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Showcasing the Predictive Validity of High School Records for Students of English Language and Literature

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Abstract

Some universities in Iran have recently witnessed a shift in admission criteria from university admission test performance towards high school records. This sudden change seems to be unwarranted since the predictive power of high school records has not been explored. To fill in this gap, this study aims at showcasing the predictive validity of high school records for undergraduate students of English language and literature. To this end, a random sample of undergraduate students studying at Shahrood University of Technology was selected as the participants, the predictor variables were operationally defined as the participants' grade point average (GPA) in three school subjects including English, Persian and Arabic languages along with their overall high school GPA, and the outcome variable was operationalized as the participants' overall GPA for the first academic year. The results of the Pearson correlation revealed a significant but very low correlation between the variables of interest. Moreover, the results of multiple regression analysis revealed that none of the predictor variables well predicts academic success in the English language and literature. Although the results of this study are case-specific, they have clear implications for policymakers and interested researchers nationwide.

Keywords: Academic success; High school GPA; Predictive power; University admission criteria

1. Introduction

Recently, there has been a shift from performance on nationwide tests towards high school records as the admission criteria for university entrance in Iran. While in top-ranked universities students still enter the university based on their ranked performance on a nationwide test the psychometric features of which have been taken for granted, in other universities, there are two

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sets of criteria for admission: in some courses, students enter based on their performance on the university admission test, while in some other courses they enter based on their high school records. This decision has been a major issue for low-ranked universities because they believe this decision may not be supported by empirical findings. And this concern seems to be rightful since it is supported by previous empirical findings. For instance, Camara and Michaelides (2005) found that the high school GPA is an unreliable indicator since "there are no common grading standards across schools or courses in the same school" (p.2). Others reject it because they believe that high school grades are inflated in nature (Camara, Kimmel, Scheuneman & Sawtell, 2003).

While it is worthwhile to evaluate such a sudden change in admission criteria against the theoretical perspectives and empirical findings in other contexts, it would be much more informative if it is evaluated by empirically validating the predictive power of the newly-adopted criteria, i.e., high school records, by collecting and analyzing context-sensitive data and provide the policymakers with situated knowledge concerning the implications of their top-down initiatives for change. To this end, this study was conducted to test the predictive validity of such a top-down shift in admission criteria by collecting data from Shahrood University of Technology (SUT) which has been at the consumer-end of this initiative.

2. Review of Related Literature

Entering the university is an important change in life for every individual. Because many student activities during high school are aimed at being accepted to university, and secondary education is one of the links in the educational chain that links secondary education to higher education, failure at this stage directly affects the performance and quality of the next stage. To ensure that only qualified candidates enter colleges and universities, different countries follow different admission standards and criteria. In an overview of the admission system in different countries of the world, Jean and Mathias (2017) specify five main systems: (1) secondary leaving examinations where students are admitted based on the score they get at a test at the end of secondary school; (2) entrance examination held national wide by central agencies which measures students' knowledge and rank them based on their performance; (3) standardized aptitude tests which measures students natural ability rather than their achievement; (4) multiple examinations which may include secondary leaving exams, entrance exams, and an institutionally-developed exam; (5) no examination where students enter the university based on their high school records.

While admission systems vary from country to country, they all aim at measuring students' academic success. This is a comprehensive and complex mental construct covering a myriad of factors including intelligence (Pesta & Poznanski, 2008), causality attributions (Gifford et al., 2006), identity (Good & Adams, 2008), learning styles (Demirbas & Demirkan, 2007), learning motivation (Shayestefar & Fazlali, 2020), students' self-efficacy beliefs (McKenzie & Schweitzer, 2001), teacher self-efficacy beliefs (Caprara et al., 2006), positive interaction with teachers and peers (Wong, 2001); hence, academic achievement is a multidimensional variable and is affected by several factors. Variables that are related to family (Carter & Wojtkiewicz, 2000), efficiency in the use of time (Kelly, 2003), washback effect

(Ghorbani & Neissari, 2015) and some personal variables including attitudes, self-concept, behaviors, and values (Kim et al., 2010) and stress (Davidson & Beck, 2006) are also contributing to academic achievement variation.

Due to the multiplicity of factors underlying this construct, scholars have found it hard to provide the field of education with a constitutive definition. Having synthesized the relevant literature, Kuh, Kinzie, Buckley, Bridges and Hayek (2006) define academic success as "academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational outcomes, and post-college performance (p. 5). On an operational level, Choi (2005) and Parker, Summerfeldt, Hogan, and Majeski (2004) define it as "academic achievement" (GPA). And this is found to be the dominant operational definition in the literature (Choi, 2005; DeFreitas, 2012; Dennis et al., 2005; Gore, 2006; Harackiewicz et al., 2002; Zajacova, Lynch & Espenshadet, 2005, Hayward, 2020).

Taking GPA as a measure of high school academic success, many studies have tried to explore the extent to which it can predict university success and dropout at a tertiary level (Alyahyan & Düştegör, 2020). Among other things they found that previous academic achievement (assessment of high school outcomes) significantly predicts the performance of the first semester of college (Duff, 2004); high school GPA was the best predictor of first-semester college GPA (Adebayo, 2008); academic achievement in high school can predict 28 percent of the variance of first-year university grades (Allen, 2008); previous academic performance has a positive effect on academic achievement in the university (Garavalia & Gerdler, 2009); and high school achievement is a significant indicator for predicting academic success (Kim, Newton, Ronald, Downey, & Benon, 2010).

Another group of studies have operationally defined academic success in high school as students' performance on the nationwide entrance exam. For example, Woosley, Angi and Miller (2009) conducted a study on the success of college students and found that entrance exam scores were associated with continued academic achievement. As expected, students with higher entrance exam scores scored higher later at a tertiary level. In a similar study, Rothstein (2003) analyzed students' performance in business and found a negative correlation between entrance exam performance and dropout probability. He also found that there was not any significant correlation between performance in the entrance exam and times-to-degree. De-emphasizing the predictive power of entrance exams, Rantanen (2001, as cited in Häkkinen, 2004) studied vocational education at a tertiary level and found that for 60 percent of the applicants the results would have been the same if the results of the entrance exam were replaced with school records. The results of his study further revealed that the entrance exam was effective only in predicting success in engineering.

As the review clearly shows, previous studies have tested the correlation between either high school records reported as GPA or entrance exam rank for all the myriad of university courses and disciplines indiscriminately. As such, very little is known about the predictive power of these criteria for academic performance in a specific major such as English language and literature. What is more, in some contexts such as Iran universities encounter unwarranted change imposed by central agencies from one set of admission criteria to another set. To test

the validity of such decisions at a local level and to shed some light on previous empirical findings, this study aims at exploring the predictive power of high school records for undergraduate students of English language and literature through multiple regression and correlational analysis. More specifically, this study aims at answering the research question: What is the predictive validity of high school records for undergraduate students of English language and literature?

3. Research Context

Iran has different types of universities which seem to enjoy quite varied levels of quality and prestige based on national and international rankings. For decades, however, one thing has been the same: students have been entering the university to pursue their interest in arts and humanities, science and technology, and medical and paramedical courses based on their performance on a nationwide university admission test held by a central agency, i.e., the Iran National Organization of Educational Testing, nationwide. Recently, however, as a reformist movement and as a response to the stakeholders' negative attitude towards the university admission test, which they believe has been commercialized by its exclusive focus on multiple-choice tests, the Iran National Organization of Educational Testing has tried to reconsider the admission criteria. As a result of this decision, different universities have witnessed different criteria for admission: while in top-ranked universities students still enter the university based on their ranked performance in the university admission test, in second-quartile universities such as SUT in some fields they enter the university based on their high school records. These universities had no voice in such a decision and they were taken at the consumer end of this initiative. University officials find this decision unwarranted because it is not informed by research findings. They believe that the assessment organization should not take the truth value of high school records for granted and they think such a high stake decision should have been made based on rigorous research findings.

4. Method

4.1.Participants

The present study is descriptive-correlational. The target population of this study was all undergraduate students of English Language and Literature who entered Shahrood University of Technology (SUT) in two consecutive years based on high school records. For the purpose of this study, 46 students were randomly selected to participate in this study. They were both male and female. The sample size is large enough for this study because the population is small and specific, as Sekaran (2013) argued, too large a sample size can be counterproductive sicne it is likely to lead to type II error, i.e., accepting a null hypothesis when it is supposed to be rejected.

4.2.Data Collection

This study aims at showcasing the predictive validity of high school records including high school grade point average, English grade point average, and grade point average for language-related courses for performance in English language and literature undergraduate students

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studying English at the Shahrood University of Technology; therefore, the study involves analyzing two sets of variables: high school records as the predictor variables and university academic success operationalized as the grade point average for the first academic year as the outcome variable. Taking the role of L1-L2 language analysis skills (Skehan, 1986a) and cross-linguistic analysis (Sparks, Patton, Ganschow, & Humbach 2011) into account, grade point averages for language-related courses were added as another predictor variable. The statistical data such as high school diploma grade point average, students' scores for Arabic, English, and Farsi were obtained from the SUT board of education and their university performance, i.e., grade point average for the first academic year, was obtained from the English department.

4.3.Data Analysis

To determine the degree to which high school records are valid indicators of academic success for students of English language and literature the data went through correlational and multiple regression analysis. To find the most suitable model, we ran different regression models including forward, backward and stepwise regression. Stepwise regression was found to yield the best most useful and the most interpretable model. The data were analyzed using the SPSS software package.

5. Results

This section is mainly dedicated to the explanation of the results of the study based on the correlation and regression analysis done to answer the research question of the study. High school performance in Arabic, English, and Farsi courses reported as GPA together with overall high school GPA were the predictor variables, and first year university GPA are considered as the outcome variable of the study. Table 1. shows the descriptive statistics for these variables.

Table 1
Descriptive Statistics for the Variables of the Study

	Mean	Std. Deviation	N
University GPA	16.2296	1.99848	46
English 1 GPA	18.8183	1.45188	46
English 2 GPA	19.1189	.77384	46
English 3 GPA	18.2837	.99795	46
High school GPA	18.3950	.74324	46
English GPA	18.6763	.71898	46
Arabic GPA	18.4457	1.37339	46
Farsi GPA	18.0748	1.34346	46

Table 1 shows that all the predictor variables, i.e., overall high school average, and each grade's English GPA are high and close to each other while the outcome variable is much lower and far from the predictor variables; hence, compared with predictor variables, the outcome variable is much lower. The differences reported in Table 1 are descriptive. In other words,

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they reflect sample statistics. These differences may be due to error of measurement or due to chance; hence, a paired-samples t-test was used to see whether the difference between high school records and university performance is significant or not. Although paired samples t-test was run for all the variables, for the sake of brevity, only two of the more important variables, i.e., high school GPA and overall English GPA are presented. The results of paired samples t-test are shown below in Table 2.

Table 2
Paired Samples t-test

	t	df	p
High school GPA-University GPA	7.34	45	.00
Overall English- University GPA	11.29	45	.00

As shown in Table 2, there were significant differences between GPA and university average score of the participants (t = 7.34, p = .00 < .05). Moreover, there were significant differences between the three-year English average score and university average score of the participants (t = 11.29, p = .00 < .05). This clearly indicates that high school grades are inflated and as such cannot be a good basis for predicting university performance. Just like overall high school GPA and the GPA related to each grade, the GPA reflecting language-related courses are also misleading because they are much higher than the outcome variable. This shows that just like overall GPA and the GPA related to English in each grade, the mean scores reflecting language-related course are tightly close to each other and far removed from college performance and as such inflated in nature.

Table 3
Correlations between the Variables

	English 1 GPA	English 2 GPA	English 3 GPA	High school GPA	English GPA	Arabic GPA	Farsi GPA
University GPA	.129	.352	.307	.112	.341	.247	.369
English 1 GPA		.310	.319	.116	.599	.137	.308
English 2 GPA			.464	.393	.695	.261	.429
English 3 GPA				.168	.550	.233	.342
High school GPA					.460	.416	.641
English GPA						.563	.650
Arabic GPA							.452

As shown in Table 3, the overall English GPA and the university GPA are weakly correlated (r= .34, p=.01< .05). But there is not any significant correlation between high school GPA and university GPA (r=.11, p=.46> .05). Similarly, there is not any correlation between English 1 GPA and university GPA (r=.12, p=.34> .05). Moreover, it shows the English 2 GPA

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is weakly correlated with university GPA (r=.35, p=.03< .05). Furthermore, as Table 2 shows, there was found to be a weak correlation between English 3 and university GPA (r=.30, p=.01< .05). It has to be noted that the observed correlation coefficients are either weak (r < .40) or moderate (.40 < r < .60) which implies that the predictor variables do not have an acceptable level of empirical predictive validity.

Table 4
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.369[a]	.136	.117	1.87820

Note. a. Predictors: (Constant), Farsi GPA

The model summary shown in Table 4, shows that except for Farsi's GPA, other predictor variables were not retained in the model summary; hence GPA can be considered as the intercept which gives the estimated value of the outcome variable even when all other predictor variables are zero. It shows the model summary obtained from the multiple regression analysis of the scores reported by the participants in this study. Taking the R squared into account, the emerged model can predict approximately14 percent (R^2= .136) of the variations in the dependent variable, which is the university performance of the English literature students. The predictor variables excluded by the model, are presented in Table 6.

Table 5
ANOVA for the Regression Analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	24.510	1	24.510	6.948	.012[b]
	Residual	155.217	44	3.528		
	Total	179.726	45			

Note. a. Outcome Variable: University Average, b. Predictors: (Constant), Average Farsi

Based on the results shown in Table 5, it can be concluded that the emerged model from the regression analysis is significant (F (45, 1) = 6.94, p = .01 < .05).

Table 6
Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.300	3.777		1.668	.102
	Farsi GPA	.549	.208	.369	2.636	.012

Note. a. Outcome Variable: University GPA

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The standardized coefficient beta shown in Table 6 shows that with each standard deviation increase in Farsi GPA, we expect a 0.369 increase in students' university GPA.

Table 7
Excluded Variables

Model		Beta In	T	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	HighSchool1	-.024[b]	-.162	.872	-.025	.905
	HighSchool2	.237[b]	1.555	.127	.231	.816
	HighSchool3	.204[b]	1.383	.174	.206	.883
	Gender	-.064[b]	-.426	.672	-.065	.887
	High school Average	-.034[b]	-.183	.856	-.028	.589
	Average English	.174[b]	.945	.350	.143	.578
	Average Arabic	.101[b]	.636	.528	.097	.796

Note. a. Outcome Variable: University Average, b. Predictors in the Model: (Constant), Average Farsis

Table 7 shows the predictor variables excluded by the model. It shows the individual significance of coefficients in regression model $y = \beta 0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \varepsilon$. The significance column, which is the p-values for all hypothesis H_{0i}: β_i=0, shows that none of the predictor variables have a significant coefficient. It means that, since all p-values are greater or highly greater than 0.05, then all hypothesis H_{0i}: β_i=0 are accepted. Therefore, none of the predictor variables can significantly contribute to the changes in the outcome variable or university performance of undergraduate students of English language and literature since the observed p values are all above .05.

6. Discussion

This study aimed at testing the predictive validity of high school records including the overall GPA and the mean score of language-related school subjects as admission criteria for undergraduate students of English language and literature. Analysis revealed that the high school records such as high school GPA, overall English GPA, and GPA for English 1, English 2, and English 3 are either not correlated with university GPA or weakly correlated. This clearly shows that. contrary to what the national organization of educational testing, assumes, high school records do not have the required predictive criterion-related validly. Moreover, the results of regression analysis revealed that the predictor variables can account for 14 percent of variations in university performance. In other words, 86 percent of the variations in the outcome variable or university performance is unaccounted for. Moreover, the model excluded six of the predictor variables since they did not significantly contribute to the R^2. As shown in Table 6,

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none of the predictor variables significantly contributed to the changes in the outcome variable or university performance; hence, in the context of this study, high school records are found not to have the predictive validity which is presupposed by assessment organization of Iran. These results are in drastic contrast with the results of many previous studies (Downey, Collins & Browning, 2002; Platt, Turocy & McGlumphy, 2001; Wharrad, Chapple & Price, 2003), which found a positive correlation between high school GPA and university performance.

This discrepancy between the findings of the current study and the previous studies can be related to the fact that in our research context the participants' performance on predictor variables, as shown in Table 1, were disproportionately higher than their performance in the outcome variable. This clearly shows that high school grades are inflated. This same result was found by Camara, Kimmel, Scheuneman, and Sawtell (2003) who found that high school grades are inflated in nature; hence, high school GPA is an unreliable indicator since "there are no common grading standards across schools or courses in the same school" (Camara & Michaelides, 2005, p.2). Despite what we found, however, it is premature to reject high school GPA as a predictor because just like any studies this study suffered from some limitations. The most considerable limitation of the study was the number of participants. This study was mainly based on the GPA and the high school scores of the 46 students of English literature. More comprehensive studies are needed to include a larger body of students from different universities across the country. Therefore, due to the fact the university admission test, which is a high stake test has been replaced with high school records as university admission criteria, it is essential that interested researchers further explore the adequacy of these criteria in other contexts and with larger and more representative samples.

Although the results of this study are context-specific and as such lack generalizability, they not only shed some light on the findings of previous studies but also presents local agencies such as Iran National Organization of Educational Testing in Iran with empirical evidence reflecting the inadequacy of their top-down initiatives concerning university admission criteria. Taking the results of this study into account, it is recommended that:

- interested researchers replicate this study with larger and more representative samples since, despite statistical rigor, the findings of this study are case-specific;
- assessment organization in this context and other similar contexts not only pilot-test the admission criteria they unilaterally impose on universities but also use the results of both university admission test and high school records since as the results clearly show high school records lack in predictive validity;
- assessment organization consider language aptitude as a predictor variable to be used along with high school records, which reflect high school achievement; and
- education departments do not take the truth value of admission criteria for granted and find parallel mechanisms such as placement tests to assure that instruction fits students' readiness and, in the case of students of English language and literature, their level of language proficiency.

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