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Closing the Gap in College Enrollment

The Potential of Children's College Accounts

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Closing the Gap in College Enrollment: The Potential of Children's College Accounts

This study examines the potential role of children's college accounts (CCAs) as a way to increase college enrollment among youth in America. This study indicates that 91 percent of young people aspire to attend college; however, only 75 percent actually expected to attend college in 2002. Among youth who expected to attend college and had a CCA, there was an expectation/enrollment gap of 13 percentage points. By contrast, among youth who did not have a CCA there was an expectation/enrollment gap of 30 percentage points. When controlling for all independent variables, children with a CCA are nearly twice as likely to be in college as those without a CCA. It appears that when the financing of college is perceived as being under a young person's own control, that person is more likely to be enrolled in college. Moreover, findings suggest that college expectations act as a partial mediator between CCAs and college enrollment.

Key words: *child development accounts, college enrollment, college expectations, homeownership, net worth, wealth*

Describing the perceived importance of a college education to the achievement of the American dream, Elfin (p. 288) writes,

> Of all the truths that this generation of Americans holds self-evident, few are more deeply embedded in the national psyche than the maxim "It pays to go to college." Since the GI Bill transformed higher education in the aftermath of World War II, a college diploma, once a birthright of the leisured few, has become a lodestone for the upwardly mobile, as integral to the American dream as the pursuit of happiness itself. (p. 1)

For many poor and minority Americans, in particular, a college education represents the difference between remaining on the path of continued poverty or gaining access to the path of prosperity. However, for many young people, especially minority and low-income youth, attending college is a genuinely desired but elusive goal. According to the Advisory Committee on Student Financial Assistance (2002), a group charged by Congress with enhancing access to postsecondary education for low-income students, 94 percent of U.S. high school students aspire to go to college.[1] However, among high school graduates, only 32 percent of Latinos, 39 percent of African-Americans, and 45 percent of whites enroll in college (U.S. Census Bureau, 2001). Even among college-qualified youth, only 63 percent of males and 71 percent of females matriculate, and only 30 percent of males and 35 percent of females graduate from college (Federal Interagency Forum on Child and Family Statistics,

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[1] In this paper, we use the shorthand "college" to refer to all post secondary training and higher education resulting in certification or a degree that reasonably can be assumed to lead to improved economic and social opportunities.

2002). These data on educational attainment translate into disparities that reduce the likelihood of later economic success (Wilson, 1987), including lower income and earnings (King & Bannon, 2002), less stable employment (Topel, 1993), less stable family support (Axinn & Arland, 1992), and lower wealth (Oliver & Shapiro, 1995; Shapiro, 2004).

However, the desire to attend college alone may not be sufficient motivation to invest in schoolwork over a period of several years. Youth also have to trust that there is a reasonable chance that they will succeed in school over the long run. This includes faith in their own individual effort and ability, but also faith that educational institutions will respond predictably and positively to their investment of effort. Moreover, youth may also have to believe that there are viable opportunities for *future* schooling and training that will help them translate their effort and ability into economic and social rewards (Ogbu, 1987).

Research with older youth and adults, however, shows that many Americans harbor doubts about whether all Americans have access to college. According to John Immerwahr (2004), who studied public attitudes about higher education in a national representative study, 57 percent of American adults say that many qualified high school graduates are unable to attend college. An overwhelming 76 percent of African American adults in Immerwahl's (2004) study believe college access is limited for financial reasons. Concerns about financing college among low-income and middle-income parents rival those of blacks. ACSFA (2006) finds that 80 percent of low-income parents and 66 percent of moderate-income parents were "very concerned" about college costs. In contrast, only 37 percent of middle-income parents and 19 percent of high-income parents were "very concerned" about financing college. Many low-income youth are also "very concerned" about their ability to finance college. Among low-income students, 71 percent are "very concerned" compared to only 21 percent of high-income youth (ACSFA, 2006).

Increasingly, researchers are looking at college costs and large levels of unmet need as a potential reason for why at-risk youth are less likely to expect to attend college and ultimately enroll in college in fewer numbers (ACSFA, 2002, 2006; Choy & Carroll, 2003).[2] Choy and Carroll (2003) find that during the 1999/2000 school year, low-income students were faced with unmet need that was between $4,000 and $9,300, depending on the type of college they attended (Choy & Carroll, 2003). ASCFA (2006) estimates that over the next decade, two million college-qualified students from low to moderate-income households will not be able to attend any college at all due to high unmet need, while four million will be forced to attend two-year colleges.

Moreover, college choice researchers consistently find that rising college costs have a negative impact on college enrollment decisions. In a review of 25 studies, Leslie and Brinkman (1988) estimated that every $100 increase (in 1982-1983 dollars) would result in a 1.8 and 2.4 percentage points decrease in college enrollment. In a follow-up study to Leslie and Brinkman, Heller (1997) reviewed ten studies from 1975 to 1996 on the price of college and enrollment. Heller (1997) concludes that each tuition increase of $100 leads to a reduction in enrollment from 0.5 to 1.00 percentage points. Low-income students' decisions to enroll in college appear to be even more sensitive to college prices than their peers. For example, McPherson and Schapiro (1998) estimate

[2] Unmet need is "the portion of college expense not covered by the expected family contribution (EFC) and student aid, including work-study and loans" (ACSFA, 2002, p. 5).

that a $150 net cost increase (in 1993-1994 dollars) will result in a 1.6 percentage point reduction in enrollment among low-income students.

This study looks at the potential of children's college accounts (CCAs) as a way to increase college enrollment. A CCA in this study is the savings set aside in a conventional savings account for college.[3] From this perspective, college savings is a pot of money. There is growing evidence that people use mental accounting techniques to think about different pots of money in different ways, which affects when and how they use the money in these separate accounts (Kahneman & Tversky, 1979; Lea, Tarpy, & Webley, 1987; Thaler, 1985; Winnett & Lewis, 1995). In other words, money is not entirely fungible; different accounts hold different purposes and meanings. These meanings affect how people deposit money into the accounts, and how they use the money (Winnett & Lewis, 1995). Families, especially those with children, have numerous household accounts that are non-fungible, designated for certain purposes, and subject to negotiation within the family (Winnett & Lewis, 1995).

A separate savings account or other method that imposes constraints on the person's ability to spend, makes money less likely to be used for current consumption (emergencies or otherwise) (Maital & Maital, 1994). If the account is a savings contract with rules and penalties for early withdrawal, there is even less likelihood of using it for current consumption (Katona, 1975). Therefore, when a young person has money designated specifically for college in a savings account, he or she is likely to think about the savings in different terms from other pots of money, or accounts. Having savings designated for college in a savings account may have the important cognitive effect of encouraging the beneficiary to think more about college, ponder what it takes to get there (academically and financially), and to picture going to college. For example, using CDS data, Elliott (2008) finds that children 12 to 18 who have a CCA are more likely to expect to attend college than children without a CCA.

In sum, this study suggests that savings designated specifically for college have two main effects. One is direct: savings increase the means to afford college, making it a more realistic option. But the indirect effect may be as important: saving over a period of years may raise expectations for college. College expectations have been cited as one of the most significant determinants of educational attainment (Marjoribanks, 1984). This study examines both the direct and indirect effects that savings may have on youth's college expectations and math achievement. I pay particular attention to at-risk youth. In addition, I consider the role that the amount saved plays in college enrollment decisions.

Sample

Data

This study uses the following three data sets: (1) Panel Study of Income Dynamics (PSID), (2) Child Development Supplement (CDS) to the PSID, and (3) Transition into Adulthood (TA).

[3] State College Savings Plans (529s) are an example of different kind of mechanisms for saving. Savings in 529s accumulate tax free and if used for college expenses, can be redeemed tax free (Clancy, Orszag, & Sherraden, 2004).

These data sets are linked together using PSID codes so that parent, early childhood, and young adult data can be used in this study.

The PSID is a nationally representative longitudinal survey of U.S. individuals and families that began in 1968. Data on employment, income, and marital status have been collected annually with questions on wealth added in 1984. In 1997, a supplement was drawn from PSID interviews to collect a wide range of data on parents and their children up to 12 years old.

In the 1997 sample, there are 3,563 young people. The numbers are fairly evenly distributed across all ages. There are 1,642 white youth and 1,455 black youth. There are also Hispanics, Asians, Native Americans, and "other" in the sample, but the counts are much smaller. Because the PSID initially over-sampled low-income families, there are a greater number of blacks than expected in the overall US population. In some cases, data were collected on more than one child per household, but the maximum number of interviews per household was limited to two children. Whenever there were three or more eligible children less than age 13 in a household, two were randomly selected for an interview (Hofferth, Davis-Kean, Davis, & Finkelstein, 1997).

In 2005, the PSID began a new study to collect information from all CDS participants who had turned age 18 and completed high school – they comprise the TA data set. The final sample consisted of 745 participants. The addition of the TA data set allows researchers to examine the potential relationship between youth with savings for college and college enrollment.

Study Sample

The sample in this study consists of black and white youth, 18 or older, who finished or left high school. It was restricted to those who were interviewed in 2002, reducing the number of children who were 18 at the time the TA data was collected. This is the only year for which data on savings and college expectations is available. This reduced the sample to 538 young people.

The youth in this study live in diverse circumstances (see Table 1). More than half live with their married parents (75 percent), while the rest live in single-parent households (25 percent). African Americans make up 40 percent of the non-weighted sample and 60 percent are white. Eleven percent of households are poor and 28 percent are upper class. 24 percent of households in this study are asset poor, while 20 percent are asset rich. 48 percent of parents have a high school degree or less, 25 percent have some college, and 27 percent have college degree or more.

Table 1. Non-weighted demographics for sample

Variable Name	Percent	Number	*SE*
Parent controls			
Head's race			
White	60%	317	1.93
Black	40%	213	1.93
Head's gender			
Male	77%	412	2.15
Female	23%	120	2.15
Head's education 2001			
High school or less	48%	205	2.74
Some college	25%	128	2.43
Four years of college or more	27%	136	2.68
Marital status 2002			
Married	75%	399	2.29
Single	25%	133	2.29
Employment status 2001			
Employed	99%	468	.61
Unemployed	1%	3	.61
Child controls			
Child's race			
White	59%	319	2.03
Black	41%	219	2.03
Child's gender			
Male	46%	250	2.74
Female	54%	288	2.74
Economic controls			
Average household income (1997 & 2001)			
Poor	11%	58	1.61
Lower middle class	12%	63	1.69
Middle class	21%	115	1.93
Upper middle class	28%	151	2.54
Upper class	28%	151	2.60
Household wealth 2001			
Less than $4,564	24%	132	2.36
$4,565-$47,743	39%	210	2.66
$47,743 - $153,700	17%	89	1.98
$More than $153,700	20%	107	2.29
Home			
Own home	81%	431	2.02
Do not own home	19%	101	2.02

Research Variables

This section provides information on how variables are measured in this study. There are both categorical and continuous variables used in the analysis. Variables are collected from 1997, 1999, 2001, and 2002, depending upon when they were available in the PSID/CDS. Variables are categorized into the following groups: parent controls, youth controls, academic controls, psychological controls, and economic controls.

Parent Controls

Head's education level in the PSID/CDS is a continuous variable (1 to 16) with each number representing a year of completed schooling. In this analysis, the household head's education level has been recoded into a three level variable: (1) no college, (2) some college, or (3) four years of college. Data are downloaded for 2001.

Marital status is measured by asking head of households, "Are you married, divorced, separated, or have you never been married?" It is recoded as a dichotomous variable: (1) married and (2) not married. Data are downloaded for 2001.

Parent engagement is measured by creating an index summing responses to the following questions: (1)" How often do you encourage your child to read on (his/her) own?" (2) "If your child brought home a report card with grades or progress lower than expected, would you contact his/her teacher or principal?" (3) "If your child brought home a report card with grades or progress lower than expected, would you spend more time helping child with schoolwork?" and (4) "In the past month, how often did you work on homework with (him/her)?"

Youth Controls

There are two demographic controls for youth used in this study, race and gender. *Race* is recoded in this study as white or black. *Gender* is also included in the analyses as a control.

Academic Controls

Special education is measured in the PSID/CDS by asking, "Has (he/she) ever been classified by a school as needing special education?" This is coded as yes or no.

Applied problem standardized score will be used as a proxy for math achievement. Applied problem standardized score is measured in the PSID using the Woodcock Johnson (WJ-R), a well-respected measure (Mainieri, 2006). The test is administered by an interviewer and is arranged in order of difficulty. The WJ-R has a standardized scoring protocol that measures math abilities in comparison to the national average for each age (Mainieri, 2006). Normed scores will be used in this study. The normed scores are constructed based on each youth's raw score, or the number of correct items, and age (Mainieri, 2006). Data on applied problem standardized score are downloaded for 2001.

Psychological Controls

Youths' aspirations are measured by asking youths, "How far would you like to go in school?" Response categories include: (1) leave high school before graduation (2) graduate from high school,

(3) graduate from a two-year community college, (4) graduate from a vocational school, such as beauty school, (5) attend a four-year college, (6) graduate from a four-year college, (7) get more than four years college (8) do something else. Youths' aspirations are recoded into a dichotomous variable. The reference group consists of youth who responded by selecting the number 3, 5, 6, or 7. The first time data was collected on youth's aspirations in the PSID/CDS was 2002.

Youth's college expectations are measured by asking respondents twelve and older, "What do you think are the chances that you will graduate from a four-year college? Would you say: (1) no chance, (2) some chance, (3) about 50-50, (4) pretty likely, or (5) it will happen?" College expectations are recoded into a dichotomous variable. The reference group consists of youth who responded by answering they were either pretty likely to attend college or definitely, it will happen. The first time data was collected on youth's expectations in the PSID/CDS was 2002.

Parent expectations for youth attending college are measured by asking heads of households, "How much schooling do you expect that (CHILD) will complete? Do you think you will?" Response categories include: (1) eleventh grade or less (2) graduate from high school (3) post-high school vocational training, (4) some college (5) graduate from a two-year college, (6) graduate from a four-year college, (7) master's degree, or (8) MD, LAW, PHD, or other doctoral degree. Parent expectations are recoded into a dichotomous variable. The reference group consists of parents who responded by selecting the number 4, 5, 6, 7, or 8. Parent expectations are downloaded for 2001.

Youth's self-efficacy is measured in the PSID/CDS using Pearlin's self-efficacy scale (for information on Pearlin's scale see, Pearlin, Menaghan, Lieberman, & Mullan, 1981). According to Mainieri (2006), the youth's self-efficacy scale measures the amount of control youth perceive they have over their life in the PSID/CDS. Data are downloaded for 2002, ages 12 to 18 (data for youth as young as eight are available in the PSID/CDS). For descriptive purposes, the variable is collapsed into a dichotomous variable using the mean score. In all regressions, it is used in its continuous form.

Youth's self-concept is measured in the PSID/CDS using Rosenberg's self-esteem scale (for information on Rosenberg's scale see Rosenberg, 1986). According to Mainieri (2006), youth's self-concept measures the degree of satisfaction one has with him or herself in the PSID/CDS. Data are downloaded for 2002, ages 12 to 18 (data for youth as young as eight are available in the PSID/CDS). For descriptive purposes, the variable is transformed into a dichotomous variable using the mean score. In all regressions, it is used in its continuous form.

Economic Controls

Children's college accounts (CCAs) information from the PSID/CDS was first collected in 2002. It is derived by asking whether youth have a conventional savings account and whether they have designated some of this savings for college. By conventional savings account, I mean an account that has not been designed for the purposes of saving for school. A CCA in this study is a regular savings account with savings the youth has designated, at least in part, for college.

Specifically, in this study youth are asked, "Do you have a savings or bank account in your name?" (1) Yes or (2) no. If they answer no, they are asked to skip to a different section of the survey and are not asked the follow-up question, "Are you saving some of this money for future schooling, like college?" Response categories include: (1) yes or (2) no. The skip pattern is used because youth who

do not have savings have practically stated that they do not have a portion of the savings set aside for future schooling. This is important to note, because CDS staff did not account for the skip pattern when constructing the CCA variable (PSID code Q23L3B). As a result, the CCA is missing for several hundred youths. To account for this, respondents who answered no to having savings are coded in this study as also having said no to having set aside a portion of this savings toward future schooling.

Children's savings amount is measured by asking youth how much they have set aside for college. They are asked to select an amount between $.01 – $9,997.99. For the purposes of descriptive analysis, the variable is collapsed into a dichotomous variable using the mean to create the categories: (1) youth with savings under $401 and (2) youth with savings over $401. For regression analysis the continuous form of the variable is used.

Homeownership is measured by asking heads of households, "Do you (or anyone else in your family living there) own the (home/apartment), pay rent, or neither?" Response categories include: (1) Owns or is buying home, either fully or jointly; mobile home owners who rent lots are included here, (5) Pays rent, (9) Neither owns nor rents. In this analysis head's education level has been recoded into a dichotomous level variable: (1) owns a home and (2) does not own a home.

Household income is a continuous variable in the PSID, summing total household income from the previous tax year, including all taxable income, transfer income, and Social Security income for anyone in the household. Household income is collected for 1997 and 2001 in this study. Single-year measures of income may not be reliable given yearly fluctuation (Blau, 1999; Mayer, 1997). Income averaged over multiple years provides the best estimate of "permanent income" (Blau, 1999; Mayer, 1997). Therefore, an average household income is calculated using the 1997 and 2001 data. The 1997 income is inflated to 2001 price levels using the Consumer Price Index (CPI). It is then collapsed into a five level variable: (1) less than $18,256 – poor, (2) $18,256 - $33,376 – lower middle class, (3) $33,377 - $53,161 – middle class, (4) $53,162 - $84,016 – upper middle class, and (5) greater than $84,016 – upper class.

Household wealth (without home equity) in the PSID is a continuous variable calculating household net worth, summing separate values for a business, checking or savings, real estate, stocks, and other assets, subtracting credit card and other debt. Data are downloaded for 1999. Household wealth is inflated to 2001 price levels using the CPI to correspond with income data. Wealth is collapsed into a four level variable: (1) less than $4,564 – asset poor, (2) $4,564 - $47,742, (3) $47743 - $153,700, and (4) more than $253,700. Asset poverty is calculated using the 2001 poverty level. It is equivalent to three months of income at the poverty line (see for e.g., CFED, 2008).

Data Analysis Plan

In the first stage of the data analysis plan, an extensive review of descriptive data is conducted to identify meaningful relationships between groups. In stage two, regression techniques are used to analyze relationships between dependent and independent variables in attempt to provide a better understanding of what relationships have statistical significance when different controls are included in a model. In the last stage of analysis, tests of mediation are run to better understand important relationships between key variables of interest. In the next section of the data analysis plan, some of the more complicated methods used in the analysis will be discussed.

Tests of Association

Logistic regression is a nonparametric test used to analyze the relationship between a categorical dependent variable and a set of independent variables (Allison, 2001). Prior to running logistic regression, bivariate analysis is conducted using the Rao-Scott chi-square. The Rao-Scott chi-square is used because of the complex survey design. The Rao-Scott chi-square is generated by SAS when using PROC SURVEYFREQ and the CHISQ option. The Rao-Scott chi-square "applies a design effect correction to the Pearson chi-square that computes the design effect correction from proportion estimates instead of null proportions" (Baisden, Park, & Hu, 2002-2003, p. 4).[4] Multicollinearity is tested using the SAS syntax, PROC REG with options VIF TOL in SAS. Tests revealed that multicollinearity is not problematic in the models in this study.

Study Weights

Due to the complex survey design of PSID/CDS, weights must be used in order for final results to be representative of the U.S. population (Gouskova, 2001). Weights adjust for possible selection bias. PSID/CDS and TA provide sampling weights (Gouskova, 2001). In this study the TA weight is used (Survey Research Center, 2008).

Missing Variables

Prior to running the logistic regression model, CCA was analyzed to determine if missing data are missing at random (MAR). According to Little and Ruin (1987), data are MAR when, given the observed data, the missingness mechanism does not depend on the unobserved data. The following variables have more than ten percent missing in this study: math achievement (11 percent), youth's aspirations (14 percent), employment (11 percent), CCA (14 percent), youth's savings amount (21 percent), and youth's college expectations (12 percent). However, because no variable had above 20 percent missing, multiple imputation can be used to replace missing values (Little & Rubin, 2002). To test for differences between excluded cases and cases included, all missing variables were transformed to a *miss* variable and a regression analysis was run. Differences were nonsignificant.

Multiple imputation is used to account for missing data. It uses 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). I used multiple imputation 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 were 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.

Identical analyses were then conducted using PROC LOGISTIC. The results were combined or "rolled up" to produce less biased estimations of parametric statistics (Saunders et al., 2006). The beta coefficients were averaged across the data sets to produce one estimate, and the standard error for each beta was calculated from the five error estimates as well as the varability between the

[4] There is a known defect with the Rao Scott chi-square that occurs when weights are used (Baisden et al., 2002-2003). To correct for this defect, weights must be normalized (Baisden et al., 2002-2003). As discussed in this section, weights have been normalized in this analysis.

estimates (Rubin, 1987). Further, the R^2 reported in this study is calculated from averaging the R^2s across the five imputed data sets is reported (Saunders et al., 2006).

Testing Mediation

A mediating variable is a variable that helps explain the relationship between an independent and dependent variable (Baron & Kenny, 1986). Mediation suggests that an independent variable causes a mediator which causes a dependent variable, or indirect effect (Baron & Kenny, 1986). In this study, I examine whether college expectations mediate the relationship between CCAs and college enrollment.

Statistical evidence of mediational effects can be established using a series of linear regressions testing whether (a) the intervention is related to the outcome variable, (b) the intervention is related to the proposed mediator, and (c) the mediator is related to outcome in a model controlling for the effects of the intervention (Baron & Kenny, 1986). However, according to Preacher and Hayes (2004), it is possible to observe a large change in the X → Y path after adding a mediator to the model without observing a drop in statistical significance – a Type II error.

Therefore, Preacher and Hayes (2004) suggest that Sobel's test might be a more powerful test of mediation than using a series of regressions, as suggested by Baron and Kenny. According to Preacher and Hayes (2004), "the Sobel test directly addresses the primary question of interest – whether or not the total effect of X on Y is significantly reduced upon the addition of a mediator to the model" (p. 720). Sobel (1982) provides the following formula for testing mediation:

$$z = a \times b \, 1 \sqrt{(b^2 \, x \;\; Sa^2 + a^2 x \; Sb^2)},$$

where a = path coefficient from the intervention to the mediator, Sa^2 = the standard error of a, b = path coefficient from the mediator to outcome, and Sb^2 = standard error of b.

Bootstrapping is a nonparametric approach to effect-size estimation and hypothesis testing (Mooney & Duval, 1993). Unlike Sobel tests, bootstrapping does not make assumptions about the shape of the distribution of variables or the sampling distribution of the statistic (Mooney & Duval, 1993). Shrout and Bolger (2002) suggest that bootstrapping is a way of circumventing the power problem introduced by asymmetries and other forms of nonnormality in the sampling distribution of the indirect effect. The bootstrapping is accomplished by taking a large number of samples of size n (where ne is the original sample size) from the data, *sampling with replacement*, and computing the indirect effect, in each sample (Preacher & Hayes, 2004).

Results

The aggregate data indicate that 91 percent of the youth in this study aspired to attend college, while 75 percent actually expected to attend college in 2002. The vast majority (97 percent) of parents in this study aspire for their child to attend college, while 88 percent actually expected their child to attend college in 2002. Among youth who graduated from high school, 80 percent had taken the SAT or ACT by 2005. Among youth with CCAs, 87 percent (181) took the SAT or ACT by 2005. In contrast, 73% of those without a CCA took the SAT or ACT by 2005. Additionally, 66 percent (356) of youth in this study were enrolled in college during 2005, 34 percent (181) were not enrolled. In

the following sections I examine the enrollment patterns of at-risk youth (i.e., low-income, asset-poor, minority, and those whose parents have no college experience) and the impact that CCAs might have on college enrollment.

Differences in College Enrollment by Income

Among poor youth, 57 percent were enrolled in college in 2005. By contrast, 85 percent of upper-class youth were enrolled in college in 2005. This is an enrollment gap of 28 percentage points. Bivariate analysis indicates that the association between income and college enrollment is significant (Rao Scott $X^2 = 42.05$, $df = 4$, $p = .00$).

Table 2. Differences in college enrollment by income

Household income	Enrolled in 2005		Not Enrolled in 2005	
	Percent	Number	Percent	Number
Poor	57%	27	43%	20
Lower middle class	43%	23	57%	30
Middle class	41%	37	58%	52
Upper middle class	70%	115	30%	50
Upper class	85%	154	16%	29

Table results rounded to the nearest percent (number); percent and numbers are weighted using PSID/CDS weights

Differences in College Enrollment by Wealth

Among asset-poor youth, 47 percent were enrolled in college in 2005; among asset-rich youth, 82 percent were enrolled in college in 2005. This is an enrollment gap of 35 percentage points. Bivariate analysis indicates that the association between college savings and household wealth is significant (Rao Scott $X^2 = 30.46$, $df = 3$, $p = .00$).

Table 3. Differences in college enrollment by wealth

Household wealth	Enrolled in 2005		Not Enrolled in 2005	
	Percent	Number	Percent	Number
Less than $4,564	47%	55	53%	61
$4,564- $47,743	61%	123	39%	80
$47,743- $153,700	81%	74	19%	17
More than $153,700	82%	105	17%	22

Table results rounded to the nearest percent (number); percent and numbers are weighted using PSID/CDS weights; wealth does not include home equity

Differences in College Enrollment by Race

Among black youth, 53% were enrolled in college in 2005; 69% percent of white youth were enrolled in college in 2005. This is an enrollment gap of 16 percentage points. Bivariate analysis indicates that the association between college savings and race is significant (Rao Scott $X^2 = 6.38$, $df = 1$, $p = .01$).

Table 4. Differences in college enrollment by race

Race	Enrolled in 2005		Not Enrolled in 2005	
	Percent	Number	Percent	Number
White	69%	304	30%	134
Black	53%	52	46%	46

Table results rounded to the nearest percent (number); percent and numbers are weighted using PSID, CDS weights

Differences in College Enrollment by Parent's Level of Education

Among youth whose parents have a high school degree or less, 51 percent were enrolled in college in 2005; among youth whose parents have four years of college or more, 83 percent were enrolled in college in 2005. This is a difference of 32 percentage points. Bivariate analysis indicates that the association between amount of college savings and parental education level is significant (Rao Scott $X^2 = 26.19$, $df = 2$, $p = .00$).

Table 5. Differences in college enrollment by parent's level of education

Parent's level of education	Enrolled in 2005		Not Enrolled in 2005	
	Percent	Number	Percent	Number
High school or less	51%	105	49%	100
Some college	72%	92	28%	36
Four-year degree or more	83%	144	17%	30

Table results rounded to the nearest percent (number); percent and numbers are weighted using PSID, CDS weights

The Expectation/Enrollment Gap

Among youth who did not have a CCA in 2002, 55 percent were enrolled in college in 2005. By contrast, 79 percent of youth with a CCA were enrolled in college in 2005. Bivariate analysis indicates that the association between CCAs and college enrollment is significant (Rao Scott $X^2 = 17.13$, $df = 1$, $p = .00$). This suggests that CCAs might be a way to increase college enrollment. In this next section I examine college enrollment by subgroup.

Table 6. Differences in college enrollment by CCA

CCA	Enrolled in 2005		Not Enrolled in 2005	
	Percent	Number	Percent	Number
Has CCA	79%	165	55%	113
Does not have CCA	21%	43	45%	92

Table results rounded to the nearest percent (number); percent and numbers are weighted using PSID, CDS weights

Moreover, among youth who expected to attend college and had a CCA in 2002, 13 percent were not enrolled in college in 2005. Among youth who expected to attend college and did not have a CCA in 2002, 30 percent were not enrolled in college in 2005.

Table 7: Differences in college enrollment by CCA

CCA	Enrolled in 2005		Not Enrolled in 2005	
	Percent	Number	Percent	Number
Has CCA and Expects to Attend College	87%	150	13%	22
Does not have CCA and Expects to Attend College	70%	96	30%	41

Table results rounded to the nearest percent (number); percent and numbers are weighted using PSID, CDS weights

Predicting College Enrollment with Wealth, Homeownership, CCAs, and Savings Amount

In this section I ask, "Are wealth, homeownership, CCAs, and/or amount of college savings associated with college enrollment when controlling for parent controls, youth controls, academic controls, psychological controls, and economic controls?" Wealth variables are added one at a time. As a result four models are presented.

Model Eleven

Model eleven includes household wealth (net worth) without home equity (see Table 8). In previous chapters, I examined wealth with home equity. However, because research suggests that homeownership might be a particularly important form of wealth for understanding college enrollment, this chapter examines homeownership independent of wealth (for e.g., Aaronson, 2000; Green & White, 1997). In the following analysis, model eleven includes household wealth without home equity, while model twelve includes both wealth and homeownership as separate variables.

In model eleven, the head of household's education, youth's college expectations and math scores, parent's college expectations, and household wealth are statistically significant when controlling for all independent variables. Moreover, all significant independent variables in model eleven fall within the 95 percent confidence interval. For each unit increase in parental level of education (high school or less, some college, four-year degree or more), youth are approximately 39 percent more likely to be enrolled in college (*odds ratio*=1.39; *p*=.04). For each one-point increase in a youth's math scores, he or she is approximately four percent more likely to be enrolled in college (*odds ratio*=1.04; *p*=.00). Youth who expect to attend college are approximately four times more likely to attend college than youth who do not expect to attend college (*odds ratio*=5.78, *p*=.00). Furthermore, youth who have parents who expect to attend college are approximately three times more likely to enroll in college than youth who have parents who do not expect them to attend college (*odds ratio*=2.69, *p*=.01). For each unit increase in household wealth (less than $4,565; $4,564-$47,743; $47,743-$153,700; or more than $153,700) youth are approximately 40 percent more likely to be enrolled in college (*odds ratio*=1.40; *p*=.02).

Model Twelve

Model twelve includes household wealth and homeownership (see Table 8). In model twelve, the head of household's education, youth's college expectations and math scores, parent's college expectations, and homeownership are statistically significant when controlling for all other

independent variables. All significant independent variables in model twelve fall within the 95 percent confidence interval.

For each unit increase in parental level of education (high school or less, some college, four-year degree or more), youth are approximately 45 percent more likely to be enrolled in college (*odds ratio*=1.45; *p*=.04). For each one-point increase in a youth's math scores, a youth is approximately three percent more likely to be enrolled in college (*odds ratio*=1.03; *p*=.00). Youth who expect to attend college are approximately three and half times more likely to attend college than youth who do not expect to attend college (*odds ratio*=3.47, *p*=.00). Furthermore, youth who have parents who expect to attend college are approximately three times more likely to enroll in college than youth who have parents who do not expect them to attend college (*odds ratio*=3.13, *p*=.01). In households where families own their home, youth are twice as likely to be enrolled in college, when controlling for all independent variables (*odds ratio*=2.01, *p*=.05).

Table 8: Logistic regression model predicting college enrollment with and without CCAs (N=1071)

Controls	Model Eleven (wealth)			Model Twelve (home ownership)		
	B	*SE*	p-value	*B*	*SE*	p-value
Intercept						
Parent controls						
Head's education	.32	.16	.04	.33	.16	.04
Marital status	-.10	.35	.77	-.13	.35	.71
Parent engagement	.02	.02	.29	.01	.02	.52
Youth controls						
Race	.23	.33	.49	.18	.33	.59
Gender	-.39	.26	.13	-.31	.25	.21
Academic controls						
Special education	-.88	.49	.07	-.99	.54	.07
Math std. score	.03	.01	.00	.03	.01	.00
Psychological controls						
Youth's self-concept	.75	.40	.06	.72	.40	.08
Youth's self-efficacy	-.07	.33	.83	-.01	.34	.98
Youth's college expectations	1.51	.30	.00	1.49	.33	.00
Parent's college expectations	1.07	.40	.01	1.11	.40	.01
Economic controls						
Household income	.05	.13	.71	-.03	.14	.85
Household wealth	.32	.14	.02	.29	.15	.06
Homeownership	-------	----	----	.64	.33	.05
Adjusted R^2	.41			.42		
R^2 *change*	------			.01		
Likelihood ratio	188.82*			188.49*		
df	13			14		

Analysis is weighted using PSID, CDS weights; *p<.000
Note: CCAs is an abbreviation for youth's college accounts; Wealth does not include home equity

Model Thirteen

Model thirteen includes household wealth, homeownership, and CCAs (see Table 9). In model thirteen, the head of household's education, math scores, youth's college expectations, parent's college expectations, home ownership, and CCAs are statistically significant when controlling for all other independent variables. All significant independent variables in model thirteen fall within the 95 percent confidence interval.

For each unit increase in parental level of education (high school or less, some college, four-year degree or more), youth are approximately 43 percent more likely to be enrolled in college (*odds ratio*=1.43; *p*=.04). For each one-point increase in a youth's math scores, a youth is approximately two percent more likely to be enrolled in college (*odds ratio*=1.02; *p*=.02). Youth who expect to attend college are approximately four times more likely to attend college than youth who do not expect to attend college (*odds ratio*=4.03, *p*=.00). Furthermore, youth whose parents expect them to attend college are approximately three times as likely to enroll in college than youth whose parents do not expect them to attend college (*odds ratio*=3.04, *p*=.01). In households where families own their home, youth are approximately twice as likely to be enrolled in college, when controlling for all independent variables (*odds ratio*=1.85, *p*=.05). Youth with a CCA are nearly twice as likely to be enrolled in college as youth without a CCA (*odds ratio*=1.85, *p*=.02).

Model Fourteen

Model fourteen includes household CCAs and amount of youth's savings (see Table 9). Parental level of education is no longer significant when controlling for youth's savings. Math scores, youth's college expectations, parent's college expectations, home ownership, and CCAs remain statistically significant when controlling for all other independent variables. All significant independent variables in model fourteen fall within the 95 percent confidence interval.

For each one-point increase in a youth's math scores, he or she is approximately two percent more likely to be enrolled in college (*odds ratio*=1.02; *p*=.02). Youth who expect to attend college are approximately six times more likely to attend college than youth who do not expect to attend college (*odds ratio*=5.77, *p*=.00). Furthermore, youth who have parents who expect to attend college are approximately three times more likely to enroll in college than youth who have parents who do not expect them to attend college (*odds ratio*=3.34, *p*=.01). In households where families own their home, youth are approximately twice as likely to be enrolled in college, when controlling for all independent variables (*odds ratio*=2.14, *p*=.05). Youth with a CCA are nearly twice as likely to be enrolled in college as youth without a CCA (*odds ratio*=1.96, *p*=.01).

Table 9. Logistic regression model predicting college enrollment with CCAs and youth's savings amount (N=1071)

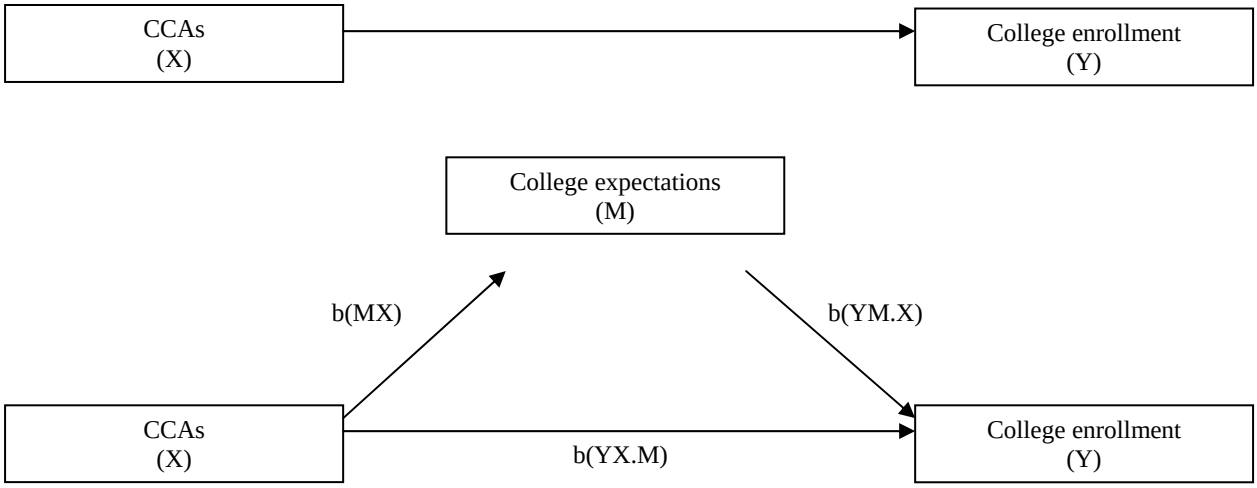
Controls	Model Thirteen (CCAs)			Model Fourteen (youth's savings amount)		
	B	*SE*	p-value	*B*	*SE*	p-value
Intercept						
Parent controls						
Head's education	.33	.16	.04	.29	.17	.09
Marital status	-.23	.36	.52	-.21	.35	.55
Parent engagement	.01	.02	.48	.02	.03	.55
Youth controls						
Race	.32	.37	.39	.26	.34	.45
Gender	-.41	.25	.11	-.37	.26	.15
Academic controls						
Special education	-.77	.58	.19	-.86	.54	.11
Math std. score	.03	.01	.02	.03	.01	.02
Psychological controls						
Youth's self-concept	.66	.46	.15	.74	.49	.15
Youth's self-efficacy	.07	.32	.82	-.03	.39	.93
Youth's college expectations	1.46	.34	.00	1.57	.34	.00
Parent's college expectations	1.12	.44	.01	1.16	.44	.01
Economic controls						
Household income	-.01	.14	.96	-.03	.14	.85
Household wealth	.23	.15	.12	.25	.14	.07
Homeownership	.70	.35	.05	.68	.35	.05
CCAs	.69	.28	.02	.72	.26	.01
Youth's savings amount	----	----	-----	-.04	.57	.94
Adjusted R^2	.44			.44		
R^2 *change*	.02			.00		
Likelihood ratio	199.36*			210.06*		
df	16			17		

Analysis is weighted using PSID, CDS weights; *p<.000
Note: CCAs is an abbreviation for youth's college accounts; Wealth does not include home equity

Indirect Effects of CCAs

In this section, we test whether or not college expectations act as a partial mediator between CCAs and college enrollment. Figure 1 illustrates the path diagram for the mediation analysis. The data used for the mediation analysis were imputed using multiple imputations to eliminate the potential of missing values influencing the results.

Figure 1. Path diagram for the analysis of college expectations as a mediator between CCAs and college enrollment



Results from the Baron and Kenny Test

Results from the Baron and Kenny (1986) suggest that CCAs significantly predict college enrollment (see Table 10). The second regression indicates that CCAs significantly predict youth's college expectations (see Table 10). The third regression indicates that college expectations significantly predict college enrollment when controlling for college aspirations (see Table 10). The first three regressions provide evidence of mediation.

Table 10. Baron and Kenny Results

Path	B	*SE*	*t-test*	p-value
b(YX)	.20	.02	11.12	.00
B(MX)	.13	.02	8.02	.00
B(YM.X)	.41	.02	20.70	.00
B(YX.M)	.15	.02	8.66	.00

The fourth regression indicates that there is a significant relationship between CCAs and college enrollment after controlling for college expectations (see Table 10). This suggests that college expectations act as a partial mediator between CCAs and college enrollment. When testing whether CCAs significantly predict college enrollment the unstandardized coefficient is .20; however, when testing whether CCAs significantly predict college enrollment, after controlling for college expectations, it decreases to .15. A question that arises, however, is whether or not the reduction is significant. The Sobel (1982) test provides a direct answer to this question.

Results from the Sobel test

Results from the Sobel test suggest that the total effect of CCAs on college enrollment is significantly reduced upon the addition of college expectations to the model ($z = 7.47$, $p < .00$) with 95 percent confidence.

Bootstrapping the Sample

I estimate that the true indirect effect is between .04 and .07 with 99 percent confidence. Because zero is not in the 99 percent confidence interval, it can be concluded that the indirect effect is significantly different from zero at $p < .05$ (two tailed).

Discussion

This study examined the relationship between CCAs and college enrollment. In addition, I determined the independent relationship of wealth and homeownerships. The descriptive data indicate that at-risk youth are underrepresented in our colleges. In examining college enrollment, 57 percent of low-income youth, 47 percent of asset-rich youth, 53 percent of black youth, and 51 percent of youth whose parents had no college experience were enrolled in college in 2005. Moreover, among youth who expected to attend college and had a CCA, there was an expectation/enrollment gap of 13 percentage points. In contrast, among youth who did not have a CCA, there was an expectations/enrollment gap more than twice (30 percentage points) that of youth who had a CCA.

As in a previous study conducted by Conley (2001), wealth (not including home equity) is a statistically significant influence on college enrollment. However, when controlling for homeownership, wealth is no longer significant. Conley (2001) did not control for homeownership as a separate variable. In this study I found that youth from households who own their home are twice as likely as their peers to be enrolled in college. Homeownership remained significant when controlling for CCAs. Furthermore, youth who have a CCA are nearly twice as likely to be enrolled in college when compared to their peers. Including CCAs in the model resulted in a two percent increase in the pseudo R^2, suggesting that CCAs are practically significant as well as statistically significant. In the final model, the youth's savings amount was included. The youth's savings amount was not significant. This might be due to the small amounts of money saved (on average $401) in 2002. Moreover, the mean grade average was ninth grade in 2002. Future research might include savings amounts in eleventh or twelfth grade.

The low savings amounts might also help explain the existing expectation/enrollment gap among youth with a CCA. While the gap is much smaller than for those without a CCA, an expectation/enrollment gap still exists for those with CCAs. Youth with CCAs who expect to attend college and do not have enough saved to pay their unmet need might be less likely to enroll in college. So while merely having a CCA may raise expectations, as Elliott (2008) finds, savings must be a factor in order for CCAs to have their full effect. Future research should look at CCAs among youth who have larger amounts saved.

In the final part of the analysis examined whether college expectations act as a partial mediator between CCAs and college enrollment. This study provides evidence that youth's college expectations act as a partial mediator between CCAs and college enrollment. This is in line with previous research (Zhan, 2006; Zhan & Sherraden, 2003). For example, Zhan and Sherraden (2003) find that assets (homeownership and savings) have a positive association with a child's academic achievement, and that the relationship between assets and achievement is partially mediated through parental expectations. In a more recent study, Zhan (2006) finds that parent assets (net worth) are positively associated with parent's expectations and children's educational performance. She (2006) finds evidence that parental expectations act as a partial mediator between assets and children's educational performance. Similarly, it appears that CCAs have both direct and indirect effects.

Conclusion

In this study, 2005 college enrollment patterns were examined among children with and without designated amounts of savings for college in conventional savings accounts. Saving for college in conventional savings accounts probably has little hope of serving as a major policy solution for raising college enrollment among at-risk children, however. This is because at-risk children live in families that are disproportionately represented among the unbanked in America (see for e.g., Bucks, Kennickell, & Moore, 2000). However, findings from CCAs can be useful for informing current policy on Child Development Accounts (CDAs).

CDAs have been introduced as a possible approach to help poor families save and accumulate financial assets for college (see for e.g., Boshara, 2001). The concept of CDAs is based on institutional savings theory. In contrast to theories that favor the individual preferences and characteristics typically emphasized by economists, an institutional theory of saving focuses on structural determinants of saving (Sherraden & Barr, 2005). These may include access, information, incentives, facilitation, expectations, restrictions, and security (Beverly & Sherraden, 1999; Sherraden & Barr, 2005; Sherraden, Schreiner, & Beverly, 2003).

In 2004, U.S. Senators Corzine and Santorum introduced a bipartisan proposal for a children's saving policy called the America Saving for Personal Investment, Retirement, and Education Act (ASPIRE, 2004). ASPIRE is an example of legislation designed to create CDAs in America. More specifically, 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.[5] Children living in households with incomes below the national median 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 account holder turns 18. Tax-free withdrawals could be made to pay for post-secondary education, a first-time home purchase, or retirement security.

With this proposal, children's development accounts (CDAs) have been placed on the U.S. policy agenda, joining other countries, such as the United Kingdom, whose Children's Trust Fund, established in 2005, is the model for the ASPIRE Act. Findings based on data from CCAs should provide a conservative estimate of the kinds of effects that should be expected if children,

[5] At this writing, the ASPIRE Act remains on the Congressional agenda (http://www.assetbuilding.org/AssetBuilding/index.cfm?pg=docs&SecID=102&more=yes&DocID=1246).

particularly at-risk children, are given access to a progressive CDA accounts. A progressive CDA would allow at risk children to receive greater benefits from the policy than their peers (for e.g., a 1:1 match). More research is needed, however.

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