

Proposal Details

Personal Information

Name	Dr. Mark E Engberg
Informal Name	Mark
Institution / Affiliation	Loyola University Chicago
Unit / Department	Higher Education
Title	Assistant Professor
Preferred Mailing Address	820 N Michigan Ave Lewis Towers, Rm 1140
City	Chicago
Country	United States
State	IL
Zip/Postal Code	60611-2147
Email	mengber@luc.edu
Phone	312-915-7401
Fax	312-915-6660

Financial Representative

Name	Ms. Angelica Vaca
Informal Name	Angie
Institution / Affiliation	Loyola University Chicago
Unit / Department	Research Services
Title	Assistant Director
Preferred Mailing Address	1032 W. Sheridan Road Granada Center, Room 400
City	Chicago
Country	United States
State	IL
Zip/Postal Code	60660
Email	avaca1@luc.edu
Phone	773-508-2480
Fax	773-508-8942

Secondary Investigator

1. Secondary Investigator Information

Name	Dr. Gregory C Wolniak
Informal Name	Greg
Institution / Affiliation	NORC at the University of Chicago
Unit / Department	
Title	Research Scientist
Preferred Mailing Address	55 East monroe Street, 30th Floor
City	Chicago
Country	United States
State	IL
Zip/Postal Code	60603
Email	wolniak-gregory@norc.org
Phone	312-759-2356
Fax	

Project Description I

Title:

Access to Postsecondary Education: The Interrelationships Among High Schools Contexts and Socioeconomic Status

Statement of the research problem and national importance:

Research problem

Despite significant increases in postsecondary attainment over the past thirty years, wide disparities still remain for students in the lowest socioeconomic echelons (NCES, 2007). Researchers examining postsecondary attainment rates for low-income students have generally highlighted individual-level factors (e.g., status attainment, access to human, social, and cultural capital) as the primary determinants of educational attainment, with comparably less attention paid to the situated contexts in which such behavior occurs. Yet, with recent advances in statistical modeling and the availability of large-scale national databases examining educational transitions, new evidence has emerged that places the high school context at the center of our understanding of postsecondary access. The empirical evidence, however, remains at a relatively incipient stage, inviting researchers to further investigate how the high school context directly influences postsecondary attainment as well as how it moderates the relationship between an individual's socioeconomic status and their likelihood of attending a postsecondary institution. Additionally, few researchers have examined how individual-level determinants of postsecondary attainment operate within different high school socioeconomic

contexts, leaving a substantial gap in our understanding of the predictive power of individually-based strategies within different situated contexts. Thus, the primary purpose of the proposed research project is to investigate the interrelationships between individuals and high schools, with a specific emphasis on improving access for lower socioeconomic students.

Importance of research

Our research project is of particular importance given the continued disparities in postsecondary participation among lower socioeconomic students, the long-term consequences of forgoing postsecondary attendance, and the need to incorporate a more holistic approach in studying college access. Today, roughly two out of every three high school graduates enroll in one of approximately 4,000 higher education institutions (Gerald & Hussar, 2002; NCES, 2007). Educational disparities, however, continue to persist across racial and socioeconomic lines, with considerably higher percentages of Black, Hispanic, and low income students forgoing the opportunity to attend a postsecondary institution (NCES, 2007). A recent summary of the second follow-up of the Educational Longitudinal Study (ELS), for instance, found that among first generation students, roughly 47% did not enroll in a postsecondary institution, whereas among families with two advanced degrees, only 13% forgo the opportunity to attend a college or university (NCES, 2008). As a result, high school graduates from lower socioeconomic backgrounds who do not attend college earn approximately three times less than those who go on to earn professional or advanced degrees (Fitzgerald & Delaney, 2002). Thus, research addressing the disparities in educational attainment among lower socioeconomic students is critical in combating the cycle of economic and social stratification in American society.

Despite a considerable amount of research examining postsecondary enrollment and attainment, most studies are based on status attainment models that focus primarily on individual characteristics of students and their families (Engberg & Wolniak, 2009; Hossler, Schmit, & Vesper, 1999). An emerging body of research, however, suggests that the social, informational, educational, and network resources available at a particular high school may structurally determine students' range of college choices and provide opportunities to compensate for deficiencies in family resources (Hill, 2008; Perna & Titus, 2005). Perna and Titus's study, in particular, uncovered a number of school-level effects that influenced postsecondary enrollment above and beyond their individual-level counterparts. There remains a significant gap, however, in our understanding of how the high school context influences both college-going behavior and the efficacy of various policies and interventions geared at enhancing postsecondary attainment for lower socioeconomic students. Our study offers a more holistic approach to studying college access by examining the direct and moderating effects of the high school context and examining the efficacy of individual-level characteristics and resources within different socioeconomic high school contexts.

Timeliness of research

In response to the disproportionate rates of postsecondary attendance and the individual and societal benefits derived from participation, the current administration has called on every American to "commit" to attending at least one year of postsecondary education (Obama, 2009). At the center of this call is the need to better understand the secondary-postsecondary nexus and the structures and organizational norms that are most conducive in enabling students to make the journey from high school to college. Drawing on a nationally representative sample of high school seniors from the Educational Longitudinal Survey (ELS), our results will improve our understanding of postsecondary enrollment by taking into consideration the interdependent relationships among individual socioeconomic backgrounds and their educational contexts for a national cohort of students who are attending a broad array of two- and four-year public and private institutions.

Review the literature and establish a theoretical grounding for the research:

In order to examine the impacts of socioeconomic backgrounds and high school contexts on postsecondary enrollment, we draw from theories and perspectives centered on the notion that an individual's behavior is determined and best understood within the situational context in which the behavior occurred (Bourdieu, 1986; Lin, 2001). Our conceptualization is largely shaped by perspectives that address college access from an individual and organizational perspective (Hossler, et al., 1989; Paulsen, 1990; Perna, 2006).

Theoretical Perspectives

From an economic perspective, human capital theory lends itself to our understanding of postsecondary enrollment by grounding the decision to attend college in the language of productivity-enhancement and investment returns (Becker, 1993; Paulsen, 2001). From a sociological and status attainment perspective, the constructs of cultural and social capital are central to understanding how class status, cultural knowledge, and social networks influence students' postsecondary proclivities (Bills, 2003, Bourdieu, 1986; Coleman, 1988; Lin, 1999). Educational achievement and social ties partially determine the levels of social capital accessible to students, which in turn provides assistance in obtaining additional education and making effective educational choices (Coleman, 1988; Lin, 1999).

Combining elements of economic and sociological perspectives, Massey, Charles, Lundy, and Fisher (2003) proposed a theory of capital deficiency in discussing the role that high schools play in explaining the academic performance gap between minority students and white students. Within this theoretical framework, financial capital exists alongside other forms of capital (i.e., human, social, and cultural), such that families with more financial resources will be able to "purchase academic inputs of higher quality" (p.5), including better schools (Massey et al., 2003). St. John, Asker, and Hu's (2001) "Student Choice Construct" similarly identifies

students' aspirations, academic development, and educational choices within a situated context comprised of parents' education level and occupation, other family background characteristics, and the K-12 educational setting. The high school context is a major component of students' college preparation that influences both educational choices and academic outcomes.

Evidence on High School Contexts and Postsecondary Outcomes

The extant literature indicates that college pathways are influenced by high school characteristics, the structure of organizations, social resources based on parental involvement and peer interactions, and networks of secondary and postsecondary institutions. Early research along this general line of inquiry included Alexander and Eckland's (1977) examination of linkages between the high school status composition and college selectivity, and Coleman and Hoffer's (1987) work that attributed the college success of Catholic high school students to the course-taking and academic behaviors that define the Catholic high school experience. Since these important contributions, statistical advances in multi-level modeling, expanding data resources, and increased focus on racial and socioeconomic differences have improved our understanding of students and educational settings prior to college in relation to postsecondary outcomes.

McDonough's (1997) qualitative research, for instance, emphasized the important role of the high school context in shaping students' college choice decisions. Building on Bourdieuan notions of cultural capital, McDonough's research stresses the importance of the organizational *habitus* of a school in understanding how structural constraints can narrow the range of postsecondary options available to students. McDonough demonstrated that students' college decisions are circumscribed not only by individual characteristics, such as their academic performance or socioeconomic background, but also by structural characteristics of their high school. The structure and organization of guidance counseling, for instance, revealed distinct differences across high schools, including the resources available to counselors, time allotted for college counseling, types of colleges recommended, and the nature of the counseling relationship. Building on this work, Hill (2008) recently found that school-level resources and organizational norms interact in a way that facilitates college enrollment. Based on an institutional-level typology of college-linking strategies that was defined according to differences in high school resources and organizational norms, Hill (2008) found racial/ethnic group differences in sensitive to the level of institutional commitment towards college enrollment.

Altogether, results have supported the notion that the resources that inform educational decisions are not equally distributed to all high school students, but are determined in part by differences in socioeconomic and institutional resources that come in contact with policy-driven changes in college admissions criteria (Rosenbaum, 1978; Wolniak & Engberg, 2007). For example, Alon and Tienda (2007) examined the relative effects of performance-based versus race-sensitive admissions criteria on educational opportunity and diversity at selective institutions. Alon and Tienda's results provide compelling evidence that the

commonly assumed tradeoff in college admissions between students' academic profile and diversity only occurs when academic merit is defined solely on the basis of SAT scores. Admissions criteria that incorporate more expansive and inclusive measures of academic performance (e.g., grades and class rank) are more compatible with achieving institutional diversity goals.

Conceptual Framework

Together, the above theoretical perspectives identify a range of human, cultural, and social networking resources that influence students' educational development (e.g., Bourdieu, 1986; Coleman, 1988; Hill, 2008; Lin, 2001; Perna & Titus, 2005). Additionally, the past research suggests a central role of the high school context in providing opportunities for students to access various forms of capital (e.g., Alexander & Eckland, 1977; Bain & Anderson, 1974; Coleman, et al., 1966; Hill, 2008; Khattab, 2005; Perna, 2006, Perna & Titus, 2005). Building on existing evidence and theoretical frameworks that highlight the interdependent nature of college choice decisions (see Perna, 2006), our conceptual framework places the high school at the foundation of the college decision-making process. We operationalize the high school context by identifying the saliency of institutional characteristics, the environment for teaching and learning, and the availability of human, cultural, and social capital. Nested within various high school contexts, students' decisions regarding college enrollment are based on the confluence of demographic and socioeconomic characteristics and their acquisition of various forms of capital (see Figure 1). Thus, the present study empirically substantiates the interdependent relationships between students, high school contexts, and postsecondary enrollment.

Describe the research method that will be used:

Research Questions

Our research is organized around the central hypothesis that postsecondary attainment is best understood when individual-level determinants are situated within specific high school contexts. Emphasizing the role of economic, human, cultural, and social resources in promoting college enrollment, our research questions address the interdependent relationships among students, their high schools, and postsecondary education.

To test this hypothesis we ask four research questions to identify relationships between student socioeconomic characteristics, high school contexts, and postsecondary enrollment. Throughout our research we operationalize postsecondary enrollment according to whether students' are attending four-year institutions, two-year institutions, or not attending any postsecondary institution following high school graduation. At the center of our research questions is the conceptualization of the high school context, defined in previous studies (e.g.,

Alexander & Eckland, 1977; Bain & Anderson, 1974; Coleman, et al., 1966; Davis, 1966; Hill, 2008; Khattab, 2005) to include institutional characteristics (e.g., sector, region, diversity, and socioeconomics), learning environments (e.g., learning expectations and academic structures), and the availability of capital resources (i.e., economic, human, cultural, and social capital).

Q1. To what extent is the likelihood of postsecondary enrollment conditional on socioeconomic status? In other words, controlling for differences across school-level measures of the high school context, do student-level predictors of enrolling in a two- or four-year institution versus no enrollment differ according to the socioeconomic status of students and their families?

Q2. In what ways do aspects of the high school context influence the likelihood of enrolling in a two- or four-year institution versus no enrollment, controlling for differences in socioeconomic backgrounds and other student-level characteristics?

Q3. In what ways do aspects of the high school context moderate the relationship between an individual's socioeconomic status and their likelihood of attending a postsecondary institution?

Q4. Do individual-level determinants of postsecondary attendance differ according to the socioeconomic context of a particular high school?

Research Methodology

Our methodology incorporates four analytical approaches necessary for answering our research questions. The first two approaches include data conditioning and the development of scaled indices to be used in the inferential portion of the plan. The latter two approaches incorporate descriptive, bivariate, and multivariate approaches to identify various individual- and school-level factors influencing college enrollment.

Phase 1: Data Conditioning. During this initial phase, we will spend time conditioning the ELS dataset for analysis. We will recode and rename variables, conduct a missing data analysis, replace missing data using advanced multiple imputation methods, and transform and standardize select variables.

Phase 2: Factor Analysis. The second phase of our analytic plan will involve the creation of different scaled indices using a principal components factor analytic approach. We will also employ a regression-based approach to create our scaled indices and evaluate the reliability of different constructs based on Cronbach's Alpha. In general, factor analysis attempts to describe underlying but unobservable relationships between groups of variables while alpha reliabilities help to verify the internal consistency among the items identified through factor analysis (Johnson & Wichern, 1998). These scaled indices will be used to develop the economic, human, cultural, and social capital constructs as well as the high school level constructs that will be used in later analyses.

Phase 3: Descriptive and Bivariate Analysis. The third phase of our analytic plan incorporates descriptive and bivariate approaches. In addition to understanding the relevant means, standard deviations, and frequencies of the different variables under investigation, we will use a chi-square analysis and one-way ANOVA to examine whether significant differences are evident for particular groups (i.e., race, socioeconomic status) or across variations of the high school context (i.e., institutional characteristics, teaching and learning environments, availability of capital resources and social networking opportunities). This phase of the analytic plan will provide a general understanding of group differences and will inform our interpretation of results from the final multivariate stage of analysis.

Phase 4: Multivariate Analysis. The fourth phase of analysis will directly address our research questions. Hierarchical general linear modeling (HGLM) will be employed to identify significant individual- and school-based factors that predict college enrollment. HGLM is an appropriate analytic technique to test hypotheses about the relationship between variables at two different levels (Raudenbush & Bryk, 2002). HGLM, for instance, allows one to partition the variance components among student-level and school-level factors, thereby isolating how facets of students' socioeconomic status and the high school context contribute to our understanding of the likelihood of enrolling in a two- or four-year institution versus no enrollment. HGLM is particularly useful in understanding school-level effects in determining whether structural characteristics and aggregated student characteristics influence college enrollment. Finally, HGLM corrects for common failures that occur when researchers treat multi-level effects in a non-nested manner; such a process can lead to aggregation bias, miscalculation of standard errors, and heterogeneity of regression (Raudenbush & Bryk, 2002). The ELS dataset is designed to facilitate multi-level modeling, having employed a sampling frame of schools, followed by students within schools.

Statistical Model

In using HGLM to answer our research questions, we will employ a multinomial logit link function to examine the log-odds of a particular type of enrollment (either two- or four-year) against a specified referent group (no enrollment). All student-level and school-level variables will be centered on their respective group means. Group-mean centering assumes that student-level variables are determined by both individual and school characteristics (Kreft, de Leeuw, & Aiken, 1995). The general multinomial model can be expressed by the following equations:

Level 1

$$hm_{ij} = b_{0j(m)} + b_{1j(m)}*(\text{Demographics}) + b_{2j(m)}*(\text{Socioeconomics})_{ij} + b_{3j(m)}*(\text{Human Capital})_{ij} + b_{4j(m)}*(\text{Cultural Capital})_{ij} + b_{5j(m)}*(\text{Social Capital})_{ij}$$

where: i denotes the student, j denotes the school, m denotes the type of enrollment.

Level 2

$$B_{0j(m)} = \gamma_{00} + \gamma_{01(m)} * (\text{Institutional Characteristics})_j + \gamma_{02(m)} * (\text{Learning Environment})_j + \gamma_{03(m)} * (\text{Human Capital Availability})_j + \gamma_{04(m)} * (\text{Cultural Capital Availability})_j + \gamma_{05(m)} * (\text{Social Capital Availability})_j + u_{0j(m)}$$

$$B_{2j(m)} = \gamma_{20} + \gamma_{21(m)} * (\text{Institutional Characteristics})_j + \gamma_{22(m)} * (\text{Learning Environment})_j + \gamma_{23(m)} * (\text{Human Capital Availability})_j + \gamma_{24(m)} * (\text{Cultural Capital Availability})_j + \gamma_{25(m)} * (\text{Social Capital Availability})_j + u_{2j(m)}$$

where: j denotes the school, m denotes the type of enrollment.

Project Description II

Will you use NCES target dataset? Yes

Please check all NCES datasets that apply
 - Educational Longitudinal Study of 2002 (ELS: 2002)

Explain why each dataset best serves this research. Include a variable list for each dataset used.

The ELS study is designed to measure students' transitions from secondary school into postsecondary education and/or the workforce. These data are particularly well-suited for research on how student characteristics, high school contexts, and other aspects of the college choice process affect postsecondary attendance. The second-follow up study of 2006 was designed, in part, to help researchers and policymakers better understand issues related to educational access and choice.

Outcome variable

§ **Postsecondary enrollment:** F2EDLEVEL

Independent variables

§ **Socioeconomic status index:** F1SES1R

Student-level control variables

§ **Demographics:** F1RACE, F1SEX

§ **Human capital:** F1RMAPIP, F1RAPIB, F1RAGP

§ **Cultural capital:** F1S44C...F1S44G

§ **Social Capital:**

o **Parent networks:** BYP53B...BYP53J, BYP54A...BYP54E, BYP59DA... BYP59EC

o **Peer networks:** F1S65C, F1S65D

o **College-linking networks:** BYP56B, BYP56C, F1S64A...F1S64H

School-level control variables

§ **Institutional characteristics:** BYSCTRL, BYURBAN, CP02PMIN, CP02FLUN, Aggregate F1SES1R

§ **Learning environment:** BYA51C, BYA51A, CP01STRO, CP01STEN/BYA23K, BYA18A... BYA18F, BYA49F, BYA49L, BYA49R, BYA49N

§ **Human, cultural, and social capital availability:** averages of student-level indicators, see above

Panel weights

§ F2F1WT

Sample selection criteria

§ G10COHRT=1

Will you use NSF target dataset? No

Explain why each dataset best serves this research. Include a variable list for each dataset used.

Will you address the NPEC focus topic? Yes

If yes, please briefly describe:

By identifying the interdependent relationships between the socioeconomic backgrounds of students, educational contexts, and college enrollment, this study marks an important step towards understanding the role of high schools in promoting college enrollment among low-income students. Our results will offer a more nuanced understanding of the secondary-postsecondary nexus and identify the saliency of socioeconomic status in moderating the effectiveness of different capital resources.

Project Description III

Provide a timeline of key project activities:

May 1, 2010

§ Receive funding and initiate project activities.

May – July, 2010

§ Complete phase one (data conditioning) and phase two (factor analysis) of the analysis plan.

§ Prepare and submit proposal for the 2011 AERA conference based on preliminary results.

August – October, 2010

§ Complete phase three (descriptive and bivariate analysis) and phase four (multivariate analysis) of the analysis plan.

§ Prepare and submit proposal for the 2011 AIR Forum based on multivariate results.

November – December, 2010

§ Interpret output.

§ Draft tables.

§ Write preliminary results and document progress for mid-year report.

§ Submit mid-year progress report by December 18, 2010. [Deliverable 1]

January – February, 2011

§ Finalize tables and results from all analytic phases.

March – April, 2011

§ Prepare and present AERA paper, contingent on acceptance. Our AERA paper will focus on empirically validating school-level resources and college-linking practices across socioeconomic strata.

§ Revise AERA paper in preparation for refereed journal submission. [Deliverable 2]

May – June, 2011

§ Prepare and present paper at the 2011 AIR Annual Forum. Our AIR Forum paper will present results of our descriptive, bivariate, and multivariate analyses of socioeconomic backgrounds, high school contexts and college enrollment.

§ Revise AIR Forum paper in preparation for refereed journal submission. [Deliverable 3]

§ Submit final report by June 30, 2011. [Deliverable 4]

Budget justification

Total estimated award requested is \$40,000. Included in the budget is a one-course buyout for Dr. Engberg during the 2010-2011 academic year (15% effort) and 10 hours per week over two summer months (15% effort). Additionally, Dr. Wolniak's efforts will include 4 hours per week (10% effort) to be distributed evenly over the 2010-2011 academic year and summer. The budget additionally contains travel expense for Drs. Engberg and Wolniak to attend the 2011 AIR Forum in Toronto, CA, as well as the 2011 meeting of the American Educational Research Association (AERA) in New Orleans, LA. Finally, we have included research expenses of \$500 to cover all expenses related to copying, report writing, presentation binders, books, and other miscellaneous expenses.

There are two important details to note about our proposed budget. First, because of the budget requirement that no overhead or indirect costs be included, NORC has requested that Dr. Wolniak follow company protocol stipulated for outside consultant status on the project. NORC officials have endorsed Dr. Wolniak's involvement on this project and have confirmed that there are no violations of corporate conflict of interest policies. Second, we intend to hire a Loyola University Chicago doctoral student on an hourly basis to act as the project's research assistant. In accordance with past proposals published on the AIR website (<http://www.airweb.org/images/Grants2009/Yasuko%20Kanno.pdf>), we have valued his or her work at \$8177 during the 2010-11 academic year, which translates to approximately 20 hours per week.

List deliverables such as research reports, books, and presentations that will be developed from this research initiative:

The proposed research project will yield four deliverables, including two research papers that will each be presented at national conferences and submitted for publication in refereed, peer-reviewed journals. The two remaining deliverables will include the mid-year and final grant reports.

Deliverable 1

The first deliverable will be the mid-year progress report due to AIR and NCES by December 18, 2011. With this report we will describe the progress made with the initial stages of the research project and discuss the likelihood of completing the proposed research by the end of the grant cycle.

Deliverable 2

The first research paper produced for this project will focus on high school-level structures that moderate the relationship between students' socioeconomic status and postsecondary enrollment. We will submit preliminary results as a paper proposal for the 2011 AERA conference in New Orleans, LA. Following AERA, we will submit the manuscript to a policy-oriented journal such as *Educational Evaluation and Policy Analysis*, *Harvard Educational Review*, or *Teachers College Record*.

Deliverable 3

The second research paper produced will contribute new evidence on how individual-level predictors influence postsecondary enrollment across different socioeconomic high school contexts. Results will be written up as a paper proposal for the 2011 AIR Forum in Toronto, Canada. Following the AIR Forum, we will submit the manuscript to a leading education journal, such as *Research in Higher Education*, *Journal of Higher Education*, *Review of Higher Education*, or *Sociology of Education*.

Deliverable 4

Our last deliverable will be the final research report due to AIR and NCES by June 30, 2011. With this report we will provide an overview of each of the project's deliverables, formally present the research findings associated with research questions 1 – 4, and discuss implications of our findings for policy, theory, and future research.

Describe how you will disseminate the results of this research:

Results from the proposed project will be presented to audiences affiliated with national conferences and peer-reviewed journals. The research paper deliverables described above will target different journals to increase exposure of this research to a wide range of scholars and practitioners interested in understanding the secondary-postsecondary nexus.

One research paper will be policy focused and will address the high school-level structures that influence postsecondary access across student-level socioeconomic conditions. Journals we will consider for this paper include *Educational Evaluation and Policy Analysis*, *Harvard Educational Review*, or *Teachers College Record*. The second research paper will target a more narrow audience of education scholars by building on prevailing theoretical and conceptual models related to college choice, college pathways, and the secondary-postsecondary nexus. Results from this second paper will contribute new information to prevailing models of postsecondary access by examining individual-level effects across high school socioeconomic contexts. Journals we will consider for this paper include *Research in Higher Education*, *Journal of Higher Education*, *Review of Higher Education*, or *Sociology of Education*. Finally, in order to expose a broader cross-section of individuals to our research, versions of both papers will be presented at national conferences, including AERA and the AIR Forum.

Provide a reference list of sources cited:

Alexander, K. L., & Eckland, B. K. (1977). High school context and college selectivity: Institutional constraints in educational stratification. *Social Forces*, 56, 166-188.

Alon, S., & Tienda, M. (2007). Diversity, opportunity, and the shifting meritocracy in higher education. *American Sociological Review*, 72, 487-511.

Bain, R. K., & Anderson, J. G. (1974). School context and peer influences on educational plans of adolescents. *Review of Educational Research*, 44, 429-445.

Becker, G. S. (1993). *Human Capital: A theoretical and empirical analysis with special reference to education* (3rd Ed.). Chicago: University of Chicago Press.

Bills, D. B. (2003). Credentials, signals, and screens: Explaining the relationship between schooling and job assignment. *Review of Educational Research, 73*, 441-469.

Bourdieu, P. (1986). *Handbook of theory and research for the sociology of education*, Greenwood Press.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*, S95-S120.

Coleman, J. S., & Hoffer, T. (1987). *Public and private high schools: The impact of communities*. New York: Basic Books.

Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A., Weinfeld, F. D., & York, R. L. (1966). *Equality of educational opportunity*. Washington, DC: U.S. Department of Health, Education & Welfare, Office of Education (OE-38001).

Engberg, M. E., & Wolniak, G. C. (2009). Navigating disparate pathways to college: Examining the conditional effects of race on enrollment decisions. *Teachers College Record, 111*, 2255-79.

Fitzgerald, B.K. & Delaney, J.A. (2002). Educational opportunity in America. In D. E. Heller (Ed.) *Condition of access: Higher education for lower income students* (pp. 3-24). Westport, CT: Praeger.

Gerald, D. E., & Hussar, W. J. (2002). *Projections of education statistics to 2012*. NCES Report No. 2002030. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics.

Hill, L. D. (2008). School strategies and the "College-Linking" process: Reconsidering the effects of high schools on college enrollment. *Sociology of Education, 81*, 53-76.

Hossler, D., Braxton, J., & Coopersmith, G. (1989). Understanding student college choice. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research, Vol. V* (pp.231-288). New York: Agathon Press.

Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college: How social, economic, and educational factors influence the decisions that students make*. Baltimore, MD: The John Hopkins University Press.

Johnson, R. A., & Wichern, D. W. (1998). *Applied multivariate statistical analysis* (4th ed.). Upper Saddle River, NJ: Prentice-Hall.

- Khattab, N. (2005). The effects of high school context and interpersonal factors on students' educational expectations: A multi-level model. *Social Psychology of Education, 8*, 19-40.
- Kreft, I. G. G., de Leeuw, J., & Aiken, L. S. (1995). The effect of different forms of centering in hierarchical linear models. *Multivariate Behavioral Research, 30*, 1-21.
- Lin, N. (1999). Social networks and status attainment. *Annual Review of Sociology, 25*, 467-487.
- Lin, N. (2001). *Social capital: A theory of social structure and action*. New York: Cambridge University Press.
- Massey, D. S., Charles, C. Z., Lundy, G. F., & Fischer, M. J. (2003). *The source of the river: The social origins of freshmen at America's selective colleges and universities*. Princeton, NJ: Princeton University Press.
- McDonough, P. M. (1997). *Choosing colleges: How social class and schools structure opportunity*. Albany: State University of New York Press.
- National Center for Educational Statistics (NCES) (2008). *Education longitudinal study of 2002 (ELS:2002): A first look at the initial postsecondary experiences of the high school sophomore class of 2002*. Washington, DC: U.S. Department of Education.
- National Center for Educational Statistics (NCES) (2007). *Educational longitudinal study of 2002 (ELS:2002); A first look the initial postsecondary experiences of the high school sophomore class of 2002*. Washington, DC: U.S. Department of Education.
- Obama, B. (2009). *Remarks of President Barack Obama –Address to Joint Session of Congress*. Retrieved May 30, 2009 from http://www.whitehouse.gov/the_press_office/Remarks-of-President-Barack-Obama-Address-to-Joint-Session-of-Congress/
- Paulsen, M. B. (1990). *College choice: Understanding student enrollment behavior* (ASHE-ERIC Higher Education Report 90-6). Washington DC: The George Washington University.
- Paulsen, M. B. (2001). The economics of human capital and investment in higher education. In M.B. Paulsen and J.C. Smart (eds.), *The finance of higher education: Theory, research, policy, and practice* (pp. 55-94). New York: Agathon Press.
- Perna, L. W. (2006). Studying college access and choice: A proposed conceptual model. In J. C. Smart (Ed.) *Higher Education: Handbook of Theory and Research, Vol. XXI* (pp.99-157). The Netherlands: Springer.

Perna, L. W., & Titus, M. A. (2005). The relationship between parental involvement as social capital and college enrollment: An examination of racial/ethnic group differences. *Journal of Higher Education, 76*, 486-518.

Raudenbush, S., & Bryk, A. (2002). *Hierarchical linear models: Applications and data analysis methods*, 2nd edition. Thousand Oaks, CA: Sage Publications.

Rosenbaum, J. E. (1978). The structure of opportunity in school. *Social Forces, 57*, 236-256.

St. John, E., Asker, E., & Hu, S. (2001). The role of finances in student choice: A review of theory and research. In M. Paulsen & J. Smart (Eds.), *The finance of higher education: Theory, research, policy, and practice* (pp. 419-438). New York: Agathon Press.

Wolniak, G. C., & Engberg, M. E. (2007). The effects of high school feeder networks on college enrollment. *Review of Higher Education, 31*, 27-53.

IRB Statement

Statement of Institutional Review Board approval or exemption:

As project PI, Dr. Mark Engberg will submit a description of this research to the Institutional Review Board (IRB) at Loyola University Chicago during the first week of April, 2010. Because this project relies on secondary data analysis and involves negligible risk to the participants represented in the data, it is expected that this project will be given "exempt" status from Loyola University Chicago's IRB. Protocol will be followed to receive IRB approval prior to May 2010 and commencement of funded research.

Statement of Use of Restricted Datasets

This project will rely on the restricted use, baseline through second follow-up data files collected through the 2006 follow-up of the Education Longitudinal Study of 2002 (ELS). Several factors make the restricted version of these data more effective for answering our research questions. For example, the web-based Data Analysis System (DAS) does not support the statistical methods required to address our research questions. In addition, the restricted dataset provides access to important information related to students' backgrounds, college destinations, and other contextual data needed to operationalize the high school context.

In terms of acquiring the data, Dr. Mark Engberg attended the NCES training seminar on June 16-18, 2008 to learn more about the construction and technical aspects of the ELS dataset and obtained access to the ELS 2002 restricted data

license on March 1, 2009. Since that time Dr. Engberg has uploaded and confirmed access to these data in preparation of other research projects. Dr. Gregory Wolniak is currently in the process of submitting an application for the ELS 2002 restricted use license, anticipated by April 2010.

Biographical Sketch

Mark Engberg's Biography Sketch

Mark Engberg is an Assistant Professor of Higher Education at Loyola University Chicago. Dr. Engberg is an expert in research methodology, evaluation and assessment, and diversity-based research. Examples of Dr. Engberg's scholarship can be found in recent issues of *Research in Higher Education*, *Journal of Higher Education*, *Journal of College Student Development*, and *Teachers College Record*.

During his doctoral training, Dr. Engberg worked on a federally-funded, national, longitudinal research study investigating how colleges were preparing students to enter an increasingly diverse and complex democracy. His dissertation research, in particular, addressed the important role of structural, interactional, and classroom diversity in promoting pluralistic skills and abilities, with an emphasis on how these skills build across different normative contexts. Dr. Engberg currently teaches courses that focus on research and evaluation methods, organization and governance in higher education, and enrollment management. He has also led workshops at the University of California, Los Angeles for the past several years on structural equation modeling (SEM), hierarchical linear modeling (HLM), missing data analysis, and data weighting techniques. Dr. Engberg's current research agenda is focused on college access and opportunity, with particular emphasis on understanding the role of the high school context on college choice, enrollment, academic achievement, and persistence. Dr. Engberg has also served as an enrollment management consultant for numerous colleges, helping admission and enrollment professionals build relational databases and employ econometric analyses to simulate admission and financial aid strategies that achieve their goals for access and diversity.

Dr. Engberg will devote fifteen percent of his time to the proposed project, overseeing and coordinating all aspects of the data analysis plan for this project. In particular, he will supervise the technical work of the project, including data conditioning and modeling in HGLM, and will collaborate on the design of the analyses, the interpretation of results, and the write-up and presentation of findings. Dr. Engberg will also supervise the Loyola University Chicago graduate research assistant assigned to work on this project.

Gregory Wolniak's Biography Sketch

Gregory Wolniak is a Research Scientist with the National Opinion Research Center (NORC) at the University of Chicago and Adjunct Faculty at Loyola University Chicago. Dr. Wolniak's teaching and research focuses on higher education policy, college students, college choice, and socioeconomic outcomes of education. His recent publications have appeared in *Research in Higher Education*, *Teachers College Record*, *Research in Social Stratification and Mobility*, and *Review of Higher Education*.

Dr. Wolniak has extensive experience in higher education research, including the design of longitudinal surveys, quantitative analysis, and reporting. At NORC, Dr. Wolniak's responsibilities include analysis and reporting tasks for the Gates Foundation's Millennium Scholars Tracking and Longitudinal Study and Washington State Achievers Longitudinal Survey and Tracking Study. Both of these studies are focused on financial aid policy and access to college for racial/ethnic and low-income student populations. Dr. Wolniak also maintains lead roles in NORC's contract to provide analysis support for the Federal TRIO programs, and a comprehensive evaluation of NSF's Graduate Research Fellowship Program. In addition to this work, from 2005-2007 Dr. Wolniak was part of a Teagle Foundation grant to assess teaching and learning in the liberal arts for a consortium of eight colleges. Prior to joining NORC, Dr. Wolniak trained and held a one-year appointment as Postdoctoral Research Scholar, both at the University of Iowa. During his tenure at Iowa, Dr. Wolniak played an integral role in numerous projects affiliated with three nationally prominent longitudinal studies: the National Study of Student Learning (funded by U.S. DOE), the Appalachian Regional Alumni Outcomes Survey (funding by the Mellon and Spencer Foundations), and the Wabash National Study of Liberal Arts Education (supported by Lilly Endowment, Inc.).

Dr. Wolniak will devote roughly four hours per week to the proposed project, distributed evenly over the academic and summer months. Dr. Wolniak's responsibilities will include writing and formatting of reports and presenting research findings, and he will provide support and oversight on all statistical programming and modeling.

Budget Requirements

Mark Engberg' Budget

Mark E. Engberg - Principle Investigator

15 % (FTE) academic year	\$11,962
15% (FTE) summer	\$3,871

Gregory C. Wolniak

10.0% (FTE) academic year	\$7,500
10.0% (FTE) summer	\$2,500

Graduate Assistant

Hourly (15 hrs/week) academic year	\$8,167
------------------------------------	---------

Total Salary and Wages \$34,000

Travel

2011 AIR Forum (presentation at 2011 Forum required): \$3,000

Other research related travel (AERA 2011): \$1,700

Other research expenses* \$300

(Software, books, copying fees, etc.)

*Costs for publishing articles in journals are allowed. The purchase of computer hardware, printing a stand alone book, overhead or indirect costs, and living expenses are not allowable. If you have questions about specific expenditures please contact the AIR Project Manager.

Funding History

The proposed research project has not received any prior or current funding, and there are no proposals pending for this project. Neither Dr. Engberg nor Dr. Wolniak has received any previous funding from AIR.