



The role of high school GPA and ACT score and its components: a predictor of college success



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INTRODUCTION

College admissions counselors are always looking for new and more efficient ways to select the next class at their institutions. There are many variables that are considered when applications are reviewed such as high school GPA, ACT composite score, ACT sub-scores, SAT scores, course rigor in high school, and many other factors. All of these variables are meant to answer the question: will this student be successful in their college career? There is ample research that claims certain variables are better than others at determining college success as defined by undergraduate GPA. The purpose of this study was to determine which of those acclaimed variables is the best.

LITERATURE CITED

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MATERIALS AND METHODS

Anonymous surveys were administered to 122 undergraduate students at Morehead State University. All but one of these surveys were completed in full and used in the study. The survey asked the respondent to self-report high school GPA, ACT composite and sub-scores (English, Mathematics, Science, and Reading), and college GPA. Multiple Regression models were performed regressing college GPA as a function of high school GPA, ACT composite score and sub-scores. The results were analyzed to determine which factors were significant. Auxiliary regression models, as well as correlation matrices, were performed to investigate possible problems with multicollinearity.

FINDINGS AND CONCLUSION

The results of this study showed high school GPA and ACT composite score were significant variables in predicting college success as measured by college cumulative GPA. The results of this study were in line with other studies in the reviewed literature in that these variables were significant predictors of college success. However, in this study, none of the individual sub-scores showed significance. This seems paradoxical and could normally be attributed to the problem of multicollinearity among independent variables. However, neither the correlation matrix, nor the auxiliary equations, in which each of the independent variables were regressed on the other independent variables, demonstrated any problem with multicollinearity. A possible explanation is that the student respondents remembered their ACT composite scores accurately, but they were not accurate in reporting the sub-scores. Only in the sub-score variables, which were all nonsignificant anyway, there was some evidence of Heteroscedasticity problem and taking care of this issue would require specifying alternative non-linear models and that would be beyond the scope of this study.

RECOMMENDATIONS FOR FURTHER RESEARCH

It is recommended that more studies similar to this be conducted in the future by relying on documented records of ACT sub-scores such as those available in the student files or by relying on data that can be provided by Morehead State University's office of Institutional Research.

DATA

The following Summary Output is for the main multiple regression model, which includes ACT composite score, ACT sub-scores, and high school GPA as the predictors. The r-square value for this model is .34, which is in line with reports from other literature.

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.5837					
R Square	0.3407					
Adjusted R Square	0.3060					
Standard Error	0.4223					
Observations	121					
ANOVA						
		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression		6	10.508	1.751	9.818	1.03426E-08
Residual		114	20.334	0.178		
Total		120	30.841			
		<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept		0.8521	0.3469	2.4560	0.0156	
Composite ACT Score		0.0706	0.0212	3.3362	0.0011	
ACT English Subscore		-0.0159	0.0140	-1.1333	0.2594	
ACT Math Subscore		-0.0025	0.0099	-0.2508	0.8024	
ACT Reading Subscore		0.0078	0.0121	0.6435	0.5212	
ACT Science Subscore		0.0013	0.0018	0.7480	0.4560	
HS Cumulative GPA		0.2599	0.0885	2.9355	0.0040	

The following table is the correlation matrix for the data set.

	College Cumulative GPA (Y)	Composite ACT Score	ACT English	ACT Math	ACT Reading	ACT Science	HS Cumulative GPA
College Cumulative GPA (Y)	1						
Composite ACT Score	0.52	1.00					
ACT English	0.33	0.76	1.00				
ACT Math	0.37	0.64	0.37	1.00			
ACT Reading	0.38	0.71	0.76	0.31	1.00		
ACT Science	0.07	-0.01	-0.05	0.09	0.06	1.00	
HS Cumulative GPA	0.37	0.29	0.15	0.34	0.15	0.04	1

