

# **The Disadvantage of College Bound Friends: A Multi-Level Analysis of Peer Effects on Minority Students' College Application Patterns**

**Steven Elías Alvarado & Ruth López Turley**  
**University of Wisconsin, Madison**

## INTRODUCTION

The impact of peers on educational outcomes has been the focus of research in the social sciences since the groundbreaking Coleman report (1966). In the sociological literature, the Wisconsin model of status attainment was among the first to include peer influence as a predictor of social mobility (Sewell, Haller and Portes 1969; Sewell, Haller and Ohlendorf 1970). More recently, the development of a wide-ranging literature on the concept of social capital has reinvigorated discussions and analyses having to do with the degree to which peers have influence on any number of outcomes – including educational achievement and attainment.

As of late, there has been a turn in the literature on the impact of peers on educational outcomes towards analyzing data from experimental or quasi-experimental design in order to deal with the long-standing issue of selection bias. Researchers have debated whether or not the fact that students pick friends who share common interests renders estimates of peer effects biased. That is, students may ‘select’ or choose to join a social groups for reasons that are associated or correlated with the outcomes of that group. One can readily see that selection bias can pose detrimental impacts on understanding the true effect of peers on educational outcomes.

Further, so called “endogenous effects” – where individuals effect the outcomes of their social group and social groups effect individual outcomes simultaneously – can also render estimates of peer effects biased (Manski 1993). In order to deal with these and other biases due to unobserved heterogeneity, some recent studies have turned to random assignment as a potential remedy (Lyle 2007; Sacerdote 2001; Zimmerman 2003). These studies followed in the footsteps of perhaps the first study that used data from random assignment and found scant evidence for peer effects (Hall and Willerman 1963).

This paper uses data from the first wave of the Texas Higher Education Project (THEOP) in order to analyze the effects of peers at the individual level and at the school level. Undoubtedly, the methodological challenges of using survey research in studies of peer effects or social capital more broadly (Mouw 2006) are still possible here. While random assignment through experimental design is undoubtedly the ‘gold standard’ to which we should all strive as researchers, experiments are expensive and difficult to execute. As it were, we limit our claims of causal analysis in this paper and implement methodological techniques amenable to the questions we ask and the data available for answering that question.

Our research questions, therefore, are; what is the effect of college bound friends on college application patterns? What are the impacts of school-level social capital & racial context on college application patterns? These outcomes have significance for labor market outcomes among the overall U.S. population but have special significance given that we are interested in such outcomes specifically among disadvantaged minorities. We focus on historically

disadvantaged minorities in the United States for whom there exists enough data points to sufficiently analyze and answer these questions (Latinos & Blacks) and compare findings for these groups to Whites. We use a multi-level modeling approach (Raudenbush and Bryk 2002) to adequately answer these questions that inherently involve individual subjects nested within larger social units – students within schools.

As dependent variables, we use a) application to any college, b) application to any selective college, and c) number of colleges applied to. We conceptualize peer effects as a mechanism for social capital and measure it at the student-level by self-reports of number of college bound friends. At the school-level, we measure the impacts of school socioeconomic status (percent of students receiving free & reduced priced lunch and proportion of students with at least one parent with a B.A. or higher) and racial composition. While most studies on peer effects have looked at achievement as an outcome, we believe that it is also important to examine choices in academic decision making.

Theoretically, we focus on peer effects at the transition between high school and college as a reaction to the theory of decreasing influence of social background at later educational transitions (Mare 1980; Mare 1981; Raftery and Hout 1993; Shavit and Blossfeld 1993). Although others have previously critiqued this approach as a tenable description of students' educational attainment (Cameron and Heckman 1998; Lucas 2001), we find it a useful theory to incorporate here given that other than family, social networks seem to contribute most to educational attainment in tandem with individual performance on various measures of achievement.

While we cannot directly control for unobserved heterogeneity and endogenous effects, the multi-level approach we use allows us to disaggregate student effects from school contextual effects. That is, in using a multi-level approach, we improve upon earlier studies that have combined student and school level predictors in single-level models of peer effects (Sacerdote 2001).

Previous research on peer effects has consistently found positive effects, if any, on educational outcomes (Mouw 2006). However, our findings suggest a complete reversal of this logic. We find that having many (four or more) college bound friends actually has a negative effect on applying to any college and on applying to a selective college among Latinos and Blacks. Table \_ shows single level as well as multi-level logistic regression results for our first outcome – applying to college.

At the school-level, we find that as the proportion of students with college educated parents increases, the number of schools Latinos apply to decreases. We find these effects after controlling for a host of student-level and school-level variables. In the following sections of this paper, we present some background on the social capital & peer effects literature, a discussion of the data as well as of the methodological approach we use, and finally a discussion of the results & conclusions based on this analysis.

Table \_: Logistic Regression Results for Effects of Student and School Level Characteristics on Applying to a College/University

	Logit Model <sup>a</sup>		Multi-Level Model <sup>b</sup>		
	Coefficient	S.E.	Coefficient		S.E.
Intercept			-0.573	*	0.242
<i>Student-Level Characteristics</i>					
<i>Race &amp; Ethnicity</i>					
Latino	1.320	*	0.621		0.294
Latino * stay at home very important	0.602	**	0.193		0.092
Latino * immigrant	-0.262		0.277		0.143
Latino*female	-0.347	†	0.192	*	0.103
Latino * college educated parent	-0.119		0.369		0.171
Black	2.173	*	0.977		0.350
Black * female	-0.574	*	0.298	*	0.150
Black * college educated parent	-0.362		0.289		0.200
<i>Peers<sup>c</sup></i>					
1 college bound friend	1.159	†	0.635		0.297
2 or 3 college bound friends	0.707		0.582	**	0.243
>3college bound friends	1.535	**	0.542		0.233
Latino * >3 college bound friends	-1.425	*	0.629	*	0.300
Latino * 2 - 3 college bound friends	-0.715		0.675		0.311
Latino * 1 college bound friend	-0.822		0.761		0.389
Black * >3 college bound friends	-1.409		0.991	***	0.359
Black * 2 - 3 college bound friends	-0.649		1.029	*	0.383
Black * 1 college bound friend	-1.777		1.127	**	0.532
<i>Background</i>					
Parents own home	0.173		0.132	**	0.074
At least 1 college educated parent	0.359	*	0.166	**	0.069
Female	0.455	***	0.143	**	0.079
Immigrant	0.047		0.214	*	0.126
Citizen	0.107		0.123		0.093
Expect college education	0.958	***	0.145	***	0.089
Aspire college education	0.136		0.163	*	0.104
<i>Encouragement<sup>d</sup></i>					
Counselor discouraged college	0.602	†	0.351	*	0.171
Counselor encouraged college	0.309	**	0.117	***	0.062
Teacher discouraged college	-0.227		0.387		0.204
Teacher encouraged college	0.435	***	0.130	***	0.070
Parent discouraged college	0.312		0.448	†	0.199
Parent encouraged college	0.555	**	0.225	***	0.092
<i>College characteristics<sup>e</sup></i>					
Low cost somewhat important	-0.297		0.186		0.069
Low cost very important	-0.463	*	0.210	*	0.078
Financial aid somewhat important	0.228		0.158	***	0.083
Financial aid very important	0.373	*	0.175	***	0.079
Staying at home somewhat important	-0.865	***	0.116	***	0.065
Staying at home very important	-1.037	***	0.140	***	0.099

Table \_: Logistic Regression Results for Effects of Student and School Level Characteristics on Applying to a College/University

	Logit Model <sup>a</sup>		Multi-Level Model <sup>b</sup>	
	Coefficient	S.E.	Coefficient	S.E.
<i>School-Level Characteristics</i>				
Latino * proportion white			-0.295	0.497
Latino * proportion of students with college educated parent(s)			-1.493	1.258
Latino * proportion White * proportion college educated parent			2.099	1.564
Latino * percent on free/reduced priced lunch <sup>f</sup>			-0.067	0.049
Latino * percent college bound			0.035	0.023
Black * proportion White			-0.434	0.629
Black * proportion of students with college educated parent(s)			-5.628 **	1.820
Black * proportion White * proportion college educated parent			4.111 *	2.103
Black * percent on free/reduced priced lunch <sup>f</sup>			0.023	0.055
Black * percent college bound			0.067	0.039

†p<.10, \*p<.05, \*\*p<.01, \*\*\*p<.001

a Model I contains weights using "pweight" command in STATA and represents averaged coefficients and corrected S.E.s using 5 imputed data sets.

b Model II results represent averaged coefficients and corrected S.E.s using 5 imputed data sets using HLM software. All student-level predictors are group-mean centered - except for the predictors for peer effects. All school-level predictors are grand-mean centered. Results shown here are unweighted estimates of fixed effects from a population average model with robust standard errors. They reflect school context impacts modeled on the Level 1 slopes for Latino and Black race/ethnicity. These are random intercepts and slopes models at the school level.

c Reference category is "no college bound friends."

d Reference category is "did not say anything."

e Reference category is "not important."

f Percent on free/reduced priced lunch variable is coded so that successive categories reflect a decrease in the percent of the school population receiving this service.