THE ADMISSION CRITERIA TO THE UNIVERSITY AS PREDICTORS FOR ACADEMIC PERFORMANCE: A PILOT STUDY

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Abstract
The race for human resources and also for state funding has motivated several university study programs to resort to employing loose admission criteria for candidate selection. Even dough the economic rationale is easy to understand, several warning signs, such as low employability rate of graduates and criticism from employers, have emerged. Based on these observations we set out to investigate the extent to which the admission criteria for the university are efficient predictors of academic performance. For this pilot study a sample of 105 freshman psychology students was used. A series of regression analyses were carried out in order to observe the efficiency of the admission criteria variables for predicting the grades of two very different disciplines within the psychology education program (neuropsychology and history of psychology). The obtained results indicate that only one of the admission criteria, high school grades average, is efficient in predicting academic performance for both disciplines.

Keywords: admission criteria, academic performance, neuropsychology discipline, history of
            psychology discipline

Introduction

One of the directions in educational research is to investigate educational effectiveness. A great number of studies attempted to identify

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high school grade point average (GPA) or general success in high school as a factor significantly correlating with college GPA and college graduation. Fletcher, Halpin, & Halpin (1999) tracked such studies in the early 1960s. For example, high school rank was found to be the most effective predictor of success in college.

Romanian faculties have recently started to use baccalaureate grade and high school GPA class as criteria for college admission (sometimes one more predictor is used – the grade obtained at a course of interest). This practice replaced the college exam and it is easy to accept taking into account the economic pressures that the universities must face. Nevertheless, this practice is frowned upon by college teachers who often think that the scientific readiness of the candidates is below the standards. These teachers would rather prefer the old admission tests, considered more rigorous and valid.

The predictive value of GPA is well documented in Western literature and we will take a brief look at it. Besides the GPA, in Romania we are also interested in the predictive value of the baccalaureate exam. Although the scholastic aptitude / assessment test (SAT) score reflects some different variable, we approached it in our introductory section because of the way it is organized, similar in certain range to the Romanian baccalaureate exam (especially starting from 2011). [The SAT is a collection of tests often required to college admission in the United States].

Standardized admissions tests such as the SAT in the United States, the baccalaureate exam or the college admission exam in Romania were originally developed to identify candidates who will perform better in college. Often such tests are seen as methodologically rigorous and objective, being a reliable indicator of academic achievement and superior to high school GPA. Geiser and Santiceles (2007) argue that this is a misperception, their research supporting the fact that high school GPA is consistently the best indicator for first-year college. The predictive weight associated with high school GPA increases after the freshman year, making this variable a good indicator for long-term college outcomes (i.e., graduation, employability). One of the explanations brought by the authors was the low level correlation between high school GPA and socioeconomic characteristics. On the other hand, the SAT scores bear a strong relationship with family income.

Another critiques is that standardized admission tests such as the baccalaureate exam or the college admission exam reflect student performance

in a single evaluation, but they fail to evaluate test preparation, repeat test-taking and other "test wise" strategies aimed at boosting scores. On the other hand, high school grades reflect a cumulative effort and performance over a period of years.

A series of studies support these ideas. The indicators of success in high school have higher correlations with the college success variable than does the admission test score (Saupe & Eimers, 2010). Brown & Conley (2007) found that items on the exit exams (i.e., such as the baccalaureate exam), taken together, measure only a small portion of the knowledge and skills expected from college and employers. Hoffman and Lowitzki (2005) found that high school grades are stronger predictors of success than standardized test scores for both racial and religious minority students.

Using high school GPA and SAT score as predictors for college GPA

The use of high school GPA and SAT score as predictors for college GPA is based on a simple philosophy: best predictor of future behavior is past behavior. Research provided critical information about the concordance between the knowledge and skills required from students to answer questions found on high school tests (which led to high school grades) and college standards.

SAT scores and high school grade-point average (GPA) were consistently used to predict first-year college GPA and college graduation. The Maryland State Higher Education Commission (1996) found that high school GPA as the best predictors of college GPA (other identified predictors: the SAT Verbal score, average grades in high school English and social studies courses). Results were intended to be used as a help for local educators with the evaluation of high school preparatory programs, curriculum development, counseling and the establishment of education policy.

One year later the same commission found high school English and the SAT Verbal score as good indicators of first college English grade. Demographic variables which were predictive of college performance were gender (women outperformed men) and father's educational level (Maryland State Higher Education Commission, 1997).

Camara and Echternacht (2000) justified that college GPA is the most frequently used criterion because (1) the courses that freshman take are more

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similar and less variable than any other year in college; (2) predictor and criterion data are readily available; (3) freshman grade averages are highly correlated with cumulative grade averages. Their study showed that high school grades are slightly better predictors of achievement, but SAT scores add significantly to the prediction. The results were consistent for all subgroups of students and for all types of measures of academic achievement.

McKenzie and Schweitzer (2001) identified previous academic performance as the most significant predictor of university performance. Integration into university, self-efficacy and employment responsibilities were also predictive of university grades. Geiser and Santelices (2007) found that high-school (GPA) is consistently the best predictor not only of freshman grades in college, the outcome indicator most often employed in predictive-validity studies, but of four-year college outcomes as well.

Zwick and Sklar (2005) found that the percentage in first-year college GPA jointly explained by high school GPA and SAT score varied from 7% to 20% for the studied groups. The differences were explained by the ethnicity (Hispanic, Black, and White) and the first language of the subjects (Spanish or English). Survival analyses revealed an important influence of high school GPA on graduation in the White / English group, and an important influence of SAT score in the Hispanic / English and White / English group.

Other research also targeted the subject of ethnicity in relationship with high school grades as predictors of college grades. Using a sample of black students, Thomas and Stanley (1969) found that high school grades do not consistently make the greatest contribution in predicting college grades of black students, perhaps particularly of men, whereas they do for whites. The phenomenon was explained firstly by the unreliability of grade reporting and the invalidity of grades in high school. The authors recommended further research, in view of the fact that many universities are relying heavily on high school grades in their selection.

Nevertheless, some studies questioned the use of high school GPA and SAT scores as predictors for college performance. The SAT brings a relatively small contribution to prediction (Baron & Norman, 1992). The authors draw conclusion that the use of achievement tests and high school class rank for college admission could provide high school students with incentive to achieve academically, but the SATs are not designed to provide such incentive. Other researchers disagreed; for example, Geiser and Santiceles (2007) argued that

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although high school GPA may be the best predictor of college performance, test scores may also add significantly to the prediction, so that the combination of test scores and high school record provides better prediction than either factor alone.

D'Agostino and Bonner (2009) stated that high school curricula, state test and exit exams are based on standards that are below college expectations, that is the reason why students believe that they are ready for college by receiving good high school grades. As a result, none of the above should be used as an admission criterion.

Mcdonald and Gawkoski (1979) showed that the Verbal and Mathematics portions of the SAT and high school GPA had moderate predictive validity for success in the Honors Program at Marquette University for a sample of 402 students. Again, the authors suggested that at least the SAT scores shouldn't be used as admission criterion.

From this perspective, high-school grades are often viewed as an unreliable criterion for college admissions, owing to differences in grading standards across high schools.

Our paper attempts to identify some of the variables associated with college academic performance, with the possibility that the results might be used to establish more effective criteria for college admissions. The degree to which exit exams (such as the baccalaureate exam) and high school GPA properly signals students' preparedness for college has been questioned by our pilot study.

Objectives

The major aim of this study was to assess the extent to which the admission criteria to the psychology department at universities in Romania which do not require an admission exam (but instead use only specific high school grades) are adequate predictors of academic performance. Another, secondary, objective was to observe the magnitude of association between high school academic performance and frequency of attendance to seminars.

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Method

Participants

      The study employed 105 participants, 11 males and 94 females, freshman year psychology students at the University of Oradea.

Procedure

      During the academic year we kept a strict record of the students' attendance to seminars for the disciplines that would later be used as criteria for academic performance in this study. We focused our attention on two distinct disciplines, one that has a more realistic basis and requires critical scientific thinking – neuropsychology, and another that has a more humanistic basis and is less rigid with respect to scientific thinking – history of psychology. We choose these disciplines due to their opposite nature. Thus we would be able to observe whether the admission criteria would predict differently the academic performance of the students in these fundamentally different domains.

      The admission criteria used at the university implied the following: (a) baccalaureate average; (b) high school grades average; (c) grade obtained at the psychology discipline in high school. We used these grades as predictor variables for the students' academic performance for the above mentioned disciplines. This performance implied the grade that the student obtained at the seminar evaluation of a discipline and also at the final exam for that discipline.

Results and discussion

      The major objective of this study was the investigation of the usefulness of the admission criteria to the psychology department, at university level, for the prediction of later academic performance. We used hierarchical regression analysis to verify our assumptions. First we investigated the extent to which the admission criteria are efficient in predicting the final exam grade for both disciplines (Table 1).

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Table 1. Model Summary for predicting final exam grades based upon the admission criteria

Discipline	Model	R	R^2 adj.	R^2 change	Std. Err.	R^2 change	F change	df1	df2	P
Neuropsychology Final exam grade	1	.277[a]	.077	.068	1.31	.077	8.55	1	103	.004
	2	.391[b]	.153	.137	1.26	.076	9.20	1	102	.003
	3	.392[c]	.154	.129	1.27	.001	.077	1	101	.782
History of psychology Final exam grade	1	.418[a]	.174	.166	2.15	.174	21.7	1	103	.000
	2	.463[b]	.214	.199	2.11	.040	5.17	1	102	.025
	3	.493[c]	.243	.221	2.08	.029	3.84	1	101	.053

Note: [a] Predictors: baccalaureate average; [b] Predictors: baccalaureate average; high school grades average; [c] Predictors: baccalaureate average; high school grades average; psychology grade in high school

Our results show that both in the case of neuropsychology and history of psychology the only valid criteria are baccalaureate average and high school grades average. This would indicate that the student's grade in psychology over his or her high school years are less relevant for predicting academic success at university level. The coefficients table offers further information (Table 2).

Table 2. Regression coefficients for the model, predicting final exam grades based upon the admission criteria

Discipline		Unstd. Coeff.		Std. Coeff.	t	p
		B	Std. Err.	Beta		
Neuropsychology Final exam grade	(Constant)	-.579	1.40		-.412	.681
	baccalaureate average	.064	.191	.040	.335	.738
	high school grades average	.589	.194	.364	3.034	.003
History of psychology Final exam grade	(Constant)	-5.13	2.33		-2.197	.030
	baccalaureate average	.680	.319	.247	2.134	.035
	high school grades average	.736	.323	.263	2.274	.025

The inspection of the coefficients table reveals that for the performance at the final exam in the field of neuropsychology only high school grades average is of real importance. In the case of history of psychology both baccalaureate average and high school grades average are of importance in predicting final exam performance.

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We consider that these results were obtained due to the fact that most students that choose psychology as their major at the university come from a humanistic oriented high school. Thus it is highly possible that they are more accustomed to dealing with such humanistic disciplines and are less used to the rigorous scientific approach required for understanding neuropsychology. Furthermore, the baccalaureate exam which these students took most probably implied humanistic disciplines and not scientific ones. In this case it is obvious why the baccalaureate exam was not a valid predictor for neuropsychology but was one for history of psychology.

A higher high school grades average indicates that the student was more involved in learning during high school in general and thus it is a good indicator of the student's general approach to academic work and effort (and also learning habit). Thus, it is not surprising that this variable is a good indicator for success in both the humanistic and realistic disciplines.

Since final exam grades offer only partial information regarding the students performance in a certain discipline we decided to include the students' whole semester activity as a criterion variable. Thus we would be able to observe weather the admission criteria variables are efficient in predicting performance for activities that occur over the whole semester for that certain discipline (Table 3).

Table 3. Model Summary for predicting seminar evaluation based upon the admission criteria

Discipline	Model	R	R^2 adj.	R^2 change	Std. Err.	R^2 change	F change	df1	df2	P
Neuropsychology Seminar evaluation	1	.392[a]	.154	.146	1.81	.154	18.73	1	103	.000
	2	.456[b]	.208	.193	1.76	.054	6.97	1	102	.010
	3	.456[c]	.208	.185	1.77	.000	.000	1	101	.999
History of psychology Seminar evaluation	1	.387[a]	.150	.142	1.84	.150	18.17	1	103	.000
	2	.533[b]	.284	.270	1.69	.134	19.12	1	102	.000
	3	.535[c]	.286	.264	1.70	.002	.217	1	101	.642

Note: [a] Predictors: baccalaureate average; [b] Predictors: baccalaureate average; high school grades average; [c] Predictors: baccalaureate average; high school grades average; psychology grade in high school

Once again we observe that the only valid criteria for predicting academic performance are baccalaureate average and high school grades

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average. It seems that these variables are also useful in predicting performance for academic activities that stretch over the whole semester. Further information is offered by the coefficients table (Table 4).

This time we conclude that the only valid criterion for predicting performance in a prolonged activity in both disciplines is high school grades average. This is not surprising since high grades during high school indicate that the student was making an effort to sustain the high performance during the whole period of high school. This means that the student is accustomed to sustaining his or her learning effort over a long period of time. Therefore, sustained academic effort during high school may efficiently predict performance for prolonged academic activities at the university.

Table 4. Regression coefficients for the model, predicting seminar evaluation based upon the admission criteria

Discipline		Unstd.Coeff.		Std. Coeff.	t	p
		B	Std. Err.	Beta		
Neuropsychology Seminar evaluation	(Constant)	-1.91	1.95		-.978	.330
	baccalaureate average	.443	.266	.193	1.663	.099
	high school grades average	.714	.270	.306	2.642	.010
History of psychology Seminar evaluation	(Constant)	-2.49	1.87		-1.329	.187
	baccalaureate average	.171	.256	.074	.667	.506
	high school grades average	1.136	.260	.482	4.373	.000

Since we used the performance for two very distinct disciplines as the criterion variables in our study we were interested in observing whether any differences existed between the performances of the students for these two disciplines. The obtained results show differences between them for both the final exam grade and the seminar evaluation (Table 5).

Table 5. Comparisons between the grades obtained by the students at the two disciplines

	Discipline	Mean	SD	t	p
Final exam grade	Neuropsychology	5.15	1.36	-9.28	.000
	History of psychology	7.14	2.36		
Seminar evaluation	Neuropsychology	8.15	1.96	-4.63	.000
	History of psychology	8.95	1.98		

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The higher scores were obtained in both cases for history of psychology. This is not a surprising result since most students come from humanistic high schools and thus are more accustomed to non-scientific disciplines and modes of thinking. We highlight the fact that even dough differences were observed in the performances of the students for these two disciplines the results of our investigation using the regression equation yielded almost identical results. That is, high school grades average is an efficient predictor for short and prolonged performance in both types of disciplines.

As a final investigation we correlated the admission criteria with the total number of attendance to seminars for the two disciplines. Since the distribution of the attendance variables was not symmetrical we used the Spearman non-parametric correlation coefficient (Table 6).

Table 6. Correlation coefficient between admission criteria and total number of attendance to seminars for the two disciplines

		Number of total attendance to neuropsychology seminar	Number of total attendance to history of psychology seminar
High school grades average	rho	.230	.307
	p	.018	.001
Psychology grade in high school	rho	.267	.265
	p	.006	.006
Baccalaureate average	rho	.118	.130
	p	.232	.188

The results indicate that high school grades average and psychology grade in high school do associate positively to number of total attendance for both disciplines however baccalaureate average does not. Also, the observed correlations are relatively low in magnitude (all but one are under 0.3).

We consider that the lack of association between baccalaureate average and attendance reflects the fact that a grade obtained for one major exam does not indicate that the student makes an effort to learn over a prolonged period of time. Perhaps this student just learns before the exam to obtain a high grade but does not make an effort to participate in studying activities over a long period of time.

The associations that were significant suggest that high school grades average and psychology grade in high school may be indicators of the students'

involvement in studying activities during the whole semester. However since the magnitude of these correlations is so low further investigation is required in order to clarify this aspect. Still, this result taken together with the previous one indicates that the best predictor for academic performance for diverse disciplines is high school grades average.

This study is only a pilot study thus its results have to be interpreted with caution. In the future we plan to include more disciplines in our research and also to include more predictor variables such as demographic and personality variables.

Other variables that may need investigation in relationship with these predictor variable are: *students' involvement in university* (taking honors courses, participating in student exchange programs, doing independent research projects, making class presentations), *student interaction* (discussing course content with other students, being a member of a student association, working on group projects, socializing in students clubs), *peer group effect* (peer affiliation pattern), *faculty responses to teaching* (faculty's publication rate, time spent conducting research, commitment to research and scholarship) (Astin, 1993). Finally, we plan to observe the performance of the students over the whole period of their university education and thus be able to identify factors that contribute to the dropping out phenomenon.

Conclusions

In this pilot study we investigated whether the admission criteria for the university's psychology department were adequate for predicting the students' academic performance. We used hieratical regression equations in which the baccalaureate average, high school grades average and psychology grade in high school were predictor variables and the final exam grade and seminar evaluation grade for neuropsychology and history of psychology were the criterion variables.

It seems that the best indicator for academic performance is high school grades average. It is efficient in predicting performance for both types of disciplines (scientific and humanistic) and also for both types of performance

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(final grade and seminar evaluation). It seems that the other criteria used for selecting candidates are less effective and may need to be replaced.

We remind the reader that these results are only preliminary and further research is required in order to initiate a change in the procedure of candidate selection for the university's psychology department. Identifying the factors that influence academic performance can improve interventions and support services for students at risk of academic problems.

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