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"My High School Is Better Than Your High School":

High Schools' Characteristics as Predictors of College GPA, Worry, and Confidence

Peter Swerdzewski

Dena Pastor

James Madison University

Abstract

Hierarchical Linear Models were used to examine if college students from various high schools differed from one another in college GPA and affective measures of worry and self confidence in college. The extent to which variation could be explained by high schools' characteristics, such as each school's location and the number of AP classes offered at each school, was also examined. Taken together, the dependent variables evaluated in this study provide little utility for a policymaker who is interested in using the specific high school a student attends or the characteristics of that high school to predict the student's college GPA, how the student worries and what the student worries about in college, and the student's confidence to engage in classroom, roommate, and social situations typical of the college experience. The study provides evidence that once a student is selected for and enrolls in college his or her high school experience has little bearing on success in college.

"My High School Is Better Than Your High School":
High Schools' Characteristics as Predictors of College GPA, Worry, and Confidence

College faculty, staff, and administrators are in the business of changing lives. The lives that they are changing are those of the 17.3 million students who are enrolled at the nation's postsecondary institutions (National Center for Education Statistics, U.S. Department of Education, 2006), and over fifty years of research indicates that they are successful in their endeavors: students who attend college leave more educated and better prepared to engage in life tasks than when they entered college (Pascarella & Terenzini, 1991). Through honors colleges, residence halls, university unions, and campus clubs, the professionals who work at the 5,000+ colleges and universities in the United States seek to create environments that foster cognitive and affective growth and development (Evans, Forney, & Guido-DiBrito, 1998). Increasingly, college and university staff members are searching for new ways to identify those students who have already matriculated at a university and would be the most ideal recipients of academic-preparatory and developmental programming offered by the university. This search has brought college educators to—ironically—high schools (for a discussion of the impact of high school attendance on college, see Astin, 1968). If, for example, postsecondary professionals are better able to determine which students are most in need of a study skills intervention, supplementary assistance from the financial aid office, or a contact from the campus counseling center, those students who benefit from this targeted programming will likely fare better during their time in college.

Purpose of the Study

University administrators are increasingly facing a paradox: institution resources should be spent on intentional programming that is designed to change the lives of the institution's

students, yet there is little understanding of how *best* to target limited funds toward the greatest number of students who would benefit from programming. Specifically, a university with an empirically-based strategy for determining which students are most in need of various programming options would certainly be an effective custodian of its limited resources and would consequently be able to make the greatest impact on the lives of its students. In other words, a strategy that allows for the widest identification of students who would benefit from specific programming would save the university in unnecessary expenditures—analogous to the old adage "casting the widest net to catch the most fish". Such a strategy could include the identification of high schools and high school characteristics that relate to various student characteristics of interest to a university staff. This study seeks to determine which high schools and high school characteristics best predict various measured attributes of a college student population. Using Astin's (1973) conceptual framework, three important outcomes were identified (one cognitive, one psychosocial, and one behavioral) that should theoretically and empirically relate to the specific high school a given student attends and the characteristics of that high school. Development of a model to illustrate how the high school a student attends relates to the cognitive, psychosocial, and behavioral characteristics of the student once he or she enters college may help postsecondary educators more purposefully allocate scarce programming resources.

Research question one: Do high school characteristics and the specific high school a student attends predict a student's college Grade Point Average (GPA)? In other words, can colleges use high school information to more intentionally target precollege and transitional programming to assist students with academic issues?

Research question two: Do high school characteristics and the specific high school a student attends predict how a student worries and what a student worries about in college? In other words, can colleges use high school information to more intentionally target precollege and transitional programming to assist students with the stresses of college life?

Research question three: Do high school characteristics and the specific high school a student attends predict the confidence that a student has to engage in the academic, roommate-related, and social tasks indicative of college? In other words, can colleges use high school information to more intentionally target precollege and transitional programming to improve students' confidence in attending college?

Method

For the first research question, the cumulative GPA for all students was obtained from all full-time undergraduate students (N = 14,890) in the spring of 2007 at a medium-sized mid-Atlantic university. This data was then combined with the College Board's SAT Questionnaire, a series of scholastic and demographic questions that students complete during each SAT administration. Although the majority of these questions relate to the individual student (e.g., questions about involvement in high school activities, questions about the types of colleges in which students were interested in attending at the time they took the SAT), the questionnaire reports sent to colleges include a series of items that are specific to the high school each student attended, which were used as predictors in this study of college GPA. Listwise deletion was employed to create a dataset that had no missing student GPAs (cumulative GPAs were acquired from the university student information system) or high school characteristics (as provided by the College Board to the university). In total, 10,219 students from 1,540 different high schools were involved in the analysis to answer research question one.

For research question two, which dealt with whether or not specific high schools and general high school characteristics could predict what students worry about and how they worry, and research question three, which dealt with whether or not specific high schools and general high school characteristics could predict students' confidence in their abilities to engage in college-related tasks, data was collected from a random sample of all entering first-year students at the same mid-sized mid-Atlantic university. As with research question one, this data was combined with the College Board's SAT questionnaire data to obtain the specific information about the high schools that students attended. In total, 1,112 students from 521 different high schools were involved in the analyses to answer research questions two and three.

An HLM Approach to the Analysis

Given the nesting of students within high schools, a simple regression of GPA, worry, and confidence on high schools and high school characteristics would have violated the assumption of independence inherent to traditional regression procedures. To accommodate in the model the dependence among students nested within the same high school, a hierarchical linear modeling (HLM) technique was employed (cf. Raudenbush & Bryk, 2002). HLM, like traditional linear regression, allows a researcher to predict a criterion variable from a predictor or series of predictors. Unlike traditional linear regression, the HLM technique can accommodate various levels of data that are nested within one another. In the case of this research project in which students are conceived as nested within high schools, the students are known as "level one" of the analysis and high schools are known as "level two" of the analysis. Our specific HLM model (known as "model 1") is as follows:

$$
\begin{aligned}
Y_{ij} &= \beta_{0j} + r_{ij} \\
\beta_{0j} &= \gamma_{00} + \\
&\quad \gamma_{01}(\textit{HS Type D1}) + \gamma_{02}(\textit{HS Type D2}) + \\
&\quad \gamma_{03}(\textit{Percent of Seniors Attending College}) + \\
&\quad \gamma_{04}(\textit{Location D1}) + \gamma_{05}(\textit{Location D2}) + \gamma_{06}(\textit{Location D3}) + \gamma_{07}(\textit{Location D4}) + \\
&\quad \gamma_{08}(\textit{Number of AP Classes Offered at School}) + \\
&\quad u_{ij} \qquad (1)
\end{aligned}
$$

where Y_{ij} is the criterion variable score for student *i* within high school *j*, β_{0j} represents the average criterion variable for high school *j*, γ_{01} through γ_{08} represent the coefficients for the level two predictors in the model, r_{ij} represents the level-one error, and u_{ij} represents the level-two error. Prior to fitting this model to the data, bivariate scatterplots of the data were examined for non-linear relationships between the average high school criterion and the high school preditors. An unconditional model was first fit to the data; the model in equation 1 was subsequently fit to the data if there was significant high school to high school variation in the criterion on interest (GPA, worry, college self-efficacy). If necessary, interactions of selected level-two variables were modeled to achieve better fit of the model to the data. All models were estimated using full maximum likelihood and the PROC MIXED procedure in SAS 9.2.

The Criterion Variables: GPA, Worry, and Confidence

GPA. For research question one, the dependent variable was students' cumulative GPA at the time at which the study was conducted. Although there is great debate about the use of GPA as a measure of cognitive ability (cf. Lei, Bassiri, & Schultz, 2001), GPA is nonetheless the most common index of students' academic abilities in college (Bridgeman, McCamley-Jenkins, & Ervin, 2000; Bridgeman, Pollack, & Burton, 2004; Burton & Ramist, 2001; Camara & Echternacht, 2000; Kobrin & Michel, 2006; Kuncel, Hezlett, & Ones, 2001). The GPA scores used in this study follow the traditional weighted four-point grading scale common in North

America, which ranges from 0.0 to 4.0 and places greater weight on courses with greater seat-time as measured by the Carnegie Unit.

Worry. The purpose of research question two was to determine how specific high schools as well as general high school characteristics influence the ways in which students worry and what they worry about. The Student Worry Questionnaire-30 (SWQ; Osman et al., 2001) was employed for this purpose, as it is among the best instruments for the measurement of the process of worry as well as the content of worry (Kroll, Johnson, Egan, Carey, & Erickson, 2002). The strength of the SWQ is that it answers the call from researchers (cf. Davey, Hampton, Farrell, & Davidson, 1992; Davey, 1993) for a way to measure worry among traditional (18-22 year-old) college students using a multidimensional framework. The instrument is composed of six separate scales: (1) Financial-Related Concerns (FRC), (2) Social Adequacy Concerns (SAC), (3) Concerns for Significant Others' Well-Being (SOW), (4) Academic Concerns (AC), (5) Worrisome Thinking (WT), and (6) Generalized Anxiety Disorder Symptoms (GAD). The first four subscales measure the content of students' worries, whereas the last two subscales measure the process of worry, or the ways in which students worry (Osman et al., 2001). Each subscale is composed of five items that each present a statement in which students are asked to indicate how "characteristic" the statement is of them. Each item is rated by the student on a one-to-five Likert-type scale, with one representing "*Almost Never* characteristic of me" and five representing "*Almost Always* characteristic of me." High subscale scores represent higher levels of worry. There is evidence that the instrument has acceptable psychometric properties when scored as six separate subscales, although evidence does not support a single total score across the subscales (Swerdzewski, 2006). To answer research

question two, six models were fit to the data, one for each of the six subscale scores as the dependent variable.

Confidence. The purpose of research question three was to determine how specific high schools as well as general high school characteristics influence the confidence that students have to engage in the tasks tantamount to being in college. Given the task-specific nature of self-efficacy measures (Bandura, 2005), an instrument was employed that focuses directly on the experiences common to traditional college students: The College Self-Efficacy Inventory (CSEI, Solberg, O'Brien, Villareal, & Kennel, 1993; Solberg et al., 1998). Based on Bandura's social cognitive theory (Bandura, 1977; Bandura, 1986; Pajares, 1996), the CSEI evaluates students' confidence in three specific areas: (1) Course Self-Efficacy, (2) Roommate Self-Efficacy, and (3) Social Self-Efficacy. There is some debate about the most correct scoring method for the instrument, so this study modified which items contribute to the Social Self-Efficacy subscale score based on findings from recent psychometric research on the instrument (C. L. Barry, personal communication, April 25, 2007). For this analysis, seven items were scored as part of the Course Self-Efficacy subscale, four as part of the Roommate Self-Efficacy scale, and four as part of the Social Self-Efficacy scale. Each item presented a task (e.g., "Do well on your exams", which is an item on the Course Self-Efficacy subscale), and students were asked to indicate using a 10-point Likert-type scale ranging from 1 ("Not at all Confident") to 10 ("Extremely Confident") the confidence with which they could successfully complete the task. Higher subscale scores represent high levels of confidence. To answer research question three, three models were fit to the data, one for each of the three subscale scores as the dependent variable.

Predictors: High Schools and High School Characteristics

When a student takes the SAT, he or she must express which colleges are to receive his or her test scores. As a service to colleges and universities who participate in the College Entrance Examination Program (CEEP; e.g., those colleges who use the SAT for admissions decisions), the College Board provides data on the high school attended by each student who sends scores to the college. For this analysis, the specific high school that each student attended was used as a nesting variable in the hierarchical model, and six high school characteristics were used as predictors of the various dependent variables noted above (all data that was derived from the College Board/SAT questionnaire). The six predictors established a priori were (1) the type of high school (public, private independent, or private religious), (2) the percent of seniors from the high school who traditionally attend a four-year college (a ten-level variable ranging from "Less than 10%" to "90% of more"), (3) the location of the high school (large city, medium-sized city, small city or town, suburban, or rural), (4) the number of AP courses offered at the high school, (5) the number of students in the high school's senior class (a six-level variable ranging from "Fewer than 100" to "1000 or more"), (6) and whether or not the high school offers honors courses. Through preliminary analyses, it was found that the data for relatively few high schools had the number of students in the school's senior class listed, so this variable was dropped from the analysis. Preliminary analyses also found that very few high schools in the study did *not* offer honors courses, and these schools were all small, private, independent institutions, so this variable was also dropped from the analysis given the little additional information it would have provided.

Due to modeling considerations inherent to HLM (as well as traditional regression), categorical variables (high school type, high school location) were dummy-coded and ordinal variables were coded with a value of zero representing the lowest level of the predictor of

interest (e.g., zero represents “less than 10%” for the size of the senior class attending college). The implication of these modeling decisions is that all schools are compared to a reference group that, for the analyses presented below, is defined as public schools in large cities that offer no AP courses and have less than 10% of the school’s graduating seniors students attending college. Unless otherwise noted below, all statistical and practical comparisons are made to this reference group.

Results and Discussion

Question 1: Do High Schools And High School Characteristics Predict Students’ College GPA?

The unconditional model (a model without predictors) was fit to the data (see Table 1 for parameter estimates for models involving GPA and other criterion variables). While attempting to estimate the model using SAS 9.2, the procedure was unable to determine the between-school variance due to the trivial difference among schools on the criterion (i.e., the G matrix was not positive definite). The between-school variance (τ_{00}) is consequently essentially zero, so there is evidence that the specific high school a student attends does *not* predict a student’s GPA. One may also interpret this finding to indicate that there are no differences among high schools in predicting students’ college GPAs. Running model 1 (with high school predictors) was consequently not necessary given the lack of variance among high schools. Given the inability of the model to estimate a variance for the between-school differences on the criterion, evidence from this study suggests that high schools and high school characteristics do not predict students’ college GPA.

Table 1

Estimates for Intercept Only Model for All Dependent Variables

Scale	Subscale	ICC*	τ_{00}	σ^2	Deviance	γ_{00}	SE(γ_{00})	*t (df)***
GPA	(cumulative)	-	0.00	0.2451	14632.3	3.0040	0.0049	613.35
Worry	FRC	0.0733	1.6635	21.0248	6619.3	11.2296	0.1563	71.87
	SAC	0.0614	1.1628	17.7889	6421.4	14.3081	0.1412	101.34
	SOW	0.0220	0.6093	26.8723	6839.5	12.7125	0.1625	78.22
	AC	0.0017	0.02886	17.0528	6311.6	16.9870	0.1243	136.67
	WST	-	0.00	22.6685	6658.1	13.4827	0.1513	89.13
	GAD	-	0.00	19.8860	6480.6	14.2662	0.1337	106.68
CSEI	Classroom	0.0221	2.1232	93.8762	8230.4	50.4923	0.3037	166.23
	Roommate	0.0043	0.1098	25.3056	6753.4	33.1588	0.1523	217.77
	Social	-	0.00	40.1322	7261.4	29.8561	0.1900	157.16

* ICCs not computed if $\tau_{00} = 0.00$

** Degrees of freedom for GPA = 1539; degrees of freedom for Worry and CSEI subscales = 520. All γ_{00} values in table are significant at the $p < 0.001$ level

Question 2: Do High Schools And High School Characteristics Predict How Students Worry And What Students Worry About?

The unconditional model was fit to the data, and variance among high schools on the criterion was found. The hierarchical model (model 1) was subsequently fit to the data with a student's high school as the level-two grouping variable, the four high school characteristics as predictors, and the six subscales of the SWQ as the criterion.

For the Financial Related Concerns (FRC) subscale, approximately 7.33% of the variance in FRC scores was due to students' nesting within high schools. The plausible range of high school financial-related worry values is 8.7 to 13.76, indicating that high schools vary from low to moderate levels of worry. This finding is interesting and not entirely surprising given that high schools tend to be somewhat homogeneous, yet different from one another in terms of the socioeconomic statuses of the students who attend a given high school. A statistical test to determine if the between-school variance was significantly different than zero similarly provides evidence that the school a student attends can predict the degree to which the student worries about finances once the student is in college (H_0: $\tau_{00} = 0$, $\chi^2_1 = 9.4$, $p = 0.002$). When the full model including high school characteristics was fitted to the data (see Table 2 for parameter estimates), the variance in true school means reduced by 6.5% over a model without school-level predictors, indicating that the school level predictors account for 6.5% of the level-two variance, although none of the predictors were statistical significant on their own. These findings provide evidence for using HLM to regress students' levels of financial-related concerns on the high schools the students attended prior to enrolling in college.

Table 2

Parameter Estimates for FRC Regressed on High Schools and High School Characteristics

Parameter for Model*	Estimate	*SE*	*df*	*t*-value	*p*
τ_{00} (between school variance)	1.5629	-	-	-	-
σ^2 (within school variance)	20.9993	-	-	-	-
γ_{00} (Intercept/Reference Group)	11.0355	0.6348	518	17.39	<0.0001
γ_{01} (private independent)	-0.3719	0.7525	585	-0.49	0.6214
γ_{02} (private religious)	0.1811	0.5456	585	0.33	0.7400

γ_{03} (% seniors attending college)	0.0307	0.0488	585	0.63	0.5294
γ_{04} (medium-sized city)	-0.2772	0.7078	585	-0.39	0.6954
γ_{05} (small city or town)	-0.0325	0.6401	585	-0.05	0.9595
γ_{06} (suburban)	0.4599	0.5300	585	0.87	0.3860
γ_{07} (rural)	0.4897	0.6267	585	0.78	0.4349
γ_{08} (# of AP courses offered)	-0.0242	0.0205	585	-1.18	0.2382

* Deviance (*-2LL*): 6613.9

The second subscale on the SWQ for which the model was fit to the data was the Social Adequacy Concerns (SAC) subscale, which measures students' social worries related to the college experience (see Table 3 for parameter estimates). As with the FRC subscale, a respectable amount of variance in the criterion (6.14%) was due to the nesting of students within high schools; however, unlike the FRC subscale, the reason for this phenomenon is less clear. While a student's worries about finances is logically related to the high school the student attended due to the traditional placement of high schools within socioeconomic pockets, one would not normally think that some high schools or high school characteristics would engender more or less social adequacy among students than other high schools or high school characteristics. Although a statistical test of the between-school variance indicated that the variance between high schools is non-significant (H_0: $\tau_{00} = 0$, $\chi^2_1 = 3.6$, $p = 0.058$), the Equation 1 model was fit to the data due to the meaningful amount of variance between schools. After including high school predictors, no between high school variance in SAC remained; the predictors fully explained high school-to-high school variance in SAC. The parameter estimates for the high school predictor model are shown in Table 3. Although the predictors as a set

explain fully the variance among high school in SAC, no one predictor by itself was statistically significant.

Table 3

Parameter Estimates for SAC Regressed on High Schools and High School Characteristics

Parameter for Model*	Estimate	*SE*	*df*	*t*-value	*p*
τ_{00} (between school variance)	1.0346	-	-	-	-
σ^2 (within school variance)	17.7889	-	-	-	-
γ_{00} (Intercept/Reference Group)	13.2595	0.5720	518	23.18	<0.0001
γ_{01} (private independent)	-0.0434	0.6830	585	-0.06	0.9493
γ_{02} (private religious)	0.0560	0.4950	585	0.11	0.9100
γ_{03} (% seniors attending college)	0.0195	0.0437	585	0.45	0.6556
γ_{04} (medium-sized city)	1.0895	0.6369	585	1.71	0.0877
γ_{05} (small city or town)	0.2570	0.5767	585	0.45	0.6560
γ_{06} (suburban)	0.6040	0.4761	585	1.27	0.2051
γ_{07} (rural)	0.9004	0.5647	585	1.59	0.1114
γ_{08} (# of AP courses offered)	0.0287	0.0186	585	1.54	0.1237

* Deviance (*-2LL*): 6414.9

The third subscale of the SWQ measures students' concerns about the well-being of their significant others (SOW). As with the previous two subscales, the model was fit to the data with students' SOW scores as the criterion, and parameters were estimated. Only about 2.20% of the variance in SOW was due to the nesting of students within high schools, and the school-to-school variance in SOW was not significantly different than zero (H_0: $\tau_{00} = 0$, $\chi^2_1 = 0.8$, $p = 0.371$), indicating that a model that allows for the impact of high school on students' concerns

for significant others to vary from school to school does not fit significantly better than a model that does allow for difference among high schools on this variable. Evidence from this analysis infers that hierarchically modeling the nesting of students within high schools provides little utility when the criterion of interest is students' concerns for their significant others' well-being.

The fourth of the four subscales of the SWQ that is designed to measure the content of students' worries (e.g., what they worry about) is the Academic Concerns (AC) subscale. This subscale is particularly prescient to the purpose of this research study because of the inherently academic missions of colleges and universities: if high schools or high school characteristics are found to predict which students worry most about academic concerns, postsecondary institutions can develop targeted interventions to directly address these concerns. Recognizing the respectable percentages of variance in students' financial-related and social adequacy concerns explained by students' nesting within high schools, one would similarly posit that students' nesting within various high schools and the characteristics of these high schools would provide some predictive utility for students' academic concerns. As with previous subscales of the SWQ, the unconditional model was first fit to the data with students' AC scores as the criterion. Interestingly and surprisingly, only 0.17% of the variance in students' academic concerns is attributable to their attendance at specific high schools. Given the lack of school-to-school variation on the criterion, it was not necessary to fit model 1 (the model with high school predictors) to the data. There is little evidence from this analysis to provide support for modeling the relationship between students' levels of academic concern and the high schools the students attended using a hierarchical approach, as the high school a student attends appears to have little predictive utility.

The first of the two process-related subscales of the SWQ addressed in this analysis is the Worrisome Thinking (WST) subscale, which measures the process or ways in which students worry. The unconditional model with WST as the criterion was first fit to the data and it was found that the school-to-school variance in WST is not significantly different than zero (H_0: $\tau_{00} = 0$, $\chi^2_1 = 1.4$, $p = 0.2367$), indicating that the process by which a student worries is not greatly influenced by the high school a student attends. It was again not necessary to fit model 1 to the data because we found no school-to-school differences among high schools on the criterion.

The final subscale on the SWQ measures students' Generalized Anxiety Disorder (GAD) symptoms, which are contributing factors to a diagnosis for Generalized Anxiety Disorder as stipulated in the *DSM-IV* (American Psychiatric Association, American Psychiatric Association, & Task Force on DSM-IV, 2000). Unlike the previous five subscales of the SWQ but similar to the regression of GPA in research question one, the between-school variance (τ_{00}) was so small when the unconditional model with GAD as the criterion was fitted to the data that the estimation procedure could not come to an admissible solution (i.e., the G matrix was not positive definite). The school-to-school variance on the criterion variable is negligible, thus knowing the specific high school (or, by extension, the characteristics of a high school) a student attended provides little insight into knowing the student's GAD subscale score.

Fitting a model with each of the SWQ subscale scores as the criterion to the data analyzed in this study provides mixed results as to the predictive utility of knowing one's high school or high school characteristics when the dependent variable of interest is worry. The evidence suggests that the subscales measuring students' financial and social adequacy concerns may be best modeled using the HLM approach, whereas there is little evidence to suggest that modeling the nesting of students within high schools provides little predictive utility for the

Significant Others' Well-being subscale as well as the Academic Concerns, Worrisome Thinking, and Generalized Anxiety Disorder subscales. Some of the school-level predictors by themselves did explain small, if not trivial quantities of variance in the dependent variables, especially those related to the type of high school as well as the location of the high school. In response to research question two, there is little evidence to support the predictive utility of the hierarchical model for five of the six subscales given that the analyses did not reveal statistical significance and essentially none of the analyses found any practical significance of a material nature. Of the six subscales, the financial related concerns subscale was the only dependent variable on which high schools appear to differ significantly; however the difference among high schools in terms of students' financial related concerns were small, detracting from the value of knowing one's high school to predict a student's financial worries. Furthermore, none of the high school characteristics individually served as significant predictors of the financial related concerns subscale, additionally detracting from the value of knowing one's high school or high school characteristics to predict financial worries.

Question 3: Do High Schools And High School Characteristics Predict The Confidence That Students Have To Engage In The Academic, Roommate-Related, And Social Tasks Indicative Of College?

A hierarchical model was fit to the data with a student's high school as the level-two grouping variable, the four high school characteristics as predictors, and the three subscales of the CSEI as the criterion to determine if high schools and high school characteristics predict students' confidence related to tasks common to the college experience.

The first subscale of the CSEI that was used as a criterion in the unconditional hierarchical model was the Classroom subscale (CSEI-C). For this model, little variance in the

criterion is due to the nesting of students within high schools (2.21%), and the school-to-school variance is not significantly different from zero (H_o: $\tau_{00} = 0$, $\tau_{00} = 2.1232$, $\chi^2_1 = 0.9$, $p = 0.3428$). Overall, there is essentially no school-to-school differences on the criterion and thus little predictive utility to knowing a student's high school and the characteristics of the high school when the outcome of interest is classroom self-efficacy.

The second of the three subscales on the CSEI measures students' confidence in having and being a roommate in a college environment, and is known as the Roommate Self-Efficacy (CSEI-R) subscale. The data were first fit to the unconditional model with CSEI-R as the criterion and parameters were estimated, yielding a solution in which there was little evidence for the hierarchical modeling of CSEI-R and students' nesting within high schools (i.e., the fitting of model 1 to the data). For example, the interclass correlation for the model is only 0.0043, indicating that only 0.43% of the variance in CSEI-R scores is due to students' nesting within high schools.

The final of the three self-efficacy variables examined was the Social Self-Efficacy subscale of the CSEI (CSEI-SocCB). The unconditional model resulted in a non-positive definite matrix due to insubstantial between-school variance (e.g., τ_{00} approached zero). Although out data analysis strategy dictates no further analysis with the social self-efficacy scale, we felt and interesting trend found during data screening warranted further attention. Therefore, a new model that included interaction terms but did not allow for school-to-school variance was fit to the data (see Table 4 for parameter estimates). The only term in the model that was statistically significant was the interaction between private religious schools and schools in medium-sized cities ($t_{1095} = 2.06$, $p < 0.0396$), indicating that those students who attend religious high schools in medium-sized cities (such as Tidewater Virginia or the outskirts of Richmond)

score on average 4.3591 points higher than the reference group on the social self-efficacy subscale (which ranges from 4 to 40) of the CSEI. Other results from this model are not statistically significant but could be termed practically significant, such as the 4+ point higher average score compared to the reference group for student who attended private independent schools in suburban and rural areas. Recognizing the significant findings for the fixed effects in this model, there may be some predictive utility to using this hierarchical model when college social self-efficacy is the outcome variable. This was a post hoc data-driven model that yielded an interesting result that needs to be replicated and further examined in future studies.

Table 4

Parameter Estimates for CSEI-SocCB Regressed on High Schools and High School Characteristics

Parameter for Model*	Estimate	*SE*	*df*	*t*-value	*p*
τ_{00} (between school variance)	N/A**	-	-	-	-
σ^2 (within school variance)	39.4013	-	-	-	-
γ_{00} (Intercept/Reference Group)	30.5538	0.8267	1095	36.96	<0.0001
γ_{01} (private independent)	-0.7236	3.2118	1095	-0.23	0.8218
γ_{02} (private religious)	-1.8782	1.3585	1095	-1.38	0.1683
γ_{03} (% seniors attending college)	0.0192	0.0574	1095	0.33	0.7379
γ_{04} (medium-sized city)	-0.8261	0.9977	1095	-0.83	0.4079
γ_{05} (small city or town)	-0.3475	0.8751	1095	-0.40	0.6914
γ_{06} (suburban)	-0.4161	0.7080	1095	-0.59	0.5568
γ_{07} (rural)	-1.4158	0.8360	1095	-1.69	0.0906

γ_{08} (# of AP courses offered)	-0.0207	0.0267	1095	-0.78	0.4379
γ_{09} (private independent*medium-sized city)	-2.8857	3.9732	1095	-0.73	0.4678
γ_{10} (private independent*small city or town)	0.4122	3.6658	1095	0.11	0.9105
γ_{11} (private independent*suburban)	4.2642	3.7809	1095	1.13	0.2596
γ_{12} (private independent*rural)	4.1313	3.7538	1095	1.10	0.2713
γ_{13} (private religious*medium-sized city)	4.3591	2.1161	1095	2.06	0.0396
γ_{14} (private religious*small city or town)	-0.9068	2.3338	1095	-0.39	0.6977
γ_{15} (private religious*suburban)	2.3924	1.7724	1095	1.35	0.1774
γ_{16} (private religious*rural)	-0.3280	2.6519	1095	-0.12	0.9016

* Deviance (*-2LL*): 7241.0

** The between school variance was not modeled in this analysis (τ_{00} was constrained to zero)

Overall, there is limited evidence to support the utility of using the high school a student attends or the characteristics of his or her high school to predict any of the three aspects of student confidence discussed above (classroom, roommate, and social self-efficacy). Some of the high school characteristics modeled may provide limited benefit in predicting social self-efficacy, particularly those related to a high school's type and location; however, the error surrounding these estimates is relatively large and must be further explored prior to a policymaker using the information to make important policy decisions.

Discussion

Hierarchical models were fit to the data for ten dependent variables (one for GPA, six related to worry, and three related to student confidence). For each criterion, an unconditional model was first fit to the data, followed by a model with no level-one predictors specified and various high school characteristics specified as level-two predictors (referred to as model 1).

Taken together, the models evaluated in this study *seem* to provide little utility for a policymaker who is interested in using the specific high school a student attends or the characteristics of that high school to predict the student's college GPA, how the student worries and what the student worries about in college, and the student's confidence to engage in classroom, roommate, and social situations typical of the college experience.

In respond to research question one, "do high school characteristics and the specific high school a student attends predict a student's GPA?", this study provides evidence that there is little variation in the average GPAs for students from different high schools.

In response to research question two, "do high school characteristics and the specific high school a student attends predict how a student worries and what a student worries about?", there is some evidence that knowing a student's high school may aid in knowing how much he or she worries about financial-related and social adequacy concerns, which could aid policymakers in targeting precollege programming toward specific populations of students who may need additional financial aid assistance and education, or interventions that could alleviate apprehensions about the social situations common to college. Little evidence was found in this study to support school-to-school differences in the degree to which students worry about their academic concerns and their significant others' well-being. Similarly, there is little support for school-to-school differences in "how" students worry (e.g., do they worry all the time? Can they stop worrying?) and the degree to which students suffer from the symptoms of the clinical condition Generalized Anxiety Disorder.

In response to research question three, "do high school characteristics and the specific high school student attends predict the confidence that a student has to engage in the academic, roommate-related, and social tasks indicative of college?", the evidence indicates that knowing a

student's high school and the characteristics of that high school provides little predictive utility with regard to the confidence a student has to engage in the classroom, roommate, and social tasks common to the college environment. Interestingly, knowing which students attended high school in a rural area may help in knowing these student's confidence to engage in academic endeavors, as students in this students who were educated in rural areas scored statistical significantly lower than students in the study's reference group (three points lower on a scale ranging from seven to 70). Again, this finding was post hoc, data driven, and needs to be replicated and further explored in future studies.

Although these findings provide little assistance to a college policymaker who is interested in identifying specific high schools and/or high school characteristics that could benefit from intentional programming to bolster students' cognition, affect, and behavior, this study does have a silver lining: which specific high school a student attends or the characteristics of that high school may have little to do with a student's college GPA, levels of worry, or confidence. The implication of this finding is that students who attend high schools that are anecdotally termed "disadvantaged" by the media or politicians may not be as disadvantages as one may have thought, at least in reference to all other high schools in the United States on the outcome variables evaluated in this study. Likewise, sending a student to an expensive preparatory school may not advantage the student as much as is commonly thought, which provides evidence that high schools do *not* contribute to social inequality with regard to students' college GPAs, levels or worry, or confidence.

This study evaluates the relationship between students' nesting within high schools on college-level outcomes for a single college, so generalization of these results should be made with caution. Other types of postsecondary institutions such as community colleges may yield

dramatically different results due to the qualitatively different student populations who choose to attend these types of intuitions. Another potential threat to the validity of this study is the limited number of outcomes that were modeled as dependent variables. To better understand the impact of a student's attendance at one high school as opposed to another, other criterion must be identified that should theoretically differentiate high schools from one another, and this outcome must be measured and modeled to provide further empirical evidence of the impact that various high schools have (or do not have) on students once they attend college.

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