the College Entrance Examination Board Scholastic Aptitude Test (C.E.E.B.), of which the S.A.T.O. is a modification, was studied. Data was collected through the co-operation of the schools. The S.A.T.O. data was recorded as raw scores; the C.E.E.B. data was recorded in standard scores. Computer analyses on all data were performed. It was found that the relationships between these two tests were very similar for those who were in the Arts and Science program and for those who were in the Technical or Commercial programs. Further study is recommended. (CK)

C.E.E.B. AND S.A.T.O. - THEIR RELATIONSHIP

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In grade twelve the Scholastic Aptitude Test of Ontario (S.A.T.O.) is regularly administered to all students. S.A.T.O. yields four scores: two verbal scores; a total verbal score; and a mathematical score. During the current school year 1965-1966, the College Entrance Examination Board Scholastic Aptitude Test (C.E.E.B.) was required by the University of Toronto from all applicants to that university. As a result, many grade thirteen students wrote this test.

S.A.T.O. is a modification of C.E.E.B. (Test Letter Number 2, October 1965, from the Ontario Institute for Studies in Education provides additional information about background and purposes of S.A.T.O.)

Because of the apparent similarity between the tests, one might ask why the university requested C.E.E.B. scores. One reason might be that this would provide a more recent score. The greater the time interval between the administration of two tests, the lower their relationship is likely to be. Another way of viewing this is that the more recent your information, the more likely you are to improve your predictive accuracy, a most important point in candidate screening.

Because C.E.E.B. was modified to serve a different population (Ontario students) and a slightly different purpose, the relationship between S.A.T.O. and C.E.E.B. is a matter of some interest. To discover the relationship it was only necessary to collect the existing test scores from the high schools. The students studied were categorized into three groups. Most grade thirteen students are in the Arts and Science programme and as a result there were large numbers of Arts and Science students writing the C.E.E.B. test. Three representative

secondary schools were selected from within the City of Toronto and they provided 282 subjects - the first group.

It is quite possible that the relationship will be different for a different group of students; therefore, the Technical and Commercial students in grade thirteen who wrote the examinations were studied as a second group. Since this was a much smaller group, all of the Technical and Commercial students who wrote the C.E.E.B. were included as a single sub-group, a total of 82 subjects.

Finally, by chance not by design, a third smaller group became available. These were thirty Technical and Commercial students who wrote the C.E.E.B. but who had written the S.A.T.O. examination two or more years ago.

The data was collected through the co-operation of the schools. The S.A.T.O. data was recorded as raw scores; the C.E.E.B. data was recorded in standard scores. Student data was key-punched and all analyses were done by computer. The analyses produced a correlation matrix for all combinations of the tests and sub-tests. Means and standard deviations were also computed. This analysis was done for students with C.E.E.B. scores according to the following groups:

a) Arts and Science students from the three selected secondary schools (N = 282);

b) All grade thirteen students in Technical and Commercial courses who wrote S.A.T.O. one year ago (N = 82);

c) Some grade thirteen students in Technical and Commercial courses who wrote S.A.T.O. two or more years ago (N = 30);

d) All the students in the above three groups (N = 394).

In other words, the complete set of calculations was done four times, once for each group. The relevant correlations have been selected and are reproduced in Table 1.

TABLE 1

SELECTED CORRELATIONS
S.A.T.O. AND C.E.E.B.

Test Scores Compared	Arts and Science N = 282	Technical & Commercial N = 82	Tech. & Comm. 2 yr. Time Lapse N = 30	Total N = 394
S.A.T.O. $Verbal_1$ with S.A.T.O. $Verbal_2$	.579	.586	.654	.653
S.A.T.O. $Verbal_1$ with C.E.E.B. Verbal	.806	.770	.449	.809
S.A.T.O. $Verbal_2$ with C.E.E.B. Verbal	.650	.669	.503	.676
S.A.T.O. Verbal Total with C.E.E.B. Verbal	.835	.816	.514	.834
S.A.T.O. Verbal Total with S.A.T.O. Math	.388	.391	.194	.397
S.A.T.O. Verbal Total with C.E.E.B. Math	.348	.443	.235	.370
C.E.E.B. Verbal with S.A.T.O. Math	.361	.427	.521	.400
C.E.E.B. Verbal with C.E.E.B. Math	.333	.527	.608	.407
S.A.T.O. Math with C.E.E.B. Math	.749	.713	.840	.755

The total verbal score, S.A.T.O., and the verbal score, C.E.E.B., are closely related, r = .834. This correlation is as high as between-forms correlations for some standardized tests. The relationship between the two mathematical scores (r = .755) is somewhat lower. It is not quite as high as is desirable between two forms of the same test.[1]

Generally speaking, the relationships between these two tests were very similar for those who were in the Arts and Science programme and for those who were in the Technical or Commercial programmes. None of the minor differences are particularly noteworthy. The scores of the small group of people for whom two years had elapsed since S.A.T.O. was written did not show the same pattern of relationship as did the other two groups. The two year interval shows that there is something different about this group of thirty students; whether it is that they are repeating a year, or taking grade thirteen in two years, or have been dropouts, we do not know. For this small group it appears that the math relationship is much higher than the verbal relationship.

Examining the data in more detail, it can be observed that the S.A.T.O. Verbal sub-test, Part I, is somewhat more closely related to the C.E.E.B. Verbal than is the S.A.T.O. Verbal sub-test, Part II. For prediction purposes, it would be possible to substitute the S.A.T.O. Verbal, Part I for the S.A.T.O. total Verbal score and achieve similar predictive accuracy. In a second set of comparisons, the relationship between the Verbal and the Mathematics sub-tests show very similar patterns regardless of pair compared.

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1 For a brief discussion of such relationships for test reliability, see V. H. Noll, Introduction to Educational Measurement (2nd ed.) Boston: Houghton Mifflin Co., 1965, p. 91-92.

On the basis of these relationships, it is possible to say that S.A.T.O. is a good predictor of C.E.E.B. scores, over a one-year period of time, for both Arts and Science as well as Technical and Commercial students. This is not so for those Technical and Commercial students who wrote S.A.T.O. two or more years ago. For them, the S.A.T.O. Mathematical score is a good predictor of C.E.E.B. Mathematical score but S.A.T.O. Verbal is not as good a predictor of C.E.E.B. Verbal. As will be seen in the following paragraphs, the scores of this small sub-group are rather different. This may partially account for the different pattern of relationships.

The means and standard deviations of the scores for the different sub-groups are reported in Table 2. On the C.E.E.B. tests, all the sub-groups performed at an average or above average level on the Mathematical section, whereas on the Verbal section, the Arts and Science group performed above average; the Technical and Commercial groups performed somewhat below average.

One standard deviation to note is C.E.E.B. Mathematics for the Technical and Commercial group which had written S.A.T.O. two years ago. For some reason, this group of thirty students shows more variability in their mathematics scores than do the other groups and more variability in this area than in the Verbal area. The greater the range of test scores in a group, the more likely that the resulting ordering of this group will remain over a period of time. This, then, might account for the very high relationship between the two math scores for this small sub-group.

TABLE 2

MEANS AND STANDARD DEVIATIONS OF TEST SCORES

	Arts and Science N = 282	Technical & Commercial N = 82	Tech. & Comm. 2 yr. Time Lapse N = 30	Total N = 394
Means				
S.A.T.O. $Verbal_1$	25.8	21.2	16.3	24.1
S.A.T.O. $Verbal_2$	13.2	12.1	9.2	12.7
Total	39.0	33.4	25.5	36.8
S.A.T.O. Math	22.5	22.5	19.2	22.2
C.E.E.B. Verbal	552.	487.	451.	531.
C.E.E.B. Math	565.	559.	552.	561.
Standard Deviation				
S.A.T.O. $Verbal_1$	5.56	5.52	4.80	6.21
S.A.T.O. $Verbal_2$	3.26	3.31	3.00	3.43
Total	7.91	7.92	7.13	8.79
S.A.T.O. Math	4.40	4.89	5.61	4.67
C.E.E.B. Verbal	85.1	93.9	80.4	93.2
C.E.E.B. Math	84.5	93.1	108.1	88.8

CONCLUSION

The Verbal S.A.T.O. scores and the Verbal C.E.E.B. scores show a relationship that is as high as that found between parallel forms of a well-constructed test. The mathematics scores on the two tests show a relationship that is a little weaker. Generally speaking, the Technical and Commercial students' scores are slightly lower than the Arts and Science students on the verbal sub-tests but not on the mathematics sub-tests.

The above neither supports nor negates the value of tests for university admission screening purposes. It does show that the year-old S.A.T.O. scores would have provided an ordering of students very similar to that provided by the C.E.E.B. scores. Other studies would be needed to investigate the relationship between these tests scores and university results.