

Uncovering the Path to College Performance:
Race, Academic Achievements and Motivation

Holly Smith

University of Nebraska- Lincoln

Abstract

What student characteristics are required for academic and all around success in college? Currently, high school GPA is the single largest determiner of college admission and predicting student success; this singular emphasis has been associated with a common over prediction of success and warrants investigation into the variation. There are a range of internal and external factors examined here that are shown to influence individual college performance outcomes. It is hypothesized that SES, self-concept, reading, writing, math scores, locus of control and educational motivation will all directly contribute to college performance; while self-concept, SES, and reading, writing and math scores will also have indirect contributions by way of path analysis. A wide distribution of high school student's reported. All significant pathways from the full model remained significant in the trimmed model, performing statistically as well as the original full hypothesized model. High school reading, writing and math scores were the largest contributors to predicting variation in level of college performance. Current collegiate admission emphasis on high school standardized test performance is supported.

Uncovering the Path to College Performance: *Race, Academic Achievements and Motivation*

What student characteristics are required for academic and all around success in college? Here we examine a range of internal and external factors that can vary between individuals in order to determine what may directly influence college performance, indirectly influence performance, and what may not affect performance at all. Currently, the largest weighed contributor to college admission and predicting student success is high school GPA. This singular emphasis has been associated with a common over prediction of success and warrants investigating other factors that may account for more of the variation seen in college student performance.

A designation of successful performance in college is comprised of not only GPA, but cognitive factors of psychological wellbeing as well. First generation students, most commonly those considered minorities and of low socioeconomic status (SES), report the strongest achievement-related educational motivations for attending college (Bui, 2002). However, they also report significantly more negative psychological and performance outcomes in college compared to their multigenerational, higher SES counterparts (Aspelmeier et al., 2012). There seems to be an all too apparent disconnect between performance and the students reported level of educational motivation. All too often the trends show minority, low SES populations underperforming their peers. They tend to score lower on pre-college assessments such as the ACT, have different motivations for achieving a college education (helping their family and gaining personal respect), and a more negative self-concept of their preparedness and ability to succeed (Aspelmeier et al., 2012). It is worthwhile to mention that GPA performance outcomes have repeatedly

shown small effect sizes and contribute to a minimal amount of variance compared to what is accounted for by the variety of social and emotional effects one experiences during the college transition (Aspelmeier et al., 2012; Billson and Terry, 1982).

An additional cognitive variable thought to directly impact college performance is the degree of an individual's internal or external locus of control attributions. Higher reported internal locus of control is commonly a predictor of better college adjustment and higher GPA, while external locus of control generally associates with poorer adjustment and lower reported GPA (Aspelmeier et al., 2012). However, it is warranted to mention these GPA, locus of control associations have shown both weak predictions (Bui, 2002) and contrary non-significant results for academic achievement influence (Lavender, 2006).

In recent studies of multidimensional influences on college performance, high performance in high school has shown prediction of higher rates of academic success in college (Sawyer, 2013). Specifically, cumulative ACT score, an average of reading, math, writing and science scores, is a more reliable predictor of college student success than cumulative high school GPA (Sawyer, 2013). Cumulatively, these test scores significantly predict level of college performance, but the correlation strength tends to increase as the individuals first year GPA increases. Here we examine psychological well being and demographic variables, in addition to performance data, in order to possibly uncover this discrepancy in relationship strength.

A positive self-concept has shown strong associations with better college adjustment and a modest association with higher self-reported GPA (Aspelmeier et al., 2012). Gender-specific biases in college performance are shown to effect outcomes in

studies that use self-reported data. Succumbing to social pressures of perceived competency, females in lower performing status tend to magnify their performance response. The influence of response bias between prior performance levels, analyzed here as reading, writing and math scores, leaves room for caution when examining gender differences as a possible direct contributor to performance variation (Caskie, Sutton & Eckhardt, 2014).

This trend data may signal a more complex relationship between the variables of interest. Here we use a method of path analysis to determine the significant indirect and direct variables contributing to variation in college performance rates. It is hypothesized that SES, self-concept, reading, writing, math scores, locus of control and educational motivation will all directly contribute to college performance; while self-concept, SES, and reading, writing and math scores will also have indirect contributions.

Methods

Participants

Data were collected from students at a traditional high school (N=200) composed of 97 males (48.5%) and 68 Caucasians (34%) with a mean age of 19.3 years old. Socioeconomic status of the population was represented as low (coded as 1), medium (coded as 2), and high (coded as 3). The low socioeconomic status contained 64 students (32%), the medium group contained 88 students (44%), and 48 students (24%) were in the high range. Ethnicity was grouped into Caucasians and Minorities, with minority including Black, Latino and Asian participants. All other examined variables were quantitative.

Materials

Self-report questionnaires were completed, including response scales for gauging self-concept, socioeconomic status, locus of control, educational motivation and college performance. Specific demographics and high school test scores (reading, writing and math) were obtained from school records.

Procedure

Randomly selected students at a large Midwestern University were asked to meet with the researcher to complete the survey questionnaire. Data analysis was done on SPSS software using Path Analysis procedure.

Results

A series of regression analyses were run to examine the variables associated with direct and indirect relationships to college performance including socio-economic status, locus of control, gender, ethnicity, self-concept, educational motivation, and high school reading, writing and math scores. Refer to Table 1 for descriptive statistics. Figure 1 shows the full model with the regression weights and residual error. The full model accounted for 62.7% of the variance in college performance, with ethnicity, educational motivation, and high school reading, writing and math scores having significant direct effects with reading score specifically having the major contribution. Socioeconomic status had a significant indirect effect on college performance via both reading and

writing scores, while self-concept and writing score had significant indirect effects on college performance via educational motivation.

The hypothesized model, see Figure 2, accounted for 58.8% of the variance in college performance. As hypothesized, educational motivation and reading, writing and math scores all had significant direct effects on college performance with reading score having the largest contribution. Also as hypothesized, there was a significant indirect effect of self-concept and writing score via educational motivation as well as a significant indirect effect of socioeconomic status via reading, writing and math scores. Contrary to the hypothesis, locus of control, SES and self-concept were not significant direct predictors of variation in college performance. This model did not perform as well as the full model, $Q=0.817$, $W=36.965$, $p=0.003$.

The fit of a trimmed model was also tested, which includes only the significant paths from the full model. The trimmed model, see Figure 3, accounted for 62% of the variance in college performance. All significant pathways from the full model remained significant after removing non-significant pathways and the trimmed model performed as well as the full model, $Q=0.894$, $W=19.705$, $p=0.762$.

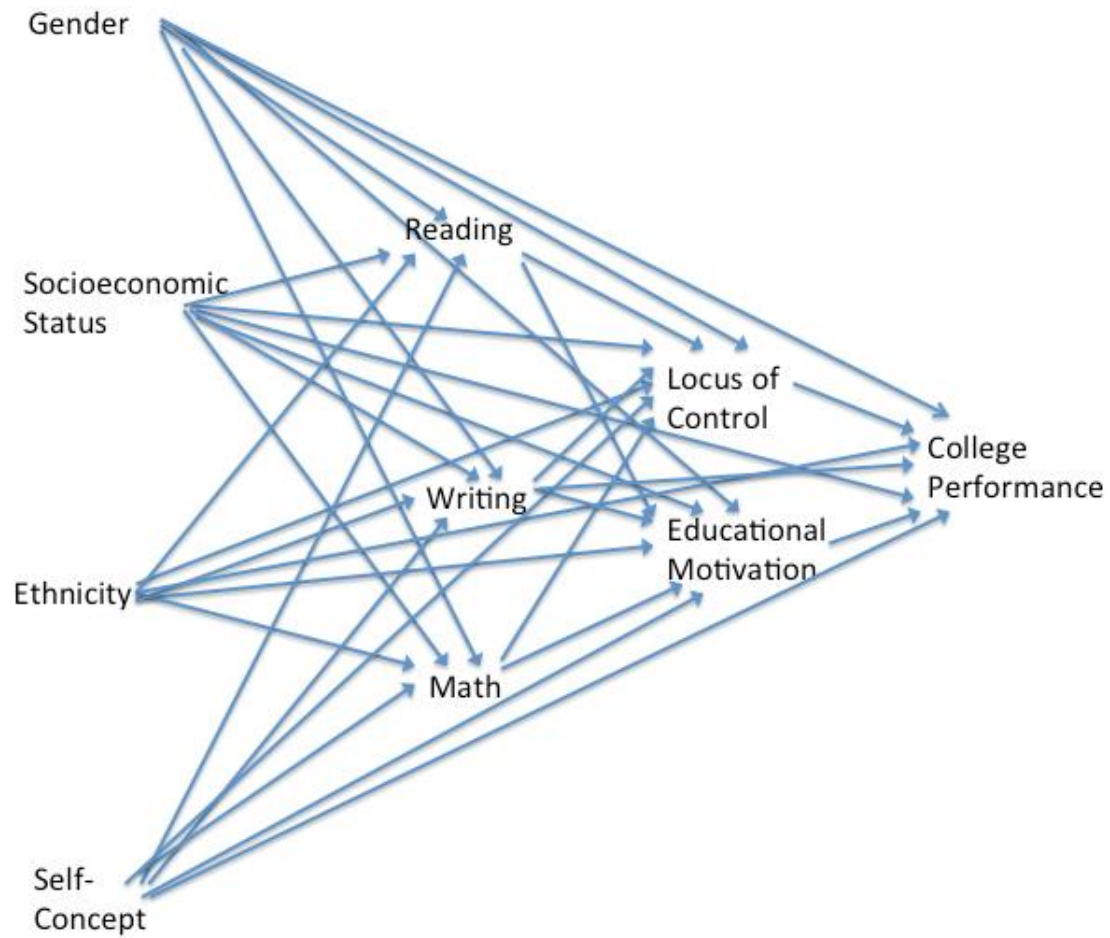


Figure 1. A visual representation of the full model of the possible pathway effects on college performance.

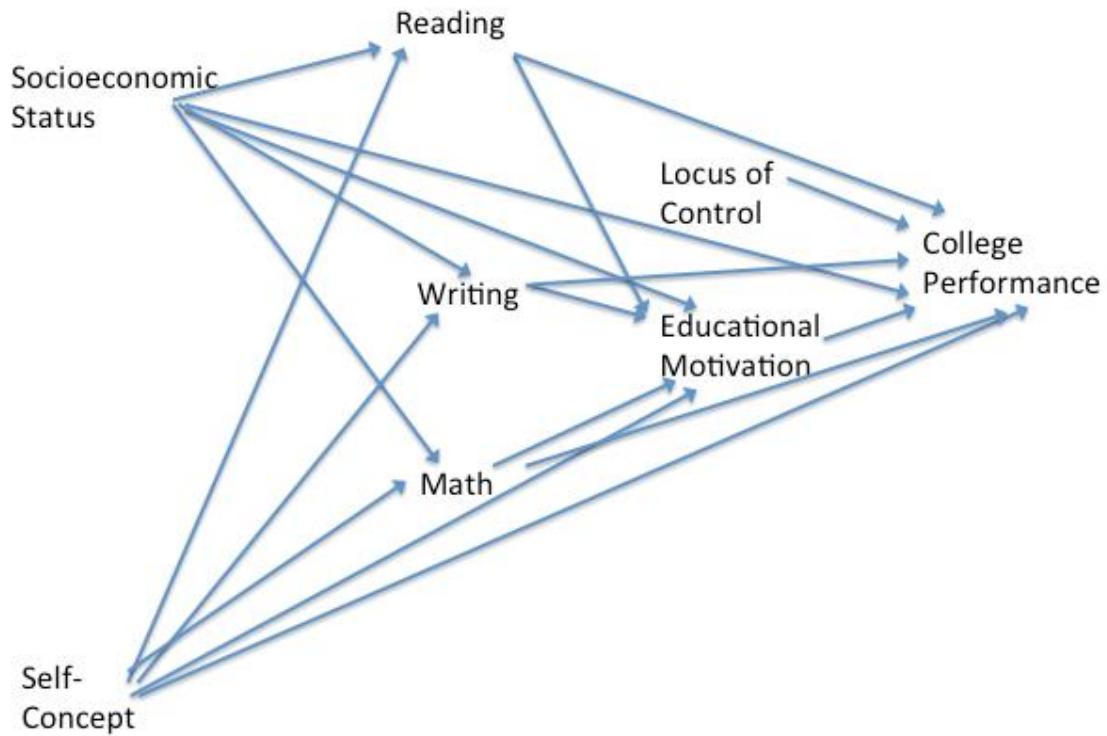


Figure 2. Hypothesized model of the probable pathway effects on college performance.

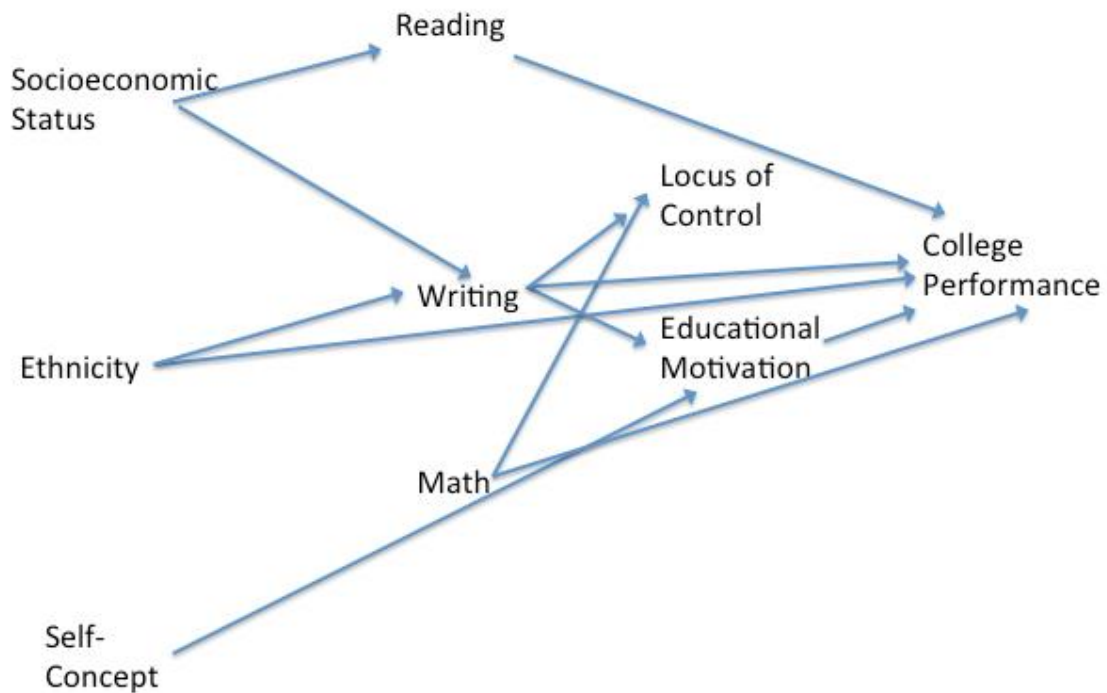


Figure 3. Trimmed model of all significant effects on college performance.

Discussion

The results from these analyses provided support for certain portions of the research hypothesis. In line with previous literature, all variables in the model displayed a significant correlation to the criterion of college performance. The predictive utility of the hypothesized model compared to the full model was not supported, showing significant differences between full and hypothesized R^2 values. However, the trimmed model of all significant predictors from the full model did show statistically equivalent predictive utility in comparison. As seen in both the full and trimmed models, high school reading, writing and math scores are the largest contributors to predicting variations in level of college performance. This result supports current collegiate admission emphasis on high school standardized test performance.

Socioeconomic status was significantly related to variations in reading and writing test scores, which were both direct predictors of an individual's level of college performance. Although socioeconomic status did not significantly contribute directly, it can be seen that it influences the amount of exposure one has to sufficient reading and writing practice during development. This lack of preparedness then reflects on both dimensions of college performance outcomes.

Ethnicity significantly related to writing score and overall college performance directly. Caucasian students seem better prepared for effective writing and seem to not have the psychological burden of minority status impacting their ability to successfully perform in a college setting.

Self-concept and writing score indirectly contribute to college performance variation by way of level of educational motivation. Trends show that minority, low SES

individuals have higher educational motivation but those predictors do not align with performance. Lower self-concept and lower writing abilities prove detrimental to an individual's level of educational motivation thus negatively impacting their ability to perform well in college.

Lastly, high school reading, writing and math scores display direct contributions to the academic side of college performance, most likely because of standardized course grading protocols. Their indirect contributions seen in educational motivation show the impact that psychological wellbeing can have on one's ability to perform well. More detailed feedback on the positive and negative aspects of an individual's performance may help to combat such negative influences on their wellbeing.

Future research with path analysis is recommended to further understand how academic and psychological factors interconnect to influence a student's level of college performance. Operationalization of variables provides one limitation of this study. Results warrant investigation of additional cognitive variables in order to uncover more of the variance in performance.

References

- Aspelmeier, J. E., Love, M. M., McGill, L. A., Elliott, A. N., & Pierce, T. W. (2012). Self-esteem, locus of control, college adjustment, and GPA among first- and continuing-generation students: A moderator model of generational status. *Research In Higher Education*, 53(7), 755-781. doi:10.1007/s11162-011-9252-1
- Billson, J. M., & Terry, M. E. (1982). In search of the silken purse: Factors in attrition among first-generation students. *College and University*, 58, 57–75.
- Bui, K. (2002). First-generation college students at a four-year university: Background characteristics, reasons for pursuing higher education, and first-year experiences. *College Student Journal*, 36, 3–11.
- Caskie, G. L., Sutton, M. C., & Eckhardt, A. G. (2014). Accuracy of self-reported college GPA: Gender-moderated differences by achievement level and academic self-efficacy. *Journal Of College Student Development*, 55(4), 385-390. doi:10.1353/csd.2014.0038
- Lavender, J. S. (2006). The relationship between locus of control orientation and academic success in college. *Dissertation Abstracts International Section A*, 67, 60.
- Sawyer, R. (2013). Beyond Correlations: Usefulness of High School GPA and Test Scores in Making College Admissions Decisions. *Applied Measurement in Education*, 26(2), 89-112. doi:10.1080/08957347.2013.765433