

VALIDITY OF STUDY SKILL TESTS WITH FIRST YEAR UNIVERSITY STUDENTS

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Abstract

The purpose of this study was to collect concurrent and predictive validity data for three study skill instruments frequently used for diagnostic purposes in Canadian high schools and universities. The study skill tests examined were the: McGraw-Hill Study Skills Test; McGraw-Hill Inventory of Study Habits and Attitudes; and Study Attitudes and Methods Survey. The concurrent validity results indicated that scales from the McGraw-Hill Study Skills Test and the Study Attitudes and Methods Survey have almost no overlapping dimensions of assessment. Predictive validity results indicated that Grade 13 marks and IQ scores are better indicators of first year university marks than any of the study skill tests examined. The implications of these findings are discussed.

Résumé

L'objet de cette étude est de déterminer la validité concurrente et la validité prédictive de trois instruments de diagnostic fréquemment utilisés dans les écoles et universités canadiennes. Les trois instruments sont: le McGraw-Hill Study Skills Test, le McGraw-Hill Inventory of Study Habits and Attitudes, et le Study Attitudes and Methods Survey. Les résultats, concernant la validité concurrente, indiquent que les dimensions formées à partir des échelles du McGraw-Hill Study Skills Test et du Study Attitudes and Methods Survey sont relativement indépendantes. Au sujet de la validité prédictive, les résultats montrent que le rendement scolaire au cours de la treizième année et le QI sont de meilleurs indicateurs du rendement de l'étudiant universitaire que chacun des trois instruments de diagnostic étudiés. La discussion porte sur les implications de ces résultats.

There exists an increasing student demand for help with basic study skill deficiencies. Post-secondary education has continued to receive emphasis in our society resulting in ever increasing competition for admission and success in the university. As well, recent open enrolment policies at institutions have dramatically increased the range of individual differences among the entering student population (Raygor, 1970). The result of these factors is increased educational concerns expressed to the counsellor in the form of coping effectively with the general work load, mastering basic study skill methods, overcoming an inadequate high school background, etc.

At the same time the counsellor is in need of well constructed and well documented diagnostic instruments to assist students in identifying their study skill deficiencies. Currently available study skill tests generally fall short of providing the counsellor with clear data regarding their validity and applicability. Subsequently, decisions concerning the adequacy or appropriateness of one test compared with another are difficult, if not impossible, to make on an empirical basis.

The Study Skills Test and the Inventory of

Study Habits and Attitudes from the McGraw-Hill Basic Skills System (Raygor, 1970) and the Study Attitudes and Methods Survey (Michael, Michael & Zimmerman, 1972) are three potentially useful instruments which receive considerable use in Canadian high schools and universities. Presently, little research concerning the validity of these study skill tests is available. In the McGraw-Hill Basic Skills System manual Raygor (1970) acknowledges the lack of such empirical information for his instrument except for construct validity and places responsibility for the development of this data on the shoulders of users of the material. For the Study Attitudes and Methods Survey construct validity exists for the instrument, and three brief reports in the professional literature provide initial support for concurrent and predictive validity of certain scales on the test (Michael, Crook, Michael & Holly, 1973; Miller & Michael, 1972; Thames, Zimmerman & Michael, 1973).

The purpose of this study was to add concurrent and predictive validity data to the literature when employing these instruments with first year Canadian university students.

METHOD

Subjects

The participants in this study were 185 first year university students (109 females and 76 males) at a large Canadian university.

Procedure

Students enrolled in Introductory Psychology were solicited to volunteer in a research experiment as a part of their requirements for completion of the course. The students who volunteered attended testing sessions during the first five weeks of the Fall term. During each testing session students were initially requested to provide the researchers with their overall grade percents at the completion of grade 13 (or in the case of mature students, the last grade completed — 13 males and 19 females) and their written permission to obtain their final grade percents for their first year in university. Effort was made to obtain an equal number of students leaving high school with grade percents in each of the following categories: A (100-80%); B (79-70%); and C (69-60%). The students then completed the following four instruments in this order; (1) Otis Self-Administering Test of Mental Ability — Form A (Otis, 1956); (2) McGraw-Hill Study Skills Test (MHSST — half randomly receiving Form A and half Form B); (3) McGraw-Hill Inventory of Study Habits and Attitudes (MHISHA); and (4) Study Attitudes and Methods Survey (SAMS). At the conclusion of the academic year, first year marks for all students participating in the study were obtained from the Registrar's Office.

RESULTS AND DISCUSSION

Sample Description

The 185 students participating in the study were distributed by high school grade percent in the following manner: A = 30%; B = 35%; and C = 35%. This even representation of students across the grade percent range insured that the sample was not skewed on this dimension, which would otherwise limit interpretation of the results. Previous analysis of the McGraw-Hill Form A and B data suggests no significant differences between the forms (Thompson, Reberg & Uhlemann, 1978), thus eliminating the need for separate form calculations. The mean high school grade percent for the entire sample was 74.5, and the mean first year university grade percent was 67.8 ($t < .01$). This finding supports the often expressed impression that on the average student grade percent does drop during students' first year in university. Finally, the mean Otis IQ score for the entire sample was 118, which corresponds well with other estimates indicating the average first

year university students to be in the 115-120 IQ range (Cronbach, 1970).

Concurrent Validity

Correlations among the MHSST, MHISHA and the SAMS are presented in Table 1. Because of the large sample size in the study, a statistical significance, of $p < .01$ was established as the minimal acceptable level for discussion. The heterotrait-monomethod intercorrelations for the MHSST show that the four MHSST scales correlate low but significantly with each other. It seems appropriate to do as suggested by the manual for this instrument and sum these four scales to obtain a single score. The MHISHA has low nonsignificant correlations with the MHSST scales and seems to define a separate factor. Thus, as indicated in Raygor's manual, the two instruments appear to assess independent areas of the field of study skills. The first instrument appears to examine knowledge about engaging in the specifics of academic pursuit, while the second appears to explore actual study skill habits and attitudes about that knowledge.

A most notable result in the correlation matrix of Table 1 is the high significant correlations between the MHISHA and all but one of the six SAMS scales. The MHISHA correlates positively with the three SAMS scales purported to represent a general academic facilitating factor and negatively with two of the scales suggested to represent a general academic inhibiting factor (Thames, et al., 1973). These findings suggest that the MHISHA may tap many of the same factors as examined by most of the scales existing in the SAMS. As well, further verification for the two clusters of scales on the SAMS is indicated in these findings.

Except for the MHISHA a large number of near-zero, non-significant correlations exist among the three instruments. Generally it appears that two tests (MHSST and SAMS) which purport to break down and assess study skill components have yielded two sets of scales which have almost no overlapping dimensions. In this instance there is no evidence to indicate that scales with similar names provide similar study skills information. Such results call for cautious and selective use of these instruments by the counsellor.

Predictive Validity

To assess any predictive qualities of the MHSST, MHISHA and SAMS, the instruments were correlated with three variables related to academic performance: (1) grade 13 graduating percent; (2) Otis IQ score; and (3) first year university grade percent. The results of this analysis are summarized in Table 2. Again a significance level of $p < .01$ was established as a minimal criterion

TABLE 1

Intercorrelations among the McGraw-Hill Study Skills Test, McGraw-Hill Inventory of Study Habits and Attitudes and the Study Attitudes and Methods Survey for first year university students.^a

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. MHSST - Problem Solving										
2. MHSST - Underlining	.23*									
3. MHSST - Library Information	.23*	.22*								
4. MHSST - Study Skills Information	.29*	.26*	.31*							
5. MHISHA	.07	-.08	.14	.07						
6. SAMS - Academic Interest	.09	-.04	.13	.05	.37*					
7. SAMS - Academic Drive	.07	.08	.15	.18	.53*	.37*				
8. SAMS - Study Methods	-.21*	-.03	.06	.03	.63*	.55*	.74*			
9. SAMS - Study Anxiety	-.10	-.07	-.12	-.12	-.47*	-.09	-.05	-.13		
10. SAMS - Manipulation	.03	-.07	-.05	-.03	-.14	.10	.01	.01	.34*	
11. SAMS - Alienation toward Authority	.01	.03	-.03	.02	-.30*	-.14	-.12	-.21	.44*	.51*

Note. Correlations by sex are available from the first author.

^an = 185

* p < .01

for examination. Several correlational patterns are worth noting.

First, all but one of the MHSST scales, the MHISHA and three of the SAMS dimensions

TABLE 2

Corrections Between Study Skill Tests and Other Relevant Factors^a

Variables	Grade 13 Average	Otis IQ	First Year University Average
1. MHSST - Problem Solving	.24*	.44*	.14
2. MHSST - Underlining	.19*	.35*	.12
3. MHSST - Library Information	.18	.51*	.20*
4. MHSST - Study Skills Information	.22*	.41*	.07
5. MHSST - Total (1, 2, 3 and 4)	.31*	.62*	.20*
6. MHISHA	.36*	.14	.09
7. SAMS - Academic Interest	.12	.08	-.03
8. SAMS - Academic Drive	.37*	.13	.10
9. SAMS - Study Methods	.25*	.02	.03
10. SAMS - Study Anxiety	-.22*	-.24*	-.07
11. SAMS - Manipulation	-.02	.09	-.03
12. SAMS - Alienation toward Authority	-.01	-.02	.10

Note. Correlations by sex are available from the first author.

^an = 185

* p < .01

correlated significantly with grade 13 marks. Of the two McGraw-Hill instruments, the MHISHA correlated most positively with grade 13 marks followed by the MHSST total score. For the SAMS two of the scales (Academic Drive and Study Methods) in the academic facilitating factor correlated significantly in the positive direction with grade 13 marks, and one scale (Study Anxiety) from the academic inhibiting factor correlated significantly with grade 13 marks in the negative direction. These SAMS results generally confirm previous findings regarding the predictive power of these scales with high school marks (Miller, et al., 1972; Thames, et al., 1973).

The correlations for the MHSST, MHISHA and SAMS with the Otis IQ scale are striking. All four MHSST scales and total score correlated highly and significantly with the Otis IQ score. One interpretation of this finding may be that the MHSST scales are mainly measuring intelligence. The MHISHA demonstrated no useful correlation with the Otis IQ. For the SAMS only the Study Methods scale correlated significantly with the Otis IQ, and that correlation was in the negative direction. This negative relationship is consistent with earlier findings on grade 13 marks. These findings for the MHISHA and SAMS may

indicate that these tests are measuring factors different from intelligence, and thus are providing a unique contribution to the prediction of student strengths and weaknesses in preparation for academic performance.

Finally, correlations with first year university grade percents showed that only two scores, MHSST Library Information and the MHSST total score, correlated low but significantly. These findings indicate that none of these tests predict successful academic performance in university when administered early in the school year. These results are rather disappointing since one basic goal of study skills assessment and remediation is in terms of predicting successful academic performance. The findings are inconsistent with those of Thames, et al. (1973) and Miller, et al. (1972) who found low but significant predictive validity correlations for certain SAMS scales with high school and community college marks, respectively. It should be noted that Miller, et al. (1972) reported higher correlations of SAMS scales with overall grade point average obtained in community college when the test was administered after completion of classes rather than at the beginning of classes. In the current study the time of test administration most closely coincided with completion of grade 13, and thus may more closely represent the demonstration of study skills related to obtaining grade 13 marks. Perhaps the skills required to gain first year university marks are different from those for grade 13. Regardless, the three study skill tests showed no practical predictive power to determine students' first year university grade percents.

Sobering results not reported in Table 2 showed that grade 13 marks and Otis IQ correlated .51 ($p < .01$) and .28 ($p < .01$), respectively, with first year university marks. These findings indicate that past academic performance and a brief indicator of IQ appear to be better indicators of continued academic success.

SUMMARY

The purpose of this study was to add concurrent and predictive validity data to the literature regarding the use of three study skill tests with first year university students in a Canadian university. Concurrent validity findings indicate that the counsellor should not rely on test names or even the labels given to specific scales of a test. The counsellor must be familiar with the specific content of the tests and relevant research pertaining to the development of the instruments. Only with such knowledge can the counsellor select the instrument which will provide appropriate information for the counselling process. In this study the three skill tests demonstrated no practical predictive validity data

for determining first year university marks. All three tests exhibited some predictive power of marks obtained in the last year of high school, and the MHSST scales and total score correlated relatively highly with Otis IQ. However, the predictive power of these instruments to anticipate first year university grade percents was overshadowed by the predictive validity correlations of the marks obtained in the last grade completed in high school and the Otis IQ score.

These findings do not suggest that the counsellor should stop responding to student demands for the remediation of study skills deficiencies. Rather, the results further emphasize the need for research into the nature of study skills assessment, and the need for well constructed and documented diagnostic instruments to identify students requiring assistance to succeed in university.

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Footnote

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