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Academic Motivation and Youth-Culture Involvement

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Academic Motivation and Youth-Culture Involvement: Their Relationships to School Performance and Career Success

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*Academic Motivation and Youth-Culture
Involvement: Their Relationships to
School Performance and
Career Success*

The increased pressure for enrolment forces more and more colleges to be selective in their admissions procedures. This selection is customarily achieved through the use of aptitude tests combined with a student's high school record. Students are therefore selected on two bases: intelligence and academic motivation, for high school record is one index of the latter. As a result, admission is denied to students with low academic motivation.

This practice inevitably raises the important question: are there attributes that some students with low academic motivation may have which will make them successful, if not in college then in their careers, despite prediction of their inability to perform well in college? Doubtless, colleges will continue to follow the customary practice of admitting students whose intelligence and academic motivation predict high grades. Not only does this practice seemingly raise the prestige of the college, but it tends to quiet the demands of a faculty which constantly seeks better qualified students. If the role of the selective institution is to train scholars via pregraduate education, the basis for judging the adequacy of an institution's admissions policy might be solely on student academic performance both in college and in graduate school. On the other hand, if the institution sees its role as the education of industrial or political leaders or the education of successful teachers, lawyers, or clergymen, etc., an alternate approach is necessary.

The question posed by this paper is whether students who are most successful in their careers have the same attributes as those most successful in achieving high grades in college.

There is a considerable amount of research which relates to the characteristics of high and low academic achievers in secondary school and college. The syndrome of attitudes, values, and behaviors which differentiates the highly motivated from those with low motivation is gradually being understood, although much remains to be done in synthesizing a wide variety of studies which appear to utilize similar constructs. Finger and Schlessler¹ report on non-intellectual correlates of school success derived from the Personal Values Inventory.² They report that the Inventory produces an academic motivation factor highly correlated with school or college grade-point average but orthogonal to intelligence. Farquhar³ has obtained several factors which differentiate over- from underachievers. The student characteristics identified in that study appear similar to those identified by the Personal Values Inventory. Bidwell, King, Finne, and Scarr⁴ show that students with *traditional* as opposed to *emergent* values achieve higher grade-point averages in college. Gottlieb and Hodgkins⁵ categorize college students by college subcultures and report that the *academic* and *non-conformist* types are the superior students. These latter two studies employed measures similar to academic motivation.

There is a pervading viewpoint that participation in the extracurricular and social activities of secondary school should be weighted in favor of a student seeking admission to college, despite the evidence of Gottlieb and Hodgkins indicating that students who view college as contributing toward both their academic and social development earn below-average grades. Is there a relationship between career success and extracurricular participation which would justify such a procedure in admitting students to college? What is the relationship between the various facets of involvement in non-academic activities and educational and career success?

A clear understanding of the variables to be utilized in identifying academic motivation and involvement in non-academic activities can

be achieved by a preliminary analysis of these characteristics in secondary-school students. This will be followed by an analysis of the relationships among career success, academic motivation, and involvement in non-academic activities.

PROCEDURE

A special revised edition of the Personal Values Inventory was prepared which, in addition to the standard sections measuring persistence and self-control–deliberateness, contained experimental items designed to assess a wide variety of involvement in and attitudes toward school and youth-culture activities. The Inventory was administered in a suburban high school to all students in grades nine through twelve. Only the data on those students enrolled in college preparatory courses will be reported.

The Personal Values Inventory has two main components—(1) persistence: studiousness, productivity, and concentration; (2) self-control–deliberateness: cautiousness, rejection of thrills and excitement, resistance to deviant or semidelinquent behavior. Students were asked to report how they viewed themselves as well as how they perceived that their parents viewed them on these characteristics. The persistence and self-control–deliberateness of the students' peer group was also reported. Additional experimental items identified involvement in a variety of non-academic activities as well as academic plans and socioeconomic status.

The major phase of the study consisted of a survey of the graduates of a liberal-arts college (Brown University) during the period 1947–52. Academic credentials and school-performance data for the graduates were procured from college records. A questionnaire was mailed to each graduate. The questionnaire was designed to ascertain the graduates' career activities and level of success as well as to identify characteristics similar to those found with the Personal Values Inventory.

The present junior class of the college was used as a sample so that the data procured on the graduates could be compared with a current college class.

RESULTS

Secondary-school level.—The Personal Values Inventory administered to secondary-school students was scored, the correlation matrix calculated, and the matrix factored and rotated.

Table 1 shows the correlations between the various scores and a self report of high school record. All of the variables are positively correlated with the high school record except for popularity, which has a very low negative correlation. The correlation matrix for the variables shown in Table 1 has been factored. The factor analysis,

TABLE 1

SELECTED CORRELATIONS AMONG SCORES ON THE PERSONAL VALUES INVENTORY FOR MALE COLLEGE-PREPARATORY STUDENTS* IN GRADES NINE THROUGH TWELVE

	Correlations with Self Report of High School Record
Persistence. . . . .	.44
Self-control-deliberateness. . . . .	.04
Home: persistence and self-control-deliberateness. . . . .	.26
Peer: persistence and self-control-deliberateness. . . . .	.23
Involvement in non-academic activities. . . . .	.18
Leadership. . . . .	.09
Popularity.	-.04
Athletics. . . . .	.08

* $N = 356$.

Table 2, identifies two factors: academic motivation and involvement in non-academic activities. The factor involvement in non-academic activities includes not only involvement in exciting and thrill-producing activities and a tendency toward risk-taking, the characteristics identified by a low score on the variable self-control-deliberateness, but also identifies involvement in a wide variety of non-academic activities. This factor has a non-significant loading on high school record indicating that leadership, popularity, athletics, and other involvements in extracurricular activities are largely unrelated to school performance. A re-examination of Table 1 verifies that the correlation of these variables with the self report of high school record is small and, except for popularity, positive.

These results for secondary-school students have not been re-

ported previously. Extensive analysis of other school and college populations utilizing similar constructs⁶ substantiates the fact that academic motivation is orthogonal to intelligence and that the factors of intelligence and academic motivation are both highly correlated with school marks.

Defining success in the population of graduates.—The problem of defining success in careers is a multidimensional one even when

TABLE 2

SELECTED FACTORS OF THE PERSONAL VALUES
INVENTORY: MALE COLLEGE-PREPARATORY
STUDENTS* GRADES NINE THROUGH TWELVE†

	FACTORS	
	Academic Motivation	Involvement in Non-Academic Activities
Persistence . . . . .	.84	.....
Self-control-deliberateness . . . . .	.36	— .60
Home: persistence and self-control- deliberateness . . . . .	.67	.....
Peer: persistence and self-control-de- liberateness . . . . .	.58	.....
Involvement in non-academic activi- ties . . . . .	.....	.67
Leadership . . . . .	.....	.65
Popularity . . . . .	.....	.69
Athletics . . . . .	.....	.59
High school record (self report) . . . . .	.64	.....

* $N = 356$.

† Principal axis solution, varimax rotation.

success is limited so as to exclude values, motives, and interpersonal relations. Income may be a fairly adequate indicator of success in some careers, but not only is income inadequate to compare the success of those who enter business with the success of those who enter occupations such as the clergy but it is also an inadequate way of judging success within some occupations. Teaching is an example of an occupation where income may not indicate adequately the extent of success. With a classification schema for type of careers, some differentiation as to extent of success will be identified. Those employed as executives would be viewed to be more successful irrespec-

tive of income than those employed in positions as clerks or salesmen.

If both income and amount of education are indexes of success, then classification by type of professional career will provide an index of success. A physician may be viewed as more successful than a pharmacologist, a physicist more than an engineer, and a college teacher more than a secondary-school teacher, because in each case the first generally requires more education and because it generally commands higher income.

Academic aptitude and performance among the occupational groups.—The scholastic aptitude and the grade-point average for the various occupational groups is shown in Table 3. All of the scores have been converted to standard scores with a mean of 500 and a standard deviation of 100. Those who have entered business have a scholastic-aptitude verbal score of 487 on the standard score scale, while those who have entered the professions have a score of 514. These differences are significant well below the 1 per cent level even though the differences are not particularly large (approximately five I.Q. points). There are larger differences between the school performance, as measured by grade-point average, of those who entered business and those who entered the professions. The academic performance of the various business groups is quite uniform except for those who have become executives. The executives earned significantly higher grades while in college than others in business even though they were not higher on scholastic aptitude. Those who entered professions that required advanced training earned grade-point averages well above average, while those who entered other professions had grade-point averages slightly below average. The grades are higher for the advanced-training group even when corrected for differences on scholastic aptitude between the two groups. Those who became college teachers, non-teaching academicians, and physicians earned grades far higher than expectations based on intelligence. The relationship between admissions practices and career success can be ascertained in part from the relationships shown in Table 3. The selection of students based on high grades in secondary

school will tend to select students who will be more likely to enter the professions.

The amount that grades exceed expected performance based on scholastic aptitude is one criterion for identifying the student with high motivation. Can additional information concerning career success be obtained from measuring the extent of academic motivation as identified by the Personal Values Inventory?

TABLE 3

GRADE-POINT AVERAGE (GPA), VERBAL SCHOLASTIC-APTITUDE TEST (VSAT), AND OVER- AND UNDERACHIEVEMENT OF OCCUPATIONAL GROUPS

	STANDARD SCORES			
	<i>N</i>	VSAT	GPA	Amount Grades Exceeded Expectations*
Business				
Clerical, sales.....	172	492	467	-31
Managers, directors.....	142	480	474	-20
Executives.....	103	485	505	+9
Self-employed.....	52	493	474	-24
Total business.....	469	487	478	-18
Professional—Advanced Training Required				
College teachers.....	45	527	588	+80
Non-teacher academicians.....	56	524	545	+38
Physicians.....	52	509	573	+70
Lawyers.....	57	529	536	+28
Miscellaneous.....	41	515	514	+10
Total.....	251	521	551	+45
Professional—Advance Training Not Required				
Teachers.....	37	480	485	-9
Engineers.....	99	510	503	0
Miscellaneous.....	55	514	479	-25
Total.....	191	505	493	-8
Total professional.....	442	514	526	+22

* $GPA - (.29 VSAT + K)$.

Academic motivation in the graduates.—Included in the questionnaire mailed to the graduates was a series of questions designed to identify characteristics similar to those identified by the Personal Values Inventory. Samples of these characteristics are as follows:

- A. Indexes of academic motivation
 1. Studiousness while in college (persistence)
 2. Academic goals (I did not have any particular goal in mind while in college. I selected courses to meet the requirements of the university and my interests of the moment.)
 3. Academic orientation (My primary orientation was toward the academic work. I usually was willing to forego other activities to meet my long-range commitments to academic success.)
- B. Indexes of involvement in non-academic activities
 1. Youth-culture involvement (I could always be counted on to join the crowd for the movies, a card game, a party, or a few rounds of drinks.) (I had difficulty learning to control my behavior while in college. My behavior at times was such that I could have been in serious difficulty had I been apprehended.)
 2. Risk-taking (one who enjoyed finding thrills and excitement)
 3. Extracurricular involvement in college
 4. Athletic involvement in college
 5. Collegiate orientation (College meant much more to me than just studying. I did not want to become so concerned about the academic work that I would have been unable to enjoy college life.)

The purpose of identifying these characteristics in the graduate was to determine whether factor analysis would produce factors similar to those identified in secondary-school and college populations. Table 4 shows the results of this factor analysis. The similarity between the results obtained on the graduates and those obtained on college populations is striking. Both the intelligence and academic-motivation factors are identified, and both have similar loadings on the grade-point average. Furthermore, involvement in non-academic activities is identified as a factor, but it does not have a significant loading on grade-point average.

There are two indexes of academic motivation available. One is the extent to which actual performance exceeds expected performance. A second is the academic-motivation factor shown in Table 4. It will be shown presently that there are very large differences be-

tween business and professional groups on the academic-motivation-factor scores. This might lead to the conclusion that the academic-motivation factor was only identifying a difference in attitudes between those who have entered business and those who have entered the professions. This is not so. The academic-motivation factor is significantly correlated with grade-point average within the occupational groups. Table 5 shows the correlation coefficients for occupa-

TABLE 4
FACTORS IDENTIFIED AMONG COLLEGE GRADUATES*

	FACTORS		
	Intelligence	Academic Motivation	Involvement in Non-Academic Activities
Studiousness . . . . .		.76	
Academic goals . . . . .		.60	
Non-collegiate orientation . . . . .		.66	-.47
Academic orientation . . . . .		.71	
Self-control-deliberateness:			
<i>a</i>) Non-youth-culture involvement . . . . .		.67	
<i>b</i>) Lack of recklessness . . . . .		.50	.33
Athletic involvement . . . . .			.69
Extracurricular involvement . . . . .			.76
Verbal scholastic-aptitude test . . . . .	.77		
Mathematical scholastic-aptitude test . . . . .	.71		
Grade-point average . . . . .	.54	.51	

* $N = 916$. Principal axis solution, varimax rotation.

tional groups with grades for several of the variables that comprise the academic-motivation factor. The correlations substantiate the relationship between academic motivation and grade-point average.

The mean academic-motivation-factor scores and the extracurricular-involvement-factor scores for each of the occupational groups are shown in Table 6. Those who have entered professions have higher scores on the academic-motivation factor than do those who have entered business. The reverse seems to be true for extracurricular involvement. Those who have entered business have higher scores than those who have entered the professions. A low academic-motivation-factor score in the business group seems to be associated with career success. Those classified as having clerical or sales occupations

have an academic-motivation score of 479, whereas those who are executives have a score of 451. The difference has a probability of approximately .02. Those in clerical sales have a low score on the extracurricular-involvement factor, while those who are executives have high scores. This difference is significant at the 1 per cent level.

TABLE 5

CORRELATION COEFFICIENTS BETWEEN GRADE-POINT AVERAGE AND INTELLIGENCE AND ACADEMIC MOTIVATION* WITHIN EACH CAREER CATEGORY

	CORRELATIONS WITH GPA		
	<i>N</i>	VSAT Intelligence	Academic Motivation
Business			
Clerical, sales	172	.39	.30
Managers, directors	142	.18	.23
Executives	103	.24	.43
Self-employed	52	.28	.40
Total business	469	.28	.32
Professional—Advanced Training Required			
College teachers	45	.37	.39
Non-teacher academicians	56	.10	.18
Physicians	52	.03	.39
Lawyers	57	.44	.46
Miscellaneous	41	.44	.43
Total	251	.27	.37
Professional—Advanced Training Not Required			
Teachers	37	.17	.30
Engineers	99	.19	.28
Miscellaneous	55	-.04	.46
Total	191	.12	.34
Total professional	442	.21	.35

* The correlations under academic motivation are the average (r to z transformation) of the variables: studiousness, academic goals, and academic orientation.

Those who are classified as managers or directors, the intermediate level of success, have an academic-motivation-factor score and extra-curricular-involvement score between the other two groups. The results of Table 6 indicate that there may be very dramatic consequences of selecting the student body on the basis of indexes of academic motivation, for in the sample studied those who became most

TABLE 6

MEAN SCORES OF OCCUPATIONAL GROUPS ON ACADEMIC
MOTIVATION AND EXTRACURRICULAR INVOLVEMENT

	FACTOR SCORES*		
	<i>N</i>	Academic Motivation †	Extracurricular Involvement
Business			
Clerical, sales	172	479.1	508.6
Managers, directors	142	460.5	539.6
Executives	103	450.8	541.8
Self-employed	52	466.0	533.0
Total business	469	465.8	528.0
Professional—Advanced Training Required			
College teachers	45	561.7	466.7
Non-teaching academicians	56	597.0	415.3
Physicians	52	537.0	485.4
Lawyers	57	483.7	515.2
Miscellaneous	41	519.0	478.6
Total	251	539.8	472.0
Professional—Advanced Training Not Required			
Teachers	37	508.6	502.6
Engineers	99	548.9	454.7
Miscellaneous	55	508.7	478.7
Total	191	529.5	470.9
Total professional	442	535.3	471.5

* Converted to standard scores.

† Grade-point average not included in calculating factor score.

successful in business had the lowest academic motivation. A highly selective admissions policy also may tend to eliminate students who might enter some professional careers, particularly law and elementary- and secondary-school teaching.

The data presented in Table 6 is augmented by Table 7, where selected occupational groups have been analyzed. A high- and low-success level of those in business and a high- and low-success level of

TABLE 7

COMPARISON OF MOST AND LEAST SUCCESSFUL GRADUATES BY TYPE OF CAREER (STANDARD SCORES)

	BUSINESS		PROFESSIONAL		TOTAL	
	High	Low	High	Low	Business	Professional
Success level						
Academic motivation (factor score)	457	482*	551	529	466	545**
Intelligence (factor score)	490	476	531	521	485	528**
Extracurricular involvement (factor score)	540	504**	464	468	528	466**
Grade-point average	491	455**	548**	505**	477	536**
Predicted grade-point average (academic motivation and intelligence)	473	479	541	525	475	537**
Actual minus predicted grade-point average	+ 18	- 24	+ 7	- 20	+ 2	- 1
N	189	101	236	90	290	326

* Difference significant at 5 per cent.

** Difference significant at 1 per cent.

those who are in professions are compared. The criteria for success in business were income and position. Those categorized as having high success were high-income managers and directors and all those classified as executives. Those classified as low-success business were low-income clerical sales, low-income managers or directors, and low-income self-employed. The criteria for success in the professional group were type of career and/or income. All college teachers, all non-teaching academicians, and all physicians were classified in the high-success group. Also included in that group were lawyers and engineers who had above-average income for their occupational group. The low-success professionals were low-income lawyers, low-

income engineers, and low-income miscellaneous professionals without advanced training. Table 7 shows that there were large differences among the high- and low-success groups. The most successful of those in business had the lowest academic-motivation score, while the most successful in the professional group had the highest academic-motivation score. Extracurricular involvement seems to be unrelated to professional success, for the high and low professional groups show almost no difference. However, among those who have entered business, extracurricular involvement seems to be related to success in business. Those who are the most successful have significantly higher scores than those who are least successful. It also should be noted that both the successful men in business and the successful men in professions have tended to achieve higher grades than their less successful counterparts. Table 7 shows the predicted grade-point average based on academic motivation and intelligence for each of the groups and compares the prediction with the actual grade-point average. Both the successful businessmen and the successful professionals tend to have grades that exceed expectations.

Graduates compared with undergraduates.—There is no way to be certain that the characteristics identified in the graduate population are the same as those identified among undergraduates. A number of similarities have already been indicated between the graduate data and the data procured on undergraduates. Further evidence that the differences in academic-motivation scores identified in the graduate population also exist in the undergraduate population is presented in Table 8, where the career plans of a class of entering freshmen are classified together with academic-motivation scores and subsequent fourth-semester cumulative grade-point average. The undergraduates planning on careers that require graduate training have both higher academic motivation and higher grade-point averages than those who plan to enter business. There will be significant shifts in career plans during the college years depending upon academic performance. Those who will actually attend graduate school, as opposed to those who originally planned to, will be

those who achieve a high level of academic performance while in college.

Academic performance is highly related to academic motivation in the undergraduate sample, but this strong relationship is not apparent in Table 8. It is shown in Table 9 where mean academic-motivation scores are listed for various levels of college performance.

TABLE 8

PERSISTENCE AND FOURTH-SEMESTER CUMULATIVE
GRADE-POINT AVERAGE OF UNDERGRADUATES
CLASSIFIED BY CAREER PLANS AT
ENTRANCE TO COLLEGE

	<i>N</i>	Persistence (Academic Motivation)	Fourth-Semester Cumulative Grade-Point Average
College teaching.....	28	27.1	2.46
Science.....	80	29.0	2.31
Medicine.....	105	28.1	2.30
Law.....	60	27.9	2.37
Engineering.....	74	27.0	2.05
Teaching (level not specified).....	36	24.2	2.18
Journalism.....	11	22.9	2.32
Business.....	81	23.4	2.11
Foreign service.....	16	23.8	2.12
Armed service.....	9	25.0	1.96
		$F = 1.86^*$	$F = 1.74^*$

* $F_{9,490}$ at 1 per cent = 2.46, at 5 per cent = 1.90.

TABLE 9

PERSISTENCE OF UNDERGRADUATES CLASSIFIED BY LEVEL OF COLLEGE PERFORMANCE

Fourth-Semester Cumulative Grade-Point Average	<i>N</i>	Persistence (Academic Motivation)
Over 3.00.....	65	34.6
2.50-2.99.....	127	30.0
2.00-2.49.....	180	26.7
Under 2.00.....	153	24.7
Academic dismissal.....	49	20.2
		$F = 11.6^*$

* $F_{4,689}$ at 1 per cent = 3.35.

It should be possible to identify, prior to admission, most students who will be unable to fulfil their career plans, for students with low academic motivation will be unlikely to achieve grades acceptable to graduate schools.

If students were surveyed as to career plans at a later time in their college career, there would be much more significant relationships between career plans and academic motivation than those shown in Table 8.

DISCUSSION

There are two implications to this study which should be examined. First, it appears that a two-factor theory of academic motivation and intelligence is inadequate for the prediction of school performance. Those who have become most successful in their careers either in business or in a profession had grades that exceeded expectations based on intelligence and the academic-motivation factor. This suggests the possibility that there is an additional factor to be identified which might be both affective and cognitive, involving need for achievement, self attitudes, ability to deal with ambiguities, or some intellectual characteristic such as concentration or creative ability or some other cognitive factors not identified by the scholastic-aptitude tests.

Second, the evidence presented in this study is consistent with the theory that academic motivation is a characteristic related to school performance itself. If academic motivation identified some value syndrome related to subcultural determinants, or if academic motivation identified the differences in attitudes between professional and non-professional, there would be no reason to expect that the academic-motivation score would correlate with grade-point average within each of the occupational groups. It is my hypothesis that academic motivation develops as a reaction to the demands that schools and adults make upon an individual. As a reaction to academic grades that are below self-expectations or that constitute academic failure, the individual establishes a complex set of com-

pensatory attitudes and behaviors. When this repertoire of defenses functions effectively, an individual is not seriously threatened by poor academic performance and hence has insufficient disequilibrium to create school striving.

Despite the apparent contradictory evidence of the low-motivation high-performance syndrome identified in the executives, the characteristics of the student with low motivation are such as to suggest that low academic motivation may be a severe detriment in some careers. We suppose that after graduation from college what is learned is primarily a function of intelligence. The relationship between intelligence and knowledge is so strong that even during college the correlations between intelligence and achievement will account for most of the variance on achievement-test scores. Given information on students that includes intelligence, achievement (such as the Graduate Record Examination in the field of the major), and college grades, the correlation between intelligence and achievement tests will not be increased by information about the student's academic motivation.⁷ Thus one would think that intelligence would be a strong predictor of career success since presumably knowledge is of value in career performance.

Academic motivation may intervene in two different ways. Those with low motivation may have developed such a distaste for academically oriented activities that they do not expose themselves to the media through which increased knowledge can be acquired. Second, some of the behaviors associated with low academic motivation may not be a career detriment. For example, the hail-fellow-well-met may be more successful as an executive or in selling, but knowledge and study may be prerequisites in many professional careers. However, if one possesses the rationalization repertoire that dissipates feelings of failure in the face of inadequate performance, the same behaviors that block college performance may block career performance.

With career aspirations that do not require attendance in graduate school, completing college may not require an individual to

utilize extensively the rationalization system that protects against poor performance. Thus low academic motivation may not be a handicap to the successful executive. He has not internalized this rationalization system, for his grades met his expectations. The underachiever oriented toward a professional career must have made frequent recourse to the protective devices, for school performance may have continually blocked goals. Thus these may become more internalized and become a major handicap to performance.

Selectivity in admissions also may deny opportunities to some who could achieve professional success. The current undergraduate classes at Brown University have almost no students with scholastic-aptitude scores as low as those of students in the sample of graduates who become college teachers, physicians, or lawyers. In the current classes, to enter one of the professions via graduate school requires not only that the student have high intelligence but also that he have high academic motivation. The student with below-average or even average academic motivation may find a professional career closed to him because of his decision to attend a highly selective college. In a less competitive situation the student with high intelligence but average academic motivation might achieve grades acceptable for admission to graduate school. More than that, the competitiveness of the academic situation may foster the development of the blocking attitudes of low academic motivation and hence thwart an individual's success even if the educational institutions do not block his goals.

While the preceding arguments may be speculative, there can be little doubt as to the impact that admissions criteria have upon the careers that graduates pursue. If colleges are not to exclude those who will become successful in business, they will not accept students solely on the basis of intelligence and school performance.

SUMMARY AND CONCLUSIONS

A study of graduates of a selective liberal-arts college was undertaken to determine the impact of selection procedures which weight

scholastic aptitude and high school record as a criteria for college admission. The sample consisted of students who graduated during the years 1947–52. A questionnaire was mailed to the sample which inquired about occupational and career activities and which also contained questions designed to assess the student's academic motivation and extracurricular involvement while he was in college. Academic motivation in the graduate population was compared with similar data procured on high school and college students. The similarity between the two sets of data gave strong support to the hypothesis that the academic motivation identified in the graduate population was the same as that identified among secondary-school and college students.

There were large differences both in college performance and in academic motivation between those who entered careers as professionals and those who entered careers in business. The professional group was characterized by higher academic motivation, less extracurricular involvement while in college, higher intelligence, and higher grade-point average.

Those most successful in their careers were compared with those who were least successful. In the professional groups the most successful were characterized by higher grades, higher academic motivation, and higher intelligence, while the most successful businessmen were characterized by higher intelligence, higher grade-point average, but lower academic motivation as defined by school attitudes. While this might suggest that predictors of grade-point average such as high school record should be continued in selecting students for college, since the most successful men either in business or in the professions were characterized by high grade-point average, this is an erroneous conclusion, for the most successful businessmen achieved grades somewhat lower than the least successful of those who entered the professions. Our conclusion is that the highly selective college will screen out by its admissions procedures those businessmen who will become the most successful. Caution is urged to view this study as suggestive rather than definitive, for the charac-

teristics that make for success now may be quite different from those that prevailed some fifteen years ago.

NOTES

1. J. A. Finger and G. E. Schlesser, "Non-Intellective Predictors of Academic Success in School and College," *School Review*, LXXIII (1965), 14-29.

2. G. E. Schlesser and J. A. Finger, *Personal Values Inventory* (Hamilton, N.Y.: Colgate University, 1962).

3. W. W. Farquhar, *Motivation Factors Related to Academic Achievement* (Cooperative Research Project 846 [East Lansing: Michigan State University, 1963]).

4. C. E. Bidwell, S. H. King, and H. A. Scarr, "Undergraduate Careers: Alternatives and Determinants," *School Review*, LXXI (1963), 299-316.

5. D. Gottlieb and B. Hodgkins, "College Student Subcultures: Their Structure and Characteristics in Relation to Student Attitude Change," *School Review*, LXXI (1963), 266-89.

6. Many matrixes have been factored on widely differing populations. See G. E. Schlesser and J. A. Finger, "Manual: Personal Values Inventory" (Hamilton, N.Y.: Colgate University, 1961 [mimeographed]). P. P. Grande also has shown that academic motivation is uncorrelated with intelligence ("Persistence and Change of Educational Objectives of Engineering Freshmen," *Journal of College Student Personnel*, 1963, pp. 98-101).

7. I believe this is true but find it difficult to document. In my unpublished study at Colgate University, where the Graduate Record Examination was administered to college seniors, there was a non-significant relationship between achievement scores and Personal Values Inventory scores. Paul Lohnes' study (P. R. Lohnes and T. O. Marshall, "Redundancy in Student Records," *American Educational Research Journal*, II [1965], 19-23) also would substantiate this view, although he did not recognize that his second factor, which was characterized by high intelligence-low grades versus low intelligence-high grades, was identifying the academic-motivation factor.