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When Effort and Ability are not Enough to Reduce the College Enrollment Gap, Does College Savings Help?

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Low-income Americans continue to believe in the idea of education as a means to economic mobility. With limited opportunities for accumulating savings for college, however, many high-achieving low-income students do not believe that a four-year college is within reach. They learn from a very young age that while college may be desired, it is not affordable; 43% of 10th grade students report that college costs are very important for the type of school they will choose. This study examines whether college-bound (i.e., students who expect to graduate from a four-year college and who are high achieving) low-income 10th graders enroll in a four-year college shortly after graduating from high school. In this study, 46% of college-bound low-income student experience "wilt"; that is, they do not attend college after graduating from high school even though they had expected to do so. Asset accumulation, especially in the form of college savings, may help reduce wilt. That is, low-income students may be more likely to actually enroll in a four-year college if they have a way to pay for it. Analyses reveal that college investment funds (such as a mutual fund) help reduce wilt.

Key words: assets, college enrollment, college savings, college expectations, wilt

In the perception of many Americans, college remains a key vehicle for increasing life chances. For example, using a nationally representative sample of 801 adults 18 or older, John Immerwahr (2004), who studies public attitudes about higher education, asked Americans, "If you had to choose one thing that can most help a young person succeed in the world today," what would it be? Having a college education (35%) was selected more than any other option, even over having a good work ethic (26%). More blacks (47%) and Hispanics (65%) than whites (33%) viewed receiving a college education as the most important factor in helping young people succeed. Further, 76% of Americans said that a college education is more important today than it was ten years ago (Immerwahr, 2004).

However, economic mobility for low-income and minority students has been on the decline in America for the past 20 years (Hertz, 2006). Hertz (2006) finds that blacks are twice as likely as whites to remain in poverty and four times less likely to reach the top 5% of the income distribution even after controlling for parental demographic characteristics, education, health, female-headed households, or whether a family receives public assistance. Further, according to Hertz, parents' education is a key factor in intergenerational transmission of socioeconomic status (SES) from parent to child. What this suggests is that inequalities in accessing college are a key factor in the status quo.

Existing Explanations that Focus on Children, Schools, and Families

The Children

In part, inequalities in the educational system are tolerated by Americans of all stripes because they believe in the *idea* of the education path as a vehicle for economic mobility. To maintain this belief, people sometimes create theories for why the experiences of some groups persistently fail to match the *ideal*. One explanation places blame on a lack of effort, ability, and/or desire among low-income students. An extreme example is *The Bell Curve* by Richard Herrnstein and Charles Murray (1994), which suggests that black children are genetically intellectually inferior to white children and therefore predetermined to fail in school. From this perspective, investments in education programs that seek to reduce the achievement gap or raise college enrollment are a waste of taxpayer dollars. As Murray (2007) writes, "There is no reason to believe that raising intelligence significantly and permanently is a current policy option, no matter how much money we are willing to spend" (p. 1).

Children's aspirations and expectations are an example of an approach that focuses on behavior and motivation (see e.g., Cook, Church, Ajanaku, Shadish, Kim, & Cohen, 1996; Mickelson, 1990; Reynolds & Pemberton, 2001). Aspirations are sometimes expressed by people as a desire or a hope. They are not formed through experience or by making judgments; instead, they are taught through socialization. Aspirations are relatively stable beliefs that are often maintained even in the face of contradictory evidence. Conversely, research has shown that college expectations are more likely to change depending on children's social and economic circumstances (Cook et al., 1996; Mickelson, 1990; Reynolds & Pemberton, 2001). Moreover, there is reason to believe that expectations are a better predictor of children's behavior than aspirations (Cook et al., 1996; Mickelson, 1990). The practical implication of this is that if children desire to attend college but do not expect to attend college, they are less likely to persist through high school, enter college, and ultimately graduate (ACSFA, 2002, 2006; Marjoribanks, 1984).

The Family

Some people and researchers point to the family as a key factor for why some children do well at school while others fail. This is based, at least in part, on the perception that the family is one of the key contexts in which students' development takes place (e.g., Bronfenbrenner, 1979). Within the family, parents are seen as students' main way of accessing resources and information to navigate the world. Moreover, parents who have a college education are believed to be better equipped to provide their children with resources and information needed to be successful than parents with less education (Davis-Kean, 2005; Davis-Kean & Eccles, 2005). According to Davis-Kean and Eccles (2005),

Advocates of this perspective argue that parents' education should influence parents' skills, values and knowledge of the educational system; which, in turn, should influence their educational practices at home and the skill children have to model, as well as the parents' ability to intervene in the education system on their children's behalf. (p. 191)

This belief is supported by the fact that parents' education level has been consistently shown to be a positive predictor of students' educational outcomes (Jimerson, Egeland, & Teo, 1999; Kohn, 1963;

Luster, Rhoades, & Haas, 1989). It remains significant even after controlling for different types of financial assets (e.g., Elliott, 2009; Elliott & Beverly, 2011a).

A number of ways have been suggested for how parents' education level may work to improve students' outcomes. One way is by helping students pay for college. Lippman, Guzman, Keith, Klnukawa, and Shwalb (2008) find that students with parents who have a four-year degree or higher are more likely to report that their parents are willing to pay for college. Moreover, research shows that students develop college expectations that parallel their parents' education level (Luna De La Rosa, 2006). Students' college expectations have been shown to be an important predictor of their educational outcomes (Mau, 1995). More educated parents are also more likely to be involved in their child's college planning activities (Choy, 2001). In regards to parent involvement, Davis-Kean (2005) finds that there is a positive relationship between parents' levels of education and parents' expectations for their children's success (Davis-Kean, 2005). Parents' expectations for their child's academic attainment appear to be more important than other forms of parent involvement, such as attending school events (Jeynes, 2005). Moreover, parents' college expectations also have a positive influence on student's own attitudes toward college (Astone & Mclanahan, 1991) and the level of education they attain (Zhan & Sherraden, 2011).

Along with parents' education and expectations, family income has long been established as having a positive impact on students' educational outcomes (Brooks-Gunn & Duncan, 1997; Coleman et al., 1966; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Yeung, Linver, & Brooks-Gunn, 2002). According to Sirin (2005), it is perhaps the most widely applied contextual variable in research on education. Research shows that, as family resources available to students increase, their educational performance, high school graduation, and college attendance rates improve (Coleman et al., 1966). However, it is not merely the amount of the resources but the diversity of the resources that leads to greater academic achievement. As Coleman et al. (1966) posit, students from families of higher income do better because they are exposed to a wider set of resources that they can tap into to promote learning.

The Schools

Some researchers who reject individual-level explanations for why students decide to attend college point to differences in the quality and resources schools provide students as the problem. Recent studies have shown that high school context (private or public) may structurally determine students' academic orientations and educational choices, and that these effects may differ by socioeconomic group (e.g., Kim & Schneider, 2005). Kim and & Shneider (2005) find that attendance at a private high school is significantly related to whether students enroll in a four-year college but not whether they attend any college (either a two-year or four-year college). One explanation for why attending private high schools may reduce student's chances of attending any college is that high grades and high class rank are harder to obtain at private high schools than they are at many public schools (Wolniak & Engberg, 2010).

Another structural factor that can affect student's decisions to attend college is the number of guidance counselors at their high school. McDonough (1997) finds that low-income students are more likely to attend schools with fewer guidance counselors at their school. This is important because Terenzini, Cabrera, and Bernal (2001) find that low-income students are more likely to rely on counselors to discuss financial aid (72%) than their higher-income peers (34%). Findings suggest

that students who have access to high school guidance counselors receive information about college and help with college-admissions requirements that make them more likely to enroll in college (Perna & Titus, 2005; Stanton-Salazar, 1997).

Additionally, school's academic climate has been shown to be an important predictor of academic achievement (Goddard, Sweetland, & Hoy, 2000; Lee & Loeb, 2000; Philips, 1997). School academic climate is about how much schools emphasize education. A positive school climate can affect student's academic achievement in a number of ways. One important way is through more positive behavior while in school. For example, Kuperminc, Leadbeater, Emmons, and Blatt (1997) find that a positive school climate is associated with fewer behavioral and emotional problems for students.

In sum, researchers point to low-income students, their families, and the schools they attend to explain the achievement gap. Although these are clearly important factors for understanding why the achievement gap exists, they do not explain why the education path fails to lift high-achieving, low-income students out of poverty at the same rate as it maintains low-achieving, high-income, and non-minority children in prosperity (ACSFA, 2002; Ingles, Curtin, Kaufman, Alt, & Owings, 2002). So, while much of the education research focuses on the achievement gap (Ladson-Billings, 2006), it cannot explain why high-achieving, low-income students perceive of college as being out of reach. Moreover, the research does not account for why high-achieving, low-income students find college a genuinely desired but elusive goal.

In other words, arguments that focus on the achievement gap often overlook the fact that, while 97% of the highest-achieving students from high-income families attend college, only 77% of the highest-achieving students from low-income families attend college (ACSFA, 2002). The majority of high-achieving, low-income students desire to attend college and recognize the value of college for future economic success but many do not attend (ACSFA, 2002). This suggests that even with high levels of investment of effort and ability, coupled with a strong desire to attend college, many low-income students perceive of college as out of reach. The failure of high-achieving, low-income students to attend college at similar rates as high-achieving, high-income students is one reason why some researchers view education as a key source of class stratification (ACSFA, 2002; Blau & Duncan, , 1967; Haycock, 2006; Hertz, 2006; Lee & Burkham, 2002).

The Role of Assets in Creating Educational Advantage

The majority of Americans believe a college education is a path to achieve economic mobility, but they also appear to recognize that low-income students lack equal access. According to Immerwahr (2004), 57% of American adults say that many qualified high school graduates are unable to attend college. According to the Advisory Committee on Student Financial Assistance (ACSFA), a group charged by Congress with enhancing access to postsecondary education for low-income students, low expectations for financing college lead to fewer low-income students taking qualifying exams to attend college and ultimately enrolling in college (ACSFA, 2002). In a report to Congress, ACSFA (2001) suggests that the pattern of educational decision-making by poor children is not the result of choice or academic preparation: "Make no mistake, the pattern of educational decision making typical of low-income students today, which diminishes the likelihood of ever completing a bachelor's degree, is not the result of free choice. Nor can it be blamed on academic preparation" (ACSFA, 2001, p. 18). Effort, ability, and desire may no longer be the determining factors in who goes to college.

The Effects of High College Costs

There is growing concern that high college costs may make the education path to income mobility inaccessible for low-to-moderate-income children. The total cost of college attendance, which includes room and board, for an in-state student at a public four-year college for the 2007-08 school year was \$13,589, representing a 5.9% increase from the prior school year (College Board, 2007). The cost of a four-year private college also rose by 5.9% in 2007-08, up to \$32,307 (College Board, 2007). College choice researchers consistently find that rising college costs have a negative impact on college enrollment decisions (Heller, 1997; Leslie & Brinkman, 1988; McPherson & Schapiro, 1998). For example, McPherson and Schapiro (1998) estimate that a \$150 net cost increase (in 1993-1994 dollars) results in a 1.6 percentage point reduction in enrollment among low-income students.

After financial aid, family contribution, work-study, and loans are considered, youth still face significant amounts of unmet need – i.e., financing college remains a problem for many even after they receive their financial aid package. According to the 2002 Advisory Committee on Student Financial Assistance (ACSFA), a group charged by Congress with enhancing access to post-secondary education for low-income youth, unmet need is "the portion of college expense not covered by the expected family contribution and student aid, including work-study and loans" (ACSFA, 2002, p. 5). Oliver and Shapiro (2006) suggest high unmet need for college is largely the result of low asset accumulation. ACSFA (2002) estimates that low-income youth on average face unmet need of \$3,800 per year at a four-year public college and \$6,200 at a four-year private college (ACSFA, 2002). According to ACSFA (2002), financial barriers prevent 48% of college-qualified low-income students and 43% of moderate-income students from attending a four-year college. However, college choice research largely ignores the role of financial assets in creating educational advantage.

Assets and the Creation of Educational Advantage

Assets are a particularly important resource for creating educational advantage (Conley, 1999; Oliver & Shapiro, 2006; Shapiro, 2004; Sherraden, 1991). From this perspective, educational advantage is the amount of control an individual has over educational resources due to asset accumulation.² Educational advantage is likely to lead to greater success in school. Greater success in school, in turn, translates into increased likelihood of later economic success (Wilson, 1987), including higher income and earnings (King & Bannon, 2002), more stable employment (Topel, 1993), more stable family support (Axinn & Arland, 1992), and higher wealth (Oliver & Shapiro, 2006; Shapiro, 2004).

High unmet need is largely the result of low asset accumulation by poor and minority families (Oliver & Shapiro, 2006). In this sense, more assets mean more control over the educational system, and more control over the educational system means more assets. Poor students enter the educational system with few assets. This means that poor students enter the educational system with an educational disadvantage, while wealthy students have an educational advantage. How might unequal accumulation of assets create an educational advantage for some?

¹ Choy and Carroll (2003) find that, during the 1999-00 school year, the average unmet need for low-income students is between \$4,000 and \$9,300, depending on the type of college.

² Sherraden (1990) suggests that assets effects may occur not only from owning an asset but also from the process of accumulating assets. This is similar to Jackson's (1978) findings in regards to financial aid. Jackson (1978) finds that just receiving a financial aid award is more influential than the amount of aid received.

In *The Hidden Cost of being African American*(2004), Thomas Shapiro shows why assets (primarily obtained through inheritance and home ownership) might be important for creating educational advantage. He finds that blacks who earn equivalent incomes to whites still have far fewer financial assets at their disposal despite increased earnings. Lack of asset accumulation among blacks results in an inability to gain control over the kinds of educational opportunities their children have access to such as high quality primary and secondary schools (Shapiro, 2004). According to Shapiro (2004), white middle- and upper-class parents gain an educational advantage by leveraging their homes (a key form of asset holding in America) in what he refers to as, "a narrow, self-interested way" (p. 158). They do this by moving to better neighborhoods where high-quality schools exist. Shapiro (2004) suggests that parents define high quality schools by race and class. However, lack of wealth (primarily inherited wealth) prevents many poor and black families from moving into these neighborhoods. Further, if too many blacks move into a neighborhood with high-quality schools (wealthy, white schools), whites leave the neighborhood (Shapiro, 2004).

In Savage Inequalities: Children in America's Schools, Jonathan Kozol (1992) points out that funding disproportionately favors affluent white children. He identifies large variability in local property taxes for education as one of the most important factors limiting life chances of poor black students. Leveraging property wealth results in educational advantage for students living in affluent communities. Minority and poor communities, however, lack the wealth to access similar advantages.

Further, Dalton Conley (1999) in *Being Black Living in the Red* suggests that wealth helps create an educational advantage that leads to differences in educational outcomes among different groups of children. In addition to allowing parents to purchase such things as computers to better their child's educational prospects, Conley (1999) suggests that wealth may be particularly important for financing college. In a study on wealth and college enrollment, Conley (2001) finds that parental wealth is a strong predictor of enrollment in college.

What these studies suggest is that unequal distribution of assets helps to create an uneven playing field within the educational system. Low college enrollment rates among low-income students might be as much about their restricted access to college as it is about individual effort and ability, their families, and their schools. High achieving low-income students may be only the most visible casualties.

A way to capture the effect that financial constraints have on actual college attendance is to identify high-achieving students who expect to attend college but do not soon after graduating from high school. ACSFA (2006) refers to the difference between the percentage of students who expect to attend a four-year college and the percentage who actually do attend a four-year college as "melt" (p. 13). They find that 70% of low-income students plan in tenth grade to enroll in college but only 54% actually enroll in college upon graduating from high school. Thus, by their calculation, 23% of low-income students experience melt.³

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³ ACSFA (2006) calculates melt by subtracting the percentage of students that attend from the %age that expected to graduate and then dividing by the percentage that expected to graduate.

In place of the term melt, Elliott and Beverly (2011b) use the term "wilt." This change highlights the fact that their measure differs from that used by ACSFA. They also suggest that wilt conjures up a more fitting image—that of a growing plant losing vitality due to a lack of resources. Further, unlike ACSFA, their study includes assets. They find that, overall, 32% of students experience wilt and that a staggering 55% of students without savings of their own experience wilt. Controlling for such things as parent's education level, family income, and student's academic achievement, they find that students who have savings of their own are six times more likely to have ever attended college than students without savings of their own (i.e., money in a local bank account in the child's name). They did not, however, look at high-achieving, low-income students or control for school quality or children's perceptions of their ability to finance college.

This study builds on the previous two studies by combining desirable aspects of each into a single study. Similar to ACSFA (2006), this study examines college enrollment in four-year colleges among high-achieving (i.e., students who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus) 10th grade students who expect to graduate from a four-year college sometime in the future. In this study, these students are referred to as college-bound. Moreover, drawing from Elliott and Beverly (2011b), this study includes assets and uses individual-level longitudinal data. However, unlike Elliott and Beverly, this study includes a wide variety of types of college savings for the child (such as U.S. savings bonds, college investment funds, and parents' savings accounts). It does not, however, include either household net worth or children's own savings because they are not available in the Education Longitudinal Study of 2002 (ELS, 2002). This study also uses separate samples of low-to-moderate-income (\$50,000 or below) (LMI) and middle-to-high income (more than \$50,000) (MHI) families to predict college enrollment in four-year colleges and controls for school quality and student's perceptions about the affordability of college.

There are two main research questions examined in this study. First, what amount of wilt occurs among college-bound LMI students and MHI students and do LMI college-bound students experience more wilt than MHI college-bound students? Secondare LMI and MHI students who have parents with college savings less likely to experience wilt?

Methods

This study uses data collected through ELS:2002, a longitudinal survey (i.e., follows same group of children over time) sponsored by the National Center for Education Statistics (NCES) to explore students' transitions from secondary school into postsecondary education or the workforce. ELS:2002's multilevel focus supplies researchers with a comprehensive picture of the home, community, and school environments of youth during their transition from adolescence into adulthood.).⁵

⁴ While ACSFA uses aggregate-level cross-sectional data gathered at different points in time, they use individual-level longitudinal data.

⁵ Additional information about the survey is available on the ELS:2002 web page (http://nces.ed.gov/surveys/els2002/). For more information on the study design, sampling, questionnaires, mathematics and reading assessments, weighting, imputation, and response rates see the *Education Longitudinal Study of 2002: Base- Year to Second Follow-up Data File Documentation* (Ingels et al., 2007).

Household and Student Characteristics

Parents' education level. Parents' education level is equivalent to either mother's highest level of education or father's highest level of education, whichever is higher. Parents' level of education is composed of eight distinct levels of education: (1) Did not finish high school; (2) Graduated from high school or GED; (3) Attended two-year school, no degree; (4) Graduated from two-year school; (5) Attended college, no four-year degree; (6) Graduated from college; (7) Completed master's degree or equivalent; and (8) Completed PhD, MD, or other advanced degree. For the purposes of this study, the eight levels were collapsed into three: (0) high school or less; (1) some college; and (2) four-year degree or higher.

Family income. In the ELS:2002, family income is composed of 13 distinct levels: (1) None; (2) \$1,000 or less; (3) \$1,001-\$5,000; (4) \$5,001-\$10,000; (5) \$10,001-\$15,000; (6) \$15,001-\$20,000; (7) \$20,001-\$25,000; (8) \$25,001-\$35,000; (9) \$35,001-\$50,000; (10) \$50,001-\$75,000; (11) \$75,001-\$100,000; (12) \$100,001-\$200,000; and (13) \$200,001 or more. For the purposes of this study, family income is dichotomized (LMI = \$50,000 or less; MHI = more than \$50,000). Categories are determined based on categories used by ACSFA (2002; 2010).

Student's gender. Student are asked to self-report their gender (1 = male; 0 = female)

Student's race. This race/ethnicity variable includes seven categories: (1) American Indian or Alaska Native; (2) Asian or Pacific Islander, including Native Hawaiian; (3) Black or African American; (4) Hispanic, no race specified; (5) Hispanic, race specified; (6) More than one race; and (7) White. Categories 1, 2, 3, 6, and 7 exclude individuals of Hispanic or Latino origin. For clarity of presentation, categories 4 and 5 are combined into "Hispanic or Latino." Moreover, categories 1 and 6 are dropped from the analysis due to small sample sizes.

School Characteristics

Parents' college expectations. Parents are asked how far in school they think their child will go. A dichotomous variable is created (1 = expect child to graduate from a four-year college; 0 = do not expect child to graduate from four-year college).

Private school attendance. This variable indicates the type of school attended by the respondent in the base-year interview: (1) public, (2) Catholic school, or (3) other private. For the purposes of this study, a dichotomous variable was created (1 = private or other private; 0 = public).

Number of guidance counselors. This is the number of full-time guidance counselors in a particular school.

School climate. Principals are asked to describe their school's climate using a Likert Scale (1 = not accurate at all to 5 = very accurate). They are asked to rate such statements as, "student morale is high," "teachers at this school press students to achieve academically," and "students are expected to do homework."

⁶ This seemed appropriate given that the study builds on ACSFA (2010).

College costs. Students are asked how important low expenses (such as tuition, books, room and board) are for choosing a school: not important, somewhat important, or very important. For this study, the variable is made into a dichotomous variable (1 = very important; 0 = not very important).

Availability of financial aid. Students are asked how important availability of financial aid is for choosing a school: not important, somewhat important, or very important. For this study, the variable is made into a dichotomous variable (1 = very important; 0 = not very important).

College Savings Variables

The variables of interest are drawn from questions asking parents what they are doing to financially prepare for their child to attend college. The following college savings variables are included: started a savings account,\; bought U.S. savings bonds; invested in stock/real estate; opened a college investment fund (i.e., mutual fund); planned to take out a home equity loan; and told student to put aside money for college. These are all dichotomous variables (1 = yes; 0 = no).

Outcome Variables

Four-year college enrollment. This variable is drawn from the highest level of education attempted variable in the ELS: 2002. Education levels are categorized as follows: some high school, GED recipient, high school diploma recipient, less than two-year school, two-year community college enrollment, and four-year college or university enrollment. For the purposes of this study, a dichotomous variable is created (1 = four-year college; 0 = less than a four-year college).

Missing Data

Multiple imputations are used to account for missing data, specifically by using all the information available as well as a random component to fill in missing values. Multiple imputation is recognized as a preferred technique for completing missing data (Little & Rubin, 2002). Multiple imputation is used through the Markov Chain Monte Carlo method (Saunders et al., 2006; Schafer & Graham, 2002) to create five independent data sets with no missing data. Five completed data sets are generated, and by utilizing a different random seed at the start of each imputation pass, variance between the data sets more accurately reflects the uncertainty in imputing missing data.

Study Sample

The final sample is restricted by whether or not students are in the sophomore cohort in the 2001-02 school year, students' follow-up questionnaire status, and high school graduation status. In addition, American Indian and biracial students are eliminated from the analysis due to small sample sizes. Further, a few schools contain less than five students. These schools are removed from the analysis. After these restrictions are applied, the aggregate sample includes 12,535 students. Applying the panel weight results in a weighted sample of approximately 2,912,364 million students.

Wilt occurs when students who are in 10th grade in 2001-02 expect to graduate from a four-year college sometime in the future but have not enrolled in a four-year college by 2006. This study examines enrollment in four-year colleges rather than two-year colleges because students who obtain a four-year degree earn more, are less likely to be unemployed, and are less likely to be poor (Baum

& Ma, 2009). In addition, according to Perna (2000), students who apply to four-year colleges are likely to consider different criteria when making a decision to enroll than student who apply to a two-year college. For example, students enrolling in four-year colleges are likely to be more sensitive to changes in tuition and financial aid (Heller, 1997), and thus parent's college savings may be more important to them. Lastly, since the students in this study expect to graduate from four-year colleges while in 10th grade, examining whether they actually do enroll in four-year colleges seems most appropriate.

In order to investigate wilt, the sample is further restricted to students who report in 2002 that they expect to graduate from a four-year college at some point in the future. Specifically, students are asked, "As things stand now, how far in school do you think you will get?" The eight response options are: (1) Less than high school graduation; (2) High school graduation or GED only; (3) Attend or complete a two-year school course in a community college or vocational school; (4) Attend college, but not complete a four-year degree; (5) Graduate from college; (6) Obtain a master's degree or equivalent; (7) Obtain a PhD, MD, or other advanced degree; and (8) Don't know. Students who choose 5, 6 or 7 are defined as "certain" students and included in the final samples.

The sample is also restricted to high-achieving students. High achieving is defined as students who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus. If effort and ability are the deciding factors for why students succeed in school (i.e., enroll in four-year colleges or not), than LMI students who are certain they will graduate from a four-year college and are high-achieving should enroll in four-year colleges at similar percentages as their MHI counterparts.

The aggregate sample is then split into two subgroups using the family income variable to create a LMI and MHI sample. The final analytic sample of LMI students contained 3,289 students. Applying the panel weight resulted in a weighted sample of approximately 737,068 students. The final analytic sample of LMI students contained 4,744 students. Applying the panel weight resulted in a weighted sample of approximately 976,792 students.

Analysis Plan

Simple logistic regression is used in this study. In both the LMI college-bound student sample (Models 1-3) and the MHI college-bound student sample (4-6), variables are added in a block fashion. The base models, models 1 & 4, contain the following variables: parent's education level, parent's college expectations, student's gender, student's race, student's perception about the cost of college, and student's perception about the affordability of college. Subsequently, to determine the independent effect of school factors on enrollment in a four-year college, two logistic regressions are estimated (one for LMI college-bound students and one for MHI college-bound students). Both models (2 & 5) include the following variables: private school attendance, number of full-time guidance counselors, and school climate. Finally, two additional models (3 & 6) include college savings variables as a block. College savings variables include parents' savings accounts, U.S. savings bonds, investment stocks/real estate, college investment fund, plan to take out home equity loan, and parent told student to put aside money for college. Because ELS:2002 randomly selects approximately 26 students within each school, I adjust standard errors by clustering them into the same school unit. Further, both the descriptive and binary regression analyses are weighted using the ELS: 2002's second follow-up base year panel weight.

Limitations

There are several noteworthy limitations to discuss before interpreting the results of this study. First, while each school was supposed to include 26 randomly selected students, there is considerable variation in the number of students whose data were collected throughout the 2004–2006 panels, thereby reducing the representativeness of the population. Second, missing data varies across the different items contained in the surveys, and many of the later items in the student questionnaire are not missing at random. I have taken steps to counter this potential threat by using multiple imputations to replace missing data. Nevertheless, the estimates may accompany a degree of missing data bias.

It is also impossible in this study to measure whether students *grow up* with knowledge that they have financial resources to help pay for current and future schooling. In this study, parents' college savings are only measured at a single point in time, 10th grade. There are also key asset variables missing from the ELS:2002 such as household net worth and students' own savings. Previous research suggests that these may be key variables in predicting college enrollment (Elliott & Beverly, 2011a, b; Zhan & Sherraden, 2011).

Results

Descriptive Results

Table 1 shows characteristics of LMI (\$50,000 or less) and MHI (more than \$50,000) 10th grade students who in 2002 expected to graduate from a four-year college and who are high-achievers (students who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus) – college-bound students. College-bound MHI students are far more likely to be white (78%) and have lived in households with parents who had a four-year degree or more (64% vs. 27%). College-bound LMI students are more likely to think that the cost of college (43% versus 25%) and the availability of financial aid (71% vs. 45%) are very important in choosing a four-year college.

In regards to school, college-bound MHI students attend private school more often than college-bound LMI students (15% vs. 6%, respectively). They are also more likely to attend schools with more guidance counselors and school that have a more positive school climate (see Table 1). Not surprisingly, college-bound MHI students' parents are also more likely to have each of the different forms of college savings (see Table 1).

Table 1. Sample characteristics among 10^{th} graders who expected to graduate from a four-year college and are high-achieving in 2002 – by income.

_	Low-Income	High-Income (More than \$50,00)		
Item	(\$50,000 <u>or</u> less)			
	% (x)	⁰ / ₀ (x)		
Household and student variables				
Parent's education level				
4yr degree or more	27	64		
Some college	39	27		
High school degree or less	34	9		
Student is male	56	48		
Student's race				
White	51	78		
Asian	6	4		
Black	19	7		
Hispanic or Latino	22	11		
School variables				
Cost of college very important	43	25		
Availability financial aid very important	71	45		
Parent expects student to complete four year college	O.F	93		
degree	85	93		
Private school	6	15		
Number of full-time guidance counselors	(3.976)	(4.403)		
School climate	(018)	(.034)		
College savings variables	, ,	, ,		
Started a savings account	29	54		
Bought U.S. savings bonds	11	32		
Investments in stocks/real estate	15	46		
College investment fund	9	31		
Planned to take out home equity loan	5	10		
Parent told student put aside money for college	16	29		
Outcome variables				
Enrolled in 4yr college by 2006	54	74		
Unweighted sample size	3,289	4,744		
Weighted sample size	737,068	976,792		

Source: ELS: 2002

Note: Weighted data used to calculate percents. Percents are rounded. High-achieves = students who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus. Amount parent has for students college education (1=\$0; 2=\$2,000 or less; 3=\$2,001-\$5,000; 4=\$5,001-\$10,000; 5=\$10,001-\$20,000; 6=\$20,001-\$30,000; 7=\$30,001-\$50,000; and 8=More than \$50,000).

Percentage Experiencing Wilt by Assets

An estimated 46% of college-bound LMI students experience wilt. In other words, almost half of these students who expect to graduate from a four-year college and are high-achievers as 10th graders in 2002 are not enrolled at a four-year college by 2006. In contrast, only 26% of college-bound MHI students experience wilt. Overall, college-bound LMI and MHI students with parents who have college assets for them experience less wilt than college-bound LMI and MHI students in the aggregate. College-bound LMI students (32%) and MHI students (16%) with parents that have a college investment fund (such as a mutual fund) experienced the least amount of wilt.

How 10th Graders who attend a Four-Year College Pay for It

Table 3 indicates that college-bound LMI students are far more likely to receive grants/scholarships than their MHI counterparts. They are also more likely to rely on personal resources in the form of student loans, work study, and their own savings or job earnings than MHI college-bound students. In contrast, college-bound MHI students are more likely to rely on family assistance in the form of parent loans or family contribution to pay for college.

Reducing Wilt among College-Bound LMI Students

Table 4, Models 1-3, presents logistic regression results estimating the effects of demographic, school, and asset variables on four-year college enrollment for LMI college-bound students who expect to graduate from a four-year college. Table 5, Models 4-6, presents logistic regression results estimating the effects of demographic, school, and wealth variables on four-year college enrollment for MHI college-bound students who expect to graduate from a four-year college.

Model 1. Parents' education level, gender, and race are significant predictors of whether collegebound LMI students are enrolled in a four-year college. LMI students with parents who have some college are over 32% more likely to be enrolled in a four-year college than LMI students who have parents with a high school degree or less when controlling for all other variables (odds ratio = 1.32, p < .01). LMI students with parents who have a four-year degree or higher are two and half times more likely to be enrolled in a four-year college than students who have parents with a high school degree or less (odds ratio = 2.65, p < .001). College-bound LMI students who expect to graduate from a four-year college and are male are 22% more likely to be enrolled in a four-year college than females (odds ratio = 1.22, p < .001). In regards to students' race, Asian LMI students are about 37% more likely than White LMI students to be enrolled in a four-year college when controlling for all other variables (odds ratio = 1.37, p < .01). In contrast, Black students are about 33% less likely (odds ratio = .67, p < .01) and Hispanic LMI students are about 22% less likely than white LMI students to be enrolled in a four-year college (odds ratio = .78, p < .05).

Model 2. When school variables (students' perception of the cost of college, parents' expectations for their child graduating from a four-year college, private school, number of full-time guidance counselors, and school climate) are added to the model, whether parents have a four-year degree or

Table 2. Percent of students who expected to graduate from a four-year college and who were high-achieving as 10th graders in 2002 and enrolled in a four-year college by 2006.

	Low-Income ((\$50,000 or less)	High-Income (More than \$50,000)			
College Savings Variables	Percent of College- Bound Students Enrolled in 4-Year College by 2006	Percent of College- Bound Students "Not" Enrolled in 4- Year College by 2006 Wilt	Percent of College- Bound Students Enrolled in 4-Year College by 2006	Percent of College- Bound Students "Not" Enrolled in 4- Year College by 2006 Wilt		
Aggregate	54	46	74	26		
Started a savings account	57	43	80	20		
Bought U.S. savings bonds	60	40	80	20		
Investments in stocks/real estate	64	36	82	18		
College investment fund	68	32	84	16		
Planned to take out home equity loan	61	39	79	21		
Parent told student put aside money for college	53	47	82	18		
Unweighted sample size	3,	289	4,	744		
Weighted sample size	737	7,068	976	5,792		

Source: ELS: 2002.

Note: Weighted data used to calculate percentages. Percentages are rounded. Low-income = \$50,000 or less. High-income = More than \$50,000. Certain = expected to graduate from a 4=year college. High-achievers = students who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus.

Table 3. How 10th graders who attended a four-year college pay for it.

Paid for postsecondary education with	Percent Low-Income (\$50,000 or less) College-Bound Students	Percent High-Income (more than \$50,000) College-Bound Students			
Grants/scholarships	78	59			
Student loans	63	47			
Parent loans	20	26			
Work study	22	11			
Savings/job earnings	48	42			
Family contribution	46	69			
Unweighted sample size	1,887	3,666			
Weighted sample size	394,613	725,993			

Source: ELS: 2002. Samples consist only of children who attended postsecondary education at some point.

Note: Weighted data used to calculate percentages. Percentages are rounded. College-Bound = students who expected to graduate from a four-year college and who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus.

higher, whether parents' expect their child to graduate, and whether a student is Black remain statistically significant among the demographic variables (see Table 4). In regards to the school variables, cost of college, affordability of college, and private school attendance are significant predictors of four-year college enrollment.

College-bound LMI students who perceive that college costs are very important are about 38% less likely than LMI students who do not perceive that college costs are important to be enrolled in a four-year college when controlling for all other variables ($odds\ ratio = .62$, p < .001). Conversely, LMI students who perceive that availability of financial aid is very important are about 42% more likely than LMI students who do not perceive that availability of financial aid is very important to be enrolled in a four-year college ($odds\ ratio = 1.42$, p < .01). LMI students with parents who expect them to graduate from a four-year college are approximately three times more likely to be enrolled in a four-year college than LMI students with parents who do not expect them to graduate ($odds\ ratio = 2.94$, p < .001). LMI students who attend a private school are about one and half times more likely than LMI students who attend a public school to be enrolled in a four-year college ($odds\ ratio = 1.62$, p < .01).

Model 3. When college savings variables are added to the model, the significant variables from model 2 remain significant (see Table 4). In addition, whether parents' have a college investment fund (such as a mutual fund) for their child's college education is significant and whether or not parents tell their child to put aside money for college or not is significant. LMI students who have parents with a college investment fund for them are over one and half times more likely to be enrolled in a four-year college than LMI students with parents who do not have a college investment fund for them (odds ratio = 1.62, p < .05). Surprisingly, LMI students who have parents that tell them to set aside money for college are 26% less likely to be enrolled in a four-year college than LMI students with parents who did not tell them to set aside money for college when controlling for all other variables (odds ratio = 1.64, p < .01).

Reducing Wilt among College-Bound MHI Students

Model 4. Similar to LMI, parents' education level, gender, and race are significant predictors of whether college-bound MHI students who expect to graduate from a four-year college while in high school are enrolled in a four-year college shortly after high school. HMI students with parents who have a four-year degree or higher are almost four and a half times more likely to be enrolled in a four-year college than MHI students who have parents with a high school degree or less when controlling for all other variables (odds ratio = 4.38, p < .001). College-bound LMI students who are male are 29% more likely to be enrolled in a four-year college than females (odds ratio = 1.29, p < .01). In regards to students' race, Black students are about 41% less likely than White students to be enrolled in a four-year college (odds ratio = .59, p < .001).

Model 5. When school variables are added to the model, whether parents have a four-year degree or higher, student's gender, and whether a student is Black remain statistically significant among the demographic variables (see Table 5). In regards to the school variables, cost of college, parents' expectations, and private school attendance are significant predictors of four-year college enrollment. College-bound MHI students who perceive that college costs are very important are

Table 4. Predicting four-year college enrollment shortly after high school among low- to moderate-income (\$50,000 or less) children who expected to graduate from a four-year college and who were high-achieving as 10th graders (weighted N=737,068).

Itams	Model 1			Model 2			Model 3		
Items	B	S.E.	O.R.	B	S.E.	O.R.	B	S.E.	O.R.
Demographics									
Parent has some college	.277**	.101	1.32	.177	.106	1.19	.156	.106	
Parent has a four-year degree or higher	.977***	.112	2.66	.791***	.118	2.20	.764***	.121	2.15
Male student	.196*	.092	1.22	.128	.096	1.14	.130	.097	
Asian student	.315*	.135	1.37	.251	.141	1.28	.263	.143	
Black student	396**	.114	.67	372***	.121	.69	365**	.126	.69
Hispanic or Latino student	245*	.112	.78	166	.118	.85	169	.121	
School variables									
College cost very important – student				486***	.103	.62	477***	.104	.62
Financial aid very important – student				.350**	.109	1.42	.384**	.111	1.47
Parents expect student to graduate 4-yr college				1.079***	.200	2.94	1.095***	.198	2.99
Private school				.484**	.175	1.62	.462**	.177	1.59
Number of full-time guidance counselors				020	.020	.98	024	.021	
School climate				.283	.357	1.33	.280	.347	
College savings variables									
Started a savings account							000	.167	
Bought U.S. savings bonds							.027	.160	
Investments in stocks/real estate							.203	.161	
College investment fund							.480*	.203	1.62
Planned to take out home equity loan							.191	.254	
Parent tells student to put aside money for college							448**	.168	.64

Source: ELS:2002.

Note: Data are weighted. Estimates are adjusted for clustering in schools. High-achievers = students who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus.

^{*}p < .05; **p < .01; ***p < .001.

about 51% less likely than MHI students who do not perceive that college costs are important to be enrolled in a four-year college when controlling for all other variables (odds ratio = .49, p < .001). MHI students with parents who expect them to graduate from a four-year college are approximately five and a half times more likely to be enrolled in a four-year college than MHI students with parents who do not expect them to graduate when controlling for all other variables (odds ratio = 5.60, p < .001). MHI students who attend a private school are about one and half times more likely than MHI students who attend a public school to be enrolled in a four-year college when controlling for all other variables (odds ratio = 1.68, p < .001).

Model 6. When college savings variables are added to the model, the significant variables from Model 3 remain significant (see Table 5). In addition, whether parents have a college investment fund for their child's college education is significant. MHI students who have parents who have set up a college investment fund are 31% more likely to be enrolled in a four-year college than MHI students with parents who did not set up a college investment fund when controlling for all other variables (odds ratio = 1.31, p < 0.05).

Discussion

The belief that an ordinary citizen can turn the America Dream into reality is embedded in the history and culture of America. The public education system has been seen as a key instrument for making the American Dream a reality (Hochschild & Scovronick, 2003). However, in a highly technical global economy, turning the Dream into reality often requires a college education. Access to college in America is commonly believed to be based on merit, but soaring college costs and high unmet need have made college a genuinely desired, but elusive goal for many Americans. This is no more evident than in the case of college enrollment patterns in four-year colleges shortly after graduating high school among high-achieving low-to-moderate-income (LMI) 10th grade students who expect to graduate from a four-year college.

This study finds that 46% of college-bound LMI students fail to enroll in a four-year college shortly after graduating high school compared to only 26% of middle-to-high-income (MHI) college-bound students. This is a gap of 20%. This finding is in line with previous findings that suggest that there is a high amount of wilt among students who expect to graduate from college while in high school (ACSFA, 2006; Elliott & Beverly, 2011b). Descriptive data suggest that different forms of parent's college savings may help reduce wilt among both LMI and MHI college-bound students with one exception. When parents tell college-bound LMI students to set aside money for college, results suggest that this might have a negative effect on enrollment in four-year colleges. LMI college-bound students who are told by their parents to put aside money for college actually are slightly more likely to experience wilt than if they are not told to put aside money for college. This is not the case for college-bound MHI students.

A reason for this might be that LMI students perceive this as a sign that their parents will not have money to pay for them to enroll in college. There is some evidence to support this contention. For example, while college costs are a concern for many college-bound LMI and MHI students, LMI students are far more likely to be concerned (43% vs. 25%). Moreover, when it comes to actually paying for college, LMI students are far more likely to have to rely on grants/scholarships, student

Table 5. Predicting four-year college enrollment shortly after high school among middle- to high-income (More than \$50,000) children who expected to graduate from a four-year college and who were high-achieving as 10th graders (weighted N=976,792).

T	Model 4		Model 5			Model 6			
Items	B	S.E.	O.R.	B	S.E.	O.R.	B	S.E.	O.R.
Household and student variables									
Parent has some college	.304	.161		.299	.171		.257	.172	
Parent has a four-year degree or higher	1.476***	.252	4.38	1.280***	.159	3.60	1.188***	.162	3.28
Male student	.070**	.171	1.29	.209*	.093	1.23	.221*	.094	1.25
Asian student	534	.128		036	.177		033	.178	
Black student	282***	.160	.59	541***	.134	.58	512***	.134	.60
Hispanic or Latino student	.076	.152		162	.179		143	.185	
School variables									
College cost very important – student				717***	.119	.49	690***	.120	.50
Financial aid very important -student				.011	.105		.050	.107	
Parents expect student to graduate 4-yr college				1.723***	.174	5.60	1.679***	.175	5.36
Private school				.517***	.143	1.68	.496***	.139	1.64
Number of full-time guidance counselors				.021	.022		.015	.212	
School climate				.398	.536		.381	.517	
College savings variables									
Started a savings account							.021	.126	
Bought U.S. savings bonds							072	.124	
Investments in stocks/real estate							.190	.142	
College investment fund							.272*	.127	1.31
Planned to take out home equity loan							.102	.183	
Parent tells student to put aside money for college							.174	.151	

Source: ELS:2002.

Note: Data are weighted. Estimates are adjusted for clustering in schools. High-achievers = students who have taken Algebra II, Trigonometry, pre-calculus, and/or calculus.

^{*}p < .05; **p < .01; ***p < .001.

loans, work study, and their own savings/job earnings. These may be thought of as personal resources derived from their own use of effort and ability in contrast to family contributions. Conversely, MHI students are far more likely to be able to rely on parent loans (26% of MHI compared to only 20% of LMI students) and family contributions (69% of MHI compared to only 46% of LMI students). Further, even though these students have been told by their parents that they need to put aside money for college, it does not mean they have a strategy for doing so. For example, findings indicate that LMI students are far less likely to have a savings account in their name (Elliott, Constance-Huggins, & Song, 2011). Findings suggest that even at a very young age when students have savings of their own, they are more likely to savings as a way to pay for their college education (Elliott, Sherraden, Johnson, & Guo, 2010). Moreover, researchers find that students who have savings in their own name are more likely to attend college (Elliott & Beverly, 2011a, b).

It should also be pointed out that the reason why LMI students are less likely to rely on family contributions may not be because the parents do not desire to help. After all, most (85%) LMI parents who have college-bound students expect them to graduate from a four-year college. Instead, it might be that the proportion of their family income necessary to cover college costs is just too high. A recent study by The Education Trust (2011) finds that unmet need after grant aid and expected family contribution is 72% of family income for students living in families that earn \$0 to \$30,200 annually and 36% for families earning \$30,000 to \$54,000 annually. In comparison, it is only 21% for families earning \$80,400 to \$115,400, and it is 14% for families earning \$115,401 or more (The Education Trust, 2011). Given this, even when LMI families contribute, their contributions may only make up a very small portion of college costs.

It might be expected that concerns about availability of financial aid may also have a negative effect on enrollment patterns of college-bound LMI students (e.g., Sallie May Fund & Harris Interactive, 2003). However, surprisingly, while most (71%) LMI students perceive that the availability of financial aid is very important to their decision on what college to attend, this concern does not appear to have a negative effect on enrollment decisions. Instead, multivariate analyses reveal it actually has a positive effect on LMI students' enrollment decisions. This may be because concerns about the availability of financial aid among LMI students can actually represent a certain level of knowledge about financial aid. For example, the American Council on Education (2004) finds that many low-income students who do not apply for financial aid believe that they do not need financial aid. However, research findings suggest that if LMI students are made aware of the availability of financial aid, they are more likely to engage in school activities (Destin & Oyserman, 2009) and ultimately enroll in college (Ekstrom, 1992; Hossler, Hu, & Schmit, 1999; King, 1996). Given this, it is speculated here that college-bound LMI students who are very concerned with the availability financial aid are more likely to be aware of its potential positive effects for financing college and pursue it as a strategy for paying for college. Whereas, LMI students who are not very concerned are more likely to not fully understand its potential for helping to finance college and do not take the appropriate steps to receive financial aid such as filling out a Free Application for Federal Student Aid (FAFSA) form.

In regards to parents' college savings, multivariate findings suggest that college investment funds (such as mutual funds) are a significant positive predictor of college-bound LMI and MHI students' enrollment in a four-year college. This is consistent with previous research on assets and education (Elliott & Beverly, 2011a, b; Kim & Sherraden, 2011; Zhan & Sherraden, 2011). Other forms of

parents' college savings are not significant. Previous research is mixed. For example, Elliott and Beverly (2011a) find that parents' savings for students' education is not a significant predictor of college enrollment decisions. In contrast, Charles, Roscigno, and Torres (2007) find that parents' saving for college is a significant predictor of college attendance at four-year colleges. Neither study uses a sample of LMI students.

Despite asset findings, parents' education level remains an important factor for transmission of SES from parent to child. A way that parents' level of education may help transmit SES is through parents' willingness/capability to pay for college costs. Lippman et al. (2008) find that students whose parents earned at least a bachelor's degree are more likely to report that their parents are willing to pay for college costs than if they did not. In line with this perspective, LMI students are far less likely to live with parents who have earned at least a bachelor's degree (27% vs. 64%). Moreover, as previously noted, after enrolling in college LMI students are less likely to report they paid for college with family contributions than MHI students. Parents' expectations are another important predictor of whether LMI students enroll in a four-year college. Research suggests that parents' expectations are associated with parents' level of education (Davis-Kean, 2005).

Conclusion

LMI Americans continue to believe in the *idea*, or normative expectation, of education as a means to economic mobility. With limited opportunities for accumulating savings for college, however, many college-bound LMI students do not believe that college is within reach. They learn from a very young age that while college may be desired, it is not affordable. In this paper, it is suggested that educational disadvantage, rooted in asset disadvantage, may be a significant factor in explaining why LMI students do not believe that college is within reach. Asset accumulation, especially in the form of college savings, may increase college-bound LMI students' opportunity for enrolling in four-year colleges. That is, LMI students may be more likely to seek a college education if—from a very young age—they have a way to pay for it. Greater control by LMI students over financing college should lead to more LMI students viewing college as within reach. Doubts about this may be quelled by observing the route to college for wealthier students.

How might students gain greater control over financing for college? Policies that encourage and facilitate college savings may help LMI students think about college as within reach (Elliott & Beverly, 2011a, b). Currently, publicly-funded college savings schemes, such as College 529 Plans, offer little advantage to LMI families because they are based on tax incentives (Newville, Boshara, New America Foundation, & Clancy, 2009). However, innovations that structure and provide incentives for college saving in poor families are currently being field tested.⁷

At the policy level, children's savings proposals are being discussed in Congress and in state legislatures. One is the America Saving for Personal Investment, Retirement, and Education (ASPIRE) Act, which might help to empower children to view college as within reach (; Loke & Sherraden, 2009; New American Foundation, 2006). The ASPIRE Act would create "KIDS Accounts," or a savings account for every newborn, with an initial \$500 deposit, along with opportunities for financial education. Children in households earning below the national median

⁷ For more information see, for example, SEED Oklahoma Kids at http://csd.wustl.edu/AssetBuilding/SEEDOK/Pages/default.aspx.

income would be eligible for both a supplemental contribution of up to \$500 at birth and a savings incentive of \$500 per year in matching funds for amounts saved in the account. Withdrawals would be allowed when the accountholder turns 18. Tax-free withdrawals could be made to pay for postsecondary education, first-time home purchase, or retirement security. While more research is needed, this and other proposed legislation show promise of helping high-achieving poor and minority students to perceive of college as a reality and help to restore the educational path as a key determinant between prosperity and poverty in the lives of all Americans.

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