

## CREATING A FINANCIAL STAKE IN COLLEGE: REPORT III OF IV

## WE SAVE, WE GO TO COLLEGE

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“Creating a Financial Stake in College” is a four-part series of reports that focuses on the relationship between children’s savings and improving college success. This series examines: (1) why policymakers should care about savings, (2) the relationship between inequality and bank account ownership, (3) the connections between savings and college attendance, and (4) recommendations to refine children’s savings account proposals. This series of reports presents evidence from a set of empirical studies conducted by Elliott and colleagues on children’s savings research, with an emphasis on low-income children, relevant to large-scale policy proposals. One such proposal, The ASPIRE Act, would encourage savings by opening an account for every newborn child, seeding the account with an initial deposit and progressively matching contributions, and designating accumulated resources to support post-secondary education or other targeted uses such as homeownership or retirement. Collectively, these reports build on the compelling observation that children with savings in their name are given a stake in their future. As such, they are more inclined to take control over their educational experience and feel more empowered to attend college and persist through graduation.

Given the well documented disparities in college attendance and completion rates by socio-economic class, and the increasingly critical role that education plays in employment and economic mobility, a primary question for the 21<sup>st</sup> century is, “How do we achieve greater access to college and higher college completion rates for more of America’s children?” The federal government’s response to this challenge has been to make college loans more accessible. However, this has created crushing high levels of student debt upon leaving college that may undermine the belief that education is a path for achieving the American Dream. As stated in Report I of this series:

“Maybe no institution has been more important in sustaining the American Dream than public education, including colleges and universities. Education in America has been called the “great equalizer” evoking the widespread belief that disparities among groups of people can be narrowed through effort in school and the pursuit of higher education. As such, the entire nation has a stake in making sure that all citizens continue to see college attendance and graduation as a viable way to achieve the American Dream.” (Elliott, 2011, p. 2)

Report III presents additional evidence of a link between savings and children’s college progress. College progress is conceptualized here as students being “on course” for

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achieving the American Dream via the education path. “On course” is operationalized as being enrolled in or having graduated from a two-year or four-year college by age 23 (see Elliott & Beverly, 2011a). This report offers evidence of the role children’s savings plays in reducing “wilt”. Wilt occurs when children who have not yet graduated from high school, but who expect to graduate from college sometime in the future, are not currently enrolled and have not graduated from college shortly after high school. Thus, these children “wilt” due to lack of resources as a growing plant loses vitality due to lack of sun and water. If children who expect to graduate from college are more likely to actually attend college when they have savings, we can consider financial barriers rather than a lack of desire as a critical barrier in the path to a college degree.

In a very basic way, having savings changes the way children think about college. Using a college-bound identity theory of asset effects first articulated by Elliott, Choi, Destin and Kim (2011) and further developed by Elliott, Nam, and Johnson (2011), this report suggests that institutions provide (1) important contextual cues that bring the college-bound identity to the forefront of the mind, (2) an embedded thought process including strategies for overcoming difficulty, and (3) power over resources.

## Can Savings Help Children Persist in College?

Interestingly, there is a clear relationship between children’s savings and college progress. In 2007, 61 percent of students were on course, but there are large disparities when considering race and gender, parent’s marital status, and class.<sup>1</sup> White, female children who live in high-income and high-net worth households with married household heads who have at least a four-year college degree are far more likely to be on course than their peers. Turning to the role of children’s savings, children with savings are more likely to be on course than children with no savings. Specifically:

- 88 percent of high-income compared to 38 percent of low-income children are on course, a gap of 51 percent.
- 86 percent of children with parents who have a 4-year college degree or more compared to 47 percent of children who live with a parent who has a high school degree or less are on course, a gap of 39 percent.
- 74 percent of children with savings for college are on course, while 59 percent of children with none of their savings designated for college, and 41 percent of children with no savings at all are on course, a gap of 33 percent.

The finding that children who have designated a portion of their savings for college are more likely to be on course than children with no savings holds true even when controlling for the influence of other important factors. A recent study to be published in the *American Journal of Education* finds that, when controlling for important factors including race, gender, academic achievement, parent’s education, household income and net worth, children with savings designated for college are twice as likely to be on course as children without savings designated for college (Elliott & Beverly, 2011a).

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## When Desire, Ability, and Effort Are Not Enough

In attempting to explain college attendance and completion gaps, researchers often point to low-income and minority children’s low levels of desire, ability, and effort. Below are examples of popular theories that emphasize the roles of

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<sup>1</sup> The term “parent” means head of household here.

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desire, ability, and/or effort in explaining low-income children's educational outcomes.

**Desire.** Aspirations are one way that researchers measure children's desire to attend college. 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. Aspirations have been shown to be predictive of children's educational outcomes (e.g., Marjoribanks, 1984; Mau, 1995).

**Ability.** An extreme form of the explanation that ability determines academic outcomes is found in *The Bell Curve* by Richard Herrnstein and Charles Murray (1994). Herrnstein and Murray suggest that black children are genetically inferior to white children intellectually 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 (January, 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).

**Effort.** Self-efficacy is an example of a theory that attempts to explain children's academic achievement based on the level of effort they put forth. Self-efficacy is believed to be predictive of how hard a child will work in school and whether the child will persist when faced with difficult school related activities (Pajares 2002). A simple definition of self-efficacy is children's "I Can Do" beliefs. The basic principle of self-efficacy theory is that children who believe they can do well at a particular task (such as doing a math problem) in school put forth more effort and in turn are more likely to be successful. For a review of research on this topic see Pajares (1996).

Although desire, ability, and effort are clearly important factors for understanding why there are gaps, they do not explain why the education path fails to lift high-achieving low-income and minority children out of poverty at the same rate it maintains low-achieving, high-income and non-minority children in prosperity (ACSFA, 2002; Ingles, Curtin, Kaufman, Alt, & Owings, 2002). In other words, arguments that focus on college attendance and completion gaps often overlook the fact that the lowest-achieving children from high-income families attend college at a much higher rate than the lowest-achieving children from low-income families (77 percent vs. 36 percent, respectively). In comparison, 97 percent of the highest-achieving children from high-income families attend college while only 78 percent of the highest-achieving children from low-income families attend college (ACSFA, 2001). This suggests that not all children have the same access to college even after desire, ability, and effort are considered.

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The majority of high-achieving, poor children desire to attend college and recognize the value of college for future economic success but many do not attend.

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## The Paradox of Positive College Expectations

According to the Advisory Committee on Student Financial Assistance (ACSFA), a group charged by Congress with enhancing access to postsecondary education for low-income children, educational decision-making by low-income children is not the result of choice or academic preparation but reflects an inability to pay for college (ACSFA, 2001, p. 18). The majority of high-achieving, poor children desire to attend college and recognize the value of college for future economic success but many do not attend (ACSFA, 2006). This suggests that even with high levels of effort and ability, along with a strong desire to attend

college, many poor and minority children perceive college as out of reach. According to ACSFA (2006), 70 percent of low-income children in tenth grade plan to go to college, but only 54 percent actually enroll in college upon graduating from high school. The paradox of positive college expectations and low college attendance among low-

income children is one reason why some analysts suggest that the ability of education to act as the “great equalizer” in society is at risk (ACSFA, 2002; Haycock, 2006; Hertz, 2006; Lee & Burkham, 2002).

**Table 1:** Percent of children on course (i.e., currently in college or already graduated) and who experience wilt by race, gender, marital status, and class

Covariates	Percent of All Children On Course by 2007	Percent All Certain Children in 2002	Percent of Certain Children On Course by 2007	Percent of Certain Children Not On Course by 2007 (“Wilt”)
<i>Full sample</i>	61	86	68	32
White	66	86	72	28
Black	38	75	47	53
Female	64	86	71	29
Male	58	85	64	36
Married	68	88	74	26
Not Married	40	79	48	52
Head has four-year degree or more	86	94	90	10
Head has some college	59	89	64	36
Head has high school degree or less	47	80	54	46
High income	88	94	89	11
Moderate income	59	86	66	34
Low income	37	77	45	55
High net worth	71	90	76	24
Moderate net worth	38	76	48	52
Negative net worth	45	81	53	47
Has college savings in savings account	74	93	77	23
Has savings account	59	84	66	44
Has no savings account	41	76	51	49

**Source:** Weighted data from the Panel Study of Income Dynamics (PSID) and its supplements, the 2002 Child Development Supplement (CDS) and the 2007 Transition into Adulthood (TA).

**Note:** Table results are rounded to the nearest percent. The data presented in this section are new data presented for the first time in this report. For more information on data and methods see Appendix A. Aggregate sample,  $N=729$ ; Certain Sample,  $N=626$ . The same children are followed through young adulthood. Data are imputed using multiple imputations.

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In addition to the concept of “wilt,” the concept of “college progress” (Elliott & Beverly, 201b) has also been used to discuss the paradox of high college expectations but low college attendance. College progress refers to children who were either enrolled in a two-year or four-year college in 2007 or who had already graduated. Data presented in this report builds on Elliott & Beverly (201b) by examining college progress data from 2007.

Among, high school students in 2002 who expected to graduate from a four-year college sometime in the future, 68 percent are on course.<sup>2</sup> As expected, large disparities exist by children’s race and gender, parent’s marital status, and socio-economic class. White, female children who live in high-income and high-net worth households with a married parent who has at least a four-year degree are far more likely to be on course than their peers. Further, high school students who expect to graduate from college and have savings, (and especially those who have some of their savings designated for college), are far more likely to be on course than their peers with no savings. Some additional information detailing these findings follows:

- 89 percent of high-income high school students who expect to graduate from college compared to 45 percent of their low-income peers are on course; gap of 44 percent.
- 90 percent of high school students who live in households with parents who have at least a four-year college degree compared to 54 percent of children who live with parents who have a high school degree or less are on course; gap of 36 percent.
- 77 percent of children with some savings designated for college, 66 percent of children with savings none of which is designated for education compared to 51 percent of children with no savings at all are on course; gap of 26 percent.

## How Savings Might Change the Way Children Think about College

Research suggests that grants and scholarships have a positive association with children’s perceptions about

whether or not college is within reach for them prior to graduating high school (e.g., Ness & Tucker, 2008). However, low-income and minority students are more likely than their peers to be reluctant to borrow to pay for college due to concerns about their ability to pay back loans (e.g., Burdman, 2005; Mortenson, 1988). This can lead to lowered expectations of attending college (e.g., Burdman, 2005; Mortenson, 1988). Personal savings that can be used to help pay for college reduces the need for student loans, and is therefore likely to have effects on student college expectations like those of grants and scholarships.

From this perspective, building savings over a period of years may raise children’s educational expectations. Higher expectations may lead to increased academic effort and achievement (see Appendix B). In other words, if children grow up knowing they have financial resources to help pay for current and future schooling, they may be more likely to have more positive college expectations, which may in turn foster educational engagement. Greater engagement may lead to better academic preparation and achievement. These attitudinal and behavioral effects of savings could be at least as important as the money itself in the transition from high school to college.

Three principal components of Identity-Based Motivation (IBM) theory can be applied to help explain how children’s savings may help them develop a college-bound identity (e.g., Elliott, Choi, Destin, & Kim, 2010; Elliott, Nam, & Johnson, 2011). The three principal components (1) identity salience, (2) congruence with group identity, and (3) interpretation of difficulty are believed to explain the relationships between a concept of the self, such as a college-bound identity and motivation, with significant attention given to how social and cultural contexts shapes the process (Oyserman & Destin, 2010). These principle components of IBM have been shown to be important predictors of children’s school behaviors (Oyserman & Destin, 2010).

### Salience

Although the term “identity” can be used to refer to a diverse array of concepts, IBM focuses on the aspects of identity that directly influence behavioral choices. Abstract

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<sup>2</sup> Children who respond that their chances of attending a four-year college are more than 50 percent before they leave high school are defined as “certain.”

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conceptions of the self are most likely to guide everyday behaviors when they are salient (i.e., causes of things that matter). Elliott, Nam, and Johnson (2011) suggest that identities are salient when they are (1) on the mind, (2) linked to detailed strategies, and (3) provide power over resources.

### *On the Mind*

It is clear that for abstract concepts of the self to guide children's behavior, they must be "on their minds" but not necessarily activated by children themselves. In fact, because people are unable to actively process all cognitive stimuli and have a limited capacity for making conscious decisions (i.e., Bargh & Chartrand, 1999), it is unlikely that children spend much of their time consciously activating identities.

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Instead, IBM theory suggests that contextual cues carry an overwhelming influence on college-related goals of children and the strategies that are activated to pursue a future goal such as college. According to institutional theorists, institutions provide the context within which all human interaction takes place (e.g., Nee and Ingram 1998). Sen (1999) states, "Individuals live and operate in a world of institutions. Our opportunities and prospects depend crucially on what institutions exist and how they function" (Sen, 1999, p. 142). Accordingly, institutions are one of the main providers of cues for activating children's college-bound identity.

North (1990) writes of formal institutions as constraints imposed on human behavior (North, 1990). When talking about institutions within the applied social science context, however, Sherraden and Barr (2004) state that they can be thought of as "interventions designed to alter behaviors and outcomes for individuals" (p. 8). From this perspective, children's savings programs are a type of institution.

### *Linked to Strategies*

It is not enough for an identity to be on the mind. For a child's college-bound identity to be salient it must also be effective—that is, linked to detailed strategies for overcoming difficulties (Oyserman & Destin, 2010). Children who have college-bound identities linked to detailed strategies are more likely to demonstrate ongoing self-regulatory behavior such as sustained engagement in school.

IBM focuses on informal social and cultural institutions as the primary mechanisms children use to link college-bound identity to strategies related to college. However, too often low-income children's college-bound identities are not linked to detailed strategies (Oyserman & Destin, 2010). Such children may be attempting to develop strategies for achieving goals associated with their college-bound identity at the same time their families are struggling to meet basic human needs. When this is the case, the survival needs of adequate food, shelter, and clothing would be expected to trump children's development of strategies related to college, even if they want and expect to go to college and know that a college education is very important for their futures.

Since low- and moderate-income families often struggle to meet survival needs, they may have little time and energy to spend developing strategies for college. The cost of fulfilling growth needs or achieving developmental goals may simply be too high, given the financial circumstances. Thus, success in college for low-income children requires personal, family, and community sacrifice that goes well beyond what is required for high-income children to

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achieve similar goals. This violates a basic tenet of the American Dream; people with similar levels of ability should achieve similar outcomes. It also raises questions about whether the education path can serve as the “great equalizer” in society without institutions taking some role in leveling the playing field so that family and community economic circumstances are not the deciding factors in going to and succeeding in college.

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Apart from helping to make financial resources available for college, formal and informal institutions may help level the playing field by providing children with schemas, rules, norms, and routines (i.e., strategies) that become “embedded thought processes” (North, 2005) for overcoming obstacles related to college. This proposition is based in institutional theory. For example, in an analysis of institutions and rational choice, North (2005) states, “... much of what passes for rational choice is not so much individual cogitation as the embeddedness of the thought process in the larger social and institutional context” (p. 24). Similarly, in reference to asset accumulation, Sherraden (1991) observes that the middle-class “participates in retirement pension systems ... not [as] a matter of making superior choices. Instead, a priori choices are made by social policy, and individuals walk into the pattern that has been established” (p.127).

Research about how institutions shape behavior may be helpful to further understanding about what it means for thought processes to be embedded via children’s savings programs. In their research on saving, Sherraden and Barr (2005) identify five institutional constructs that encourage people to save: (1) access, (2) information, (3) incentives, (4)

facilitation, (5) expectations, (6) restrictions, and (7) security (Sherraden and Barr, 2005). What asset theorists have found is that the poor can and will save when given access to institutions for saving and real opportunities to do so, suggesting that when institutions are accessible, people acquire an embedded thought process that makes the decision to save more likely. When low- and moderate-income children suffer from lack of real access to institutions, they are also likely to lack the embedded thought processes that allow them to more easily make decisions that are in line with achieving developmental goals such as saving for and going to college. The promise of institutional theory as applied to education is that institutions in society can be shaped to perpetuate disparities in college outcomes across generations or shaped to eliminate such disparities over time. Further, from this perspective, barriers to narrowing the gaps that exist are likely institutional, rather than cultural.

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Children’s savings programs can help institutionalize the development of college-bound identities, especially for low- and moderate-income children. With children’s savings accounts, educational disparities may begin to narrow as all children develop college-bound identities.

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However, because the kinds of institutions that are most accessible to low- and moderate-income children are by necessity related to survival needs (e.g., food stamps, TANF, and unemployment benefits), formal institutions such as children’s savings accounts that are likely to lead to embedded thought processes and strategies for overcoming academic and financial difficulties might be required to level the education playing field if more children are going to achieve the goal of attending and graduating from college. In brief, children’s savings programs can help

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institutionalize the development of college-bound identities, especially for low- and moderate-income children. With children's savings accounts, educational disparities may begin to narrow as all children develop college-bound identities. In addition, children's savings accounts help resources and strategies for college success become increasingly salient because children have repeated opportunities to actualize messages and practice behaviors such as "we save," "we succeed in school," and "we go to college"

### *Provide Power over Resources*

Elliott, Nam, and Johnson (2011) suggest that whether college-bound identity is salient also depends on whether or not it provides children with the power they need over resources to achieve desired outcomes (e.g., savings accounts in the name of the child). Children's college-bound identities can be on their minds, but give them no power over resources needed for performing activities or achieving goals associated with their identity. It is equally true that children can possess strategies for attending and completing college such as doing homework, seeking out financial aid, and so forth and still not have enough money to pay for college. From this standpoint, strategies and power over resources are independent factors in going to and graduating from college, and as such may operate together or independently on educational outcomes.

Drawing on the idea that most people in the United States view college as a commodity to be bought and sold (Cayton, 2007), it is proposed that owning savings gives children a sense of power in regards to college and therefore they begin to act as though they have a right to attend, and expect to complete, college. This sense of power comes from their faith in the rules and regulations governing capitalist economic markets that are designed to protect the individual's right to one's own property. As a result, children are likely to be more inclined to take control over their educational experience when they own savings. This feeling of power manifests itself in many different ways. For example, children who feel empowered are

hypothesized to feel more comfortable about asking teachers, counselors, and school administrators for information about higher education or financial aid. They may also be more likely to take college prep classes, the SAT/ACT or apply to four-year colleges instead of two-year colleges. In this manner, children's savings programs may well empower children to participate in, negotiate with, influence, control, and hold accountable the schools they attend.

### **Congruence**

Another important factor in the connection between context, college-bound identities, and behaviors is a link to group identity. When an image of the self feels tied to ideas about relevant social groups (e.g., friends, classmates, family, cultural groups), the congruent personal identity becomes reinforced. For children, assets are almost always connected to a larger social unit or family. The family is recognized as one of the key contexts in which children's development takes place and there is a rich literature on the topic (e.g., Bronfenbrenner, 1979; Lerner, 1984; Lerner & Steinberg, 2004; Steinberg & Morris, 2001). Even when opening their own accounts, children are often supported by parents or other family members (Scanlon & Adams, 2008). When children, their families, and their peers save money for college, the meta-message asserts "we save," "we go to college," reinforcing the college-bound identity through its congruence with the actions and goals of the larger group.

When elements of a family's environment contain cues about assets, like when parents have school savings for their children, the presence of such resources can bolster parents' expectations for their children (e.g., Elliott & Beverly, 2011a). These expectations, in turn, influence their own interactions with children and then children's own college expectations and school-related behaviors. A lack of assets, on the other hand, makes economic struggles loom large, which is often incongruent with a focus on future goals like college. As college-bound identities lose strength, school behaviors decline.



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## Difficulty

A final key insight from IBM is the importance of learning to interpret and overcome difficulty as a normative experience. Difficulties associated with college are often related to academic preparedness and financial costs that include tuition, books, fees, clothes, computers, tutoring, and so forth. According to IBM theory, to sustain and work toward an image of a future self, one's context must provide tangible resources to address inevitable obstacles to the goal. Further, it is commonly recognized that high college costs act as an obstacle to attending and graduating from college (e.g., ACSFA, 2010). The extent to which children interpret the difficulty articulated in the meta-message "college costs a lot" when bringing to mind their college-bound identity will largely determine whether they see college as possible or out of reach.

## A Test of the College-Bound Identity Theory of Savings Effects

A recent study by Elliott, Nam, and Johnson (2011) tests the effects of parent's expectations of college on their children, including effects on children's expectations and actual college progress. College progress, or whether children are "on course" in terms of education, is the outcome variable. Children who are currently enrolled in or who have graduated from a two-year or four-year college are defined as on course. Those who are not currently enrolled and who do not have college degrees are defined as off course. The effects of expectations and savings are tested for all children in the study, and then separately tested for low- and moderate-income children. In three important instances, the relationship was found to be significant for both the full sample and for children from lower- and moderate-income families:

Children's school savings are significantly related to children's expectations and college progress. Parent's college expectations are significantly related to children's expectations, children's school savings, and college progress. Children's college expectations are related to college progress.

In brief then, three key variables—(1) parental college expectations, (2) children's college expectations, and (3) children's savings designated for school—all have independent effects on being on course five years later. These effects hold when testing the effects of the variables on the college progress of low- and moderate-income students. In addition to these findings, there is evidence that children's college savings work through children's expectations to affect college progress. Overall, preliminary evidence indicates that tangible resources in the form of children's savings designated for school strengthens children's college-bound identity which, in turn, makes college progress more likely.

## Conclusion

The belief that an ordinary citizen can turn the American Dream into reality through effort and ability is embedded in the history and culture of America. Higher education has been and continues to be viewed as a key instrument for making the American Dream a reality. However, in a highly technical global economy, turning the American Dream into reality often requires a college education. Findings from the studies discussed in this brief suggest that if high school children have savings of their own, and especially when they have designated some of their savings for education, they are more likely to be on course five years later than if they do not have their own savings. The importance of children's savings on college progress holds when controlling for such things as children's academic achievement, parent's education level, and family income suggests that children who have designated a portion of their savings for college are about two times more likely to be on course than if they did not have any savings at all (Elliott & Beverly, 2011a).

Unfortunately, disparities by race, gender, parental marital status, and socio-economic class are tied to which children tend to have their own savings accounts. It may be taken as a given that children with socio-economic advantage are more likely than their less fortunate peers to have savings accounts and graduate from college. The research

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discussed here also asks “Does owning savings matter for low-income children?” The answer appears to be yes. The suggestion from recent research is that ownership of children’s savings accounts may be playing a role in current educational disparities. Given this, an important part of a strategy for promoting college attendance and graduation and helping to ensure education as the “great equalizer” in society may be to assure that all children own a savings account early in life with public deposits in these accounts.

Further, access to college in America is commonly believed to be based on merit. From this perspective, whether a child is on course is not a matter of financial resources including savings, but desire and preparation. Tests of “wilt” ask whether factors other than desire play a significant role in determining whether college attendance and graduation is more than a dream for many children. Findings suggest that wilt is largely due to socioeconomic factors such as parental education and income. While not typically included in studies as a socioeconomic factor, children’s savings is also a key financial factor influencing wilt. Children who have college savings experience less wilt than their peers without savings. Further, when controlling for such things as children’s academic achievement, parent’s education and family income, children who expect to graduate from a four-year college and have savings are about 6 times more likely to attend college than their peers (Elliott & Beverly, 2011b). It is also worth noting that family income remains a significant predictor of college attendance in these tests. However, children’s academic achievement and parent’s education do not remain significant in their effects on college progress when controlling for these other factors. These findings parallel the results of ACSFA’s research, and suggest that college attendance and graduation is not solely about desire or academic achievement but that tangible financial resources are also critical to college success. .

In conclusion, low- and moderate-income children continue to believe in the idea of education as a means to achieving the American Dream. With limited opportunities for

accumulating savings for college, however, many low- and moderate-income children do not believe that college is within their reach from a very young age. Asset accumulation, especially in the form of savings, can assist children in preparing for and affording college, leading to a salient college-bound identity and greater educational engagement and academic achievement. In other words, low- and moderate-income children may be more likely to seek a college education if—from a very young age—they have a way to help pay for it. Greater control by low- and moderate-income children over financing college should lead to more children viewing college as within reach.

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## Appendix A: Methods for Table 1

**Data.** This study uses longitudinal data from the Panel Study of Income Dynamics (PSID) and its supplements, the Child Development Supplement (CDS) and the Transition into Adulthood supplement (TA). The PSID is a nationally representative longitudinal survey of U.S. individuals and families that began in 1968. The PSID collects data on such things as employment, income, and assets. The CDS was administered to 3,563 PSID respondents in 1997 to collect a wide range of data on parents and their children, aged birth to 12 years. Questions covered a broad range of developmental outcomes across the domains of health, psychological well-being, social relationships, cognitive development, achievement, motivation, and education. Follow-up surveys were administered in 2002 and 2007. The TA supplement, administered in 2005 and 2007, measures outcomes for young adults who participated in earlier waves of the CDS and were no longer in high school.

The three data sets are linked using PSID, CDS, and TA map files containing family and personal ID numbers. The linked data sets provide a rich opportunity for analyses in which data collected at one point in time can be used to predict outcomes at a later point in time, and stable background characteristics can be used as covariates. Because the PSID initially oversampled low-income families, descriptive analyses are weighted using the last observed weight variable as recommended by the PSID manual (Gouskova, 2001).

**Savings variables.** There is one measure of children's savings used in this study: Children's savings 2002. Children are asked in 2002 whether they have a savings in a regular savings account held by a financial institution with the child named as owner. If they have an account, they are also asked whether they are saving some of this money for future school, like college. The children's savings variable divides children into three categories: those who in 2002 have an account but have not designate a portion of the savings in the account for school (children's savings), those who had an account and designated a portion of the savings in the account for school (children's college savings), and those with no account (the reference group).

**Race, gender, marital status, class and wealth variables.** There are six control variables: children's race, gender, head's marital status, education level, and household income and household net worth.

Children's race, a dichotomous variable (Black/White), is available from the 1997 wave of the CDS. Children's gender is also a categorical variable (male/female), which is available from the 2002 wave of the CDS. Head's marital status (married/not married) is available from the 2001 wave of the PSID.

Head's education level is a continuous variable ranging from 1 to 16 and is available from the 2003 wave of the PSID. Each number represents a year of completed schooling. For example, a head of household who has 12 years of education is considered to have graduated from high school. Head's education is changed into a categorical variable, dividing heads into three groups: those with a high school degree or less, those with some college, and those with a four-year degree or more.

Household income is calculated by averaging family income for 1993, 1997, and 2002. Income averaged over multiple years provides the best estimate of permanent income (Blau, 1999; Mayer, 1997). Next, household income is changed into a variable

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with three groups: low-income (<\$33,377), modest-income (\$33,377 to \$84, 015), and high-income (\$84,016 or more).<sup>3</sup> Income is inflated to 2007 price levels using the Consumer Price Index (CPI).

Net worth in the PSID is a continuous variable that sums separate household values for a business, checking or savings accounts, real estate, stocks, and other assets, and subtracts out credit card and other debt. In this analysis, net worth does not include home equity. Net worth is averaged for 1994, 1999, and 2001. It is then changed into a variable with three groups: negative net worth (< \$0), modest net worth (\$0~\$10,000), and high net worth (>\$10,000).<sup>4</sup> Net worth is inflated to 2007 price levels using the Consumer Price Index (CPI).

***Analysis plan.*** In the first stage of the analysis, missing data are replaced using multiple imputations. Missing data might result in limitations regarding generalizability of the findings and model comparisons as well as reduced power (Rubin, 1976). Multiple imputation has been recognized as a preferred method for estimating and completing missing data (Little & Rubin, 2002). This method assumes that missing data occur randomly. To accurately complete missing data, multiple imputations use information from the observed variables as well as the missing data. The Markov Chain Monte Carlo method is performed to create five completed, or imputed, datasets with no missing data (Saunders, Morrow-Howell, Spitznagel, Doré, Proctor, & Pescarino, 2006; Schafer & Graham, 2002). In the second stage of the analysis, the results are then pooled across the five imputed datasets to reduce bias in the estimations of parametric statistics (Saunders et al., 2006). In third and final stage, basic frequencies and means are estimated.

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<sup>3</sup> Category amounts are based on those used in the US Census Bureau’s Current Population Report Income in the United States: 2002 (De Navas-Walt, Cleveland, & Webster, 2002). De-Navas-Walt et al. used five income categories; we recoded into three categories to increase the sample size within each group.

<sup>4</sup> These categories are based on work done by Nam and Huang (2009).

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## Appendix B: Research that Includes Children's Savings and College Expectations

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Study	Asset Variables	Methods / Data	Outcome	Findings
Staying on Course: The Effects of Savings and Assets on the College Progress of Young Adults				
Elliott and Beverly (2011a)	Net worth; Children's school savings; Parents' school savings for young people	Methods: Logistic regressions  Data sets: Panel Study of Income Dynamics (PSID) & Child Development Supplement (CDS) & Transition to Adulthood (TA)  Longitudinal: Baseline measured at mean age of 17 in 2002; Outcome measured mean age of 20 in 2007; N = 1,003	Expectations	Baron & Kenny findings: Net worth/college attendance is not mediated by Children's college expectations; Parents' school savings/college attendance is not mediated by college expectations; Children's school savings/college attendance is partially mediated by Children's college expectations  Bootstrap findings: Net worth has no indirect effect; Parental savings has an indirect effect on college attendance; Children's school saving has an indirect effect on college attendance
The Age Old Question, Which Comes First? A Simultaneous Test of Children's Savings and Children's College-Bound Identity				
Elliott, Destin, & Kim (2011)	Children's savings	Methods: Path analysis using (SEM); The sample is restricted to children who have graduated high school or completed a G.E.D. and are not attending a four-year college and have not graduated from a four-year college by 2007. The reason for these restrictions is because college-bound identity as measured in this study has no meaning for children who are currently attending a four-year college or have already graduated from a four-year college.  Data sets: Panel Study of Income Dynamics (PSID) & Child Development	Expectations	Simultaneously tests whether savings leads to higher expectations or higher expectations lead to owning savings, Children's savings has a modest effects on college expectations & vice versa

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Study	Asset Variables	Methods / Data	Outcome	Findings
		Supplement (CDS) & Transition into Adulthood		
		Longitudinal: Baseline measured at ages 12 to 17 in 2002; Outcomes measured at ages 17 to 23 in 2007; N = 592		
Asset Holding and Educational Attainment among African American Youth				
Elliott, Kim, Jung & Zhan (2010)	Net worth; Children's school savings	Methods: Path analytic technique using structural equation modeling (SEM); Bootstrapping (Bollen & Stine, 1992);  Data sets: Panel Study of Income Dynamics (PSID) & its Child Development Supplement (CDS);  Cross sectional: Measured at ages 12 to 18 in 2002; N = 1,063	Expectations	Children's school savings are significantly related to Children's college expectations for both Blacks and Whites; Net worth is not significantly related to college expectations for either Blacks or Whites  Bootstrap findings: The relationship between White Children's school savings & their math scores are partially mediated by college expectations; not blacks or in the case of reading w/ Whites or Blacks; The relationship between home ownership & White Children's math scores are fully mediated by college expectations; not blacks or in the case of reading w/ Whites or Blacks
Math Achievement and Children's Savings: Implications for Child Development Accounts				
Elliott, Jung, & Friedline (2010)	Net worth; Children's savings account; Children's savings amount	Methods: Hierarchical linear modeling (HLM)  Data sets: Panel Study of Income Dynamics (PSID) & its Child Development Supplement (CDS)	Expectations	Children's basic savings is not significant w/ their college expectations; Children's school savings is significant w/ their college expectations; Parent's school savings for their child is significant w/ their child's college expectations; Net worth is not significant w/ young people college

Study	Asset Variables	Methods / Data	Outcome	Findings
		Cross sectional: Measured at ages 12 to 18 in 2002; N = 1,063		expectations; Head's education level and marital status interact with Children's savings in predicting Children's college expectations
Children's College Aspirations and Expectations: The Potential Role of College Development Accounts				
Elliott (2009)	Net worth; Categorical net worth ( (1) < \$4,564; (2) \$4,564 to \$47,742; (3) \$47,743 to \$153,700; and (4) > \$153,700); Children's school savings; Children's school savings amount	Methods: Logistic regression; Multiple regression; Baron and Kenny(1986) tests; Sobel test (1982); Bootstrapping (Bollen & Stine, 1992)  Data sets: Panel Study of Income Dynamics (PSID) and its Child Development Supplement (CDS)  Cross sectional: Measured at ages 12 to 18 in 2002; N = 1,071	Expectations	Baron and Kenny findings: Net worth is not significant with Children's college expectations; Children's school savings is significantly associated with Children's college expectations. The effect of children's savings on math achievement is significantly reduced when college expectations are included in the model (i.e., college expectation act as a mediator)  Sobel test findings: Total effect of Children's school savings on math scores is significantly reduced  Bootstrap findings: Children's school savings is indirectly related to math achievement through their college expectations

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