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Taking Stock of Ten Years of Research on the Relationship between Assets and Children's Educational Outcomes:

Implications for Theory, Policy and Intervention

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Taking Stock of Ten Years of Research on the Relationship between Assets and Children's Educational Outcomes: Implications for Theory, Policy and Intervention

This paper has two main goals. First, we provide a review of 38 studies on the relationship between assets and children's educational attainment. Second, we discuss implications for Child Development Accounts (CDAs) policies. CDAs have been proposed as a potentially novel and promising asset approach for helping to finance college. More specifically, we propose that CDAs should be designed so that, in addition to promoting savings, they include aspects that help make children's college-bound identity salient, congruent with children's group identity, and that help children develop strategies for overcoming difficulties.

Key words: *Wealth, assets, college attendance, college graduation, savings, Child Development Accounts (CDAs), college-bound identity, identity-based motivation*

Among industrialized countries the United States ranked second in college graduation rates in 1995; however, by 2009 the nation had dropped to fourteenth (OECD, 2010). Having a college educated citizenry is commonly believed to be linked to such public economic benefits as increased taxed revenues, greater productivity, increased consumption, and decreased reliance on government financial support (The Institute of Higher Education Policy, 1998). Therefore, finding new ways to improve college attendance and graduation rates at 4-year colleges is one of the main challenges of the 21st Century if America is to remain a global economic power. The need for educated workers is only likely to increase over time. For example, Carnevale, Smith, and Strohl (2010), researchers at Georgetown University's Center on Education and the Workforce, forecast that by 2018, 63% of all jobs will require at least some college and that there will be a shortfall of 300,000 college graduates per year through 2018.

Social capital (Porfeli, Wang, Audette, McColl, & Algozzine, 2009), human capital (Paulsen, 2001), and economic capital (Coleman, 1988) are commonly used by researchers to predict college attendance and completion. In this review we focus on economic capital. The role of economic capital, typically defined as family income, has long been established as having a positive impact on educational attainment (Brooks-Gunn & Duncan, 1997; Coleman et al., 1966; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Yeung, Linver, & Brooks-Gunn, 2002). According to Sirin (2005), it is perhaps the most widely applied contextual variable in research on education. Research shows that, as family resources available to children increase, their educational performance, high school graduation, and college attendance rates improve (Coleman et al., 1966). Nonetheless, it is not merely the amount of the resources but the diversity of the resources that leads to greater academic achievement. As Coleman et al. (1966) posit, children from families of higher socioeconomic status (SES) do better because they are exposed to a wider set of resources that they can tap into to promote learning. However, until recently this research has largely ignored financial assets as a type

of financial resource with independent effects separate from income (e.g., Conley, 1999; Oliver & Shapiro, 2006; Sherraden, 1991).

Why Should Policymakers and Educators Care about Assets?

A well recognized barrier to college access and completion is high college costs. In recent years, the federal government has increasingly relied on policies that address short-term credit constraints by making loans more accessible to children and their families (e.g., Federal Stafford and PLUS loan programs). However, emphasis on loans has led to a growing number of children leaving college burdened with high amounts of debt. High debt reduces the return on college for students.

In the 2008-09 school year, 45% of all financial aid received came from federal loans (College Board, 2009). Moreover, from 2007-08 to 2008-09 total education borrowing increased by 5%, or $4 billion.[1] Due to the current financial aid system's emphasis on loans as a socially acceptable way to finance college, students are incurring higher levels of debt upon leaving college. For example, the median loan debt of a graduate recipient from a four-year public college in 2007-08 is $17,700, up 5% from 2003-2004 (Steele and Baum, 2009). Moreover, 10% of graduate recipients in 2007-08 have more than $40,000 worth of debt (Steele and Baum, 2009). At a four-year private college, the median loan debt of a graduate recipient is $22,375 in 2007-08, up 4% from 2003-04. Among graduate recipients at a four-year private college, 22% have more than $40,000 worth of debt (Steele and Baum, 2009).

As a result of the increasing debt student borrowers face, some policymakers and researchers question whether promoting college attendance and completion through debt accumulation (i.e., loans) is a wise policy decision (e.g., Baum, 1996). As an alternative to debt accumulation, a growing number of policymakers and researchers are beginning to examine the effectiveness of asset accumulation strategies for promoting college attendance and completion among children such as Child Development Accounts (CDAs). More specifically, CDAs have been proposed as a novel and potentially promising asset approach for helping children and their families pay for college (Boshara, 2003; Goldberg & Cohen, 2000; Sherraden, 1991).

In their simplest form, CDAs are incentivized savings accounts that can be used for long-term investments, such as education, home and business ownership, and retirement. In this study we focus on CDAs designed to solve the problem of low college attendance rates. There is reason for focusing on education as the problem that CDAs should aim to solve. Findings from a survey of 801 registered voters commissioned by CFED and conducted by Hart, Goldberg, Friedman, and Boshara (2010), suggest that registered voters were most likely (40%) to say that making education more affordable should be the top priority of government. Further, registered voters (58%) chose paying for college as the most effective frame for CDAs (Goldberg, Friedman, and Boshara, 2010).

This paper has two main goals. First, we provide a review of 38 studies on the relationship between assets and children's educational attainment (29 on household assets and 9 on children's savings). To date, little of this research (4 of the 38 studies) has made its way into journals of education. As part of the review, we draw particular attention to the unique effects of children's savings and discuss

[1] These figures only include federal loans. They do not include other types of borrowing for school such as credit cards or personal loans.

how asset researchers are increasingly looking to expectations as a way to explain, at least in part, the assets/education relationship. Second, we discuss implications of findings for CDA policies and we propose an intervention based on assets, savings, and the Identity-Based Motivation (IBM) theory of children's motivation and behavior (Oyserman & Destin 2010) for increasing college attendance rates.

Review of Research on Household Assets and Children's Educational Attainment

We use several methods in our comprehensive search for research examining assets and children's educational attainment, beginning with a search of major databases and collections of electronic journals (ERIC, Project Muse, JSTOR, EconLit, Ingenta Connect, Oxford University Press, Proquest Dissertations and Theses, Social Work Abstracts via Silver Platter, and Academic Search Premier) using major keywords (education/ achievement/ attainment/ school/ college, assets/ wealth/ savings and educational expectations). Additionally, we use the same keyword searches of the electronic library catalog at the University of Pittsburgh to select books related to assets and education. We include working papers, conference papers, reports (such as those from government agencies), books, book chapters, and published articles that include assets (such as net worth, savings, stocks and bonds). After selecting all relevant research from these searches, we comb through the reference lists to find other related research not captured in our initial searches. This process yields 38 separate studies related to assets and children's educational attainment.

There are three main categories of children's educational attainment reviewed here: (1) academic achievement (math and reading), (2) college attendance, and (3) college completion. Each category is treated as a separate topic in this review and is accompanied by a table that contains author's name and date of study, asset variables included in the study, how variables are operationalized, methods and data, and major findings. Most studies cover multiple outcomes (more than one outcome variable) so they are included in several different tables (e.g., tables on college attendance and college graduation). In cases where working papers, conference papers, or reports are later published in a book/book chapter or as journal articles, only the book/book chapter or journal article is included. There are several topics covered that only one or two studies address (such as, repeated grade, gifted program participation, extracurricular activities, and expulsion/suspension). These topics are not included in this review.

In addition, we do not review findings on home ownership. While home ownership is the most widely studied form of assets in regards to children's educational attainment and has merit of its own, we suggest that it may be the least informative for policies seeking to develop children's asset building programs like in the proposed ASPIRE Act. This is because owning a home is least like owning a savings account, the type of asset proposed in the ASPIRE Act. A savings account is designed, at least in part, with the assumption that some portion of the money will be withdrawn at some point. In contrast, homes have what Shapiro, Oliver, and Meschede (2009) refer to as a "use value" (p. 2). Shapiro, Oliver, and Meschede (2009) suggest that homes cannot be easily turned into cash, and when refinanced to pay for school, create debt and a "false sense of security" (p. 2). This is not to say that home ownership is not an important factor to study when examining children's educational outcomes, only that it is different from owning a savings account in important ways. Moreover major reviews already exist covering home ownership effects (e.g., Rossi and Weber, 1996).

Within this body of research, most asset researchers focus on household assets and children's educational attainment. Household assets are most commonly defined as net worth (i.e., total family assets minus debt), liquid assets (i.e., easily converted into cash), and illiquid assets (i.e., hard to convert into cash). Appendix 1 provides detailed information from studies conducted on the relationship between household assets and children's math and reading achievement; only a summary is provided in the body of this review.

Researchers examining the household assets/education attainment relationship more consistently find a positive association between household assets and children's math achievement than they do between household assets and reading achievement (see Appendix 1 & Table 2). Loke and Sacco's (2010) study may provide some insight into why researchers do not consistently find significant results for reading. Their study is the only study to measure reading achievement and net worth across multiple years (four years). They find that initial net worth is not significantly associated with reading achievement, but an increase in net worth over the four years is associated with a slower rate of decline in reading achievement. Because most studies combine (i.e., average and adjusted for inflation) multiple years of net worth into a single variable and only use a single year of data for reading, they may fail to detect the positive effects assets have on reading achievement due to change over time in assets and/or reading.

In contrast to findings on reading, all six studies reviewed examining math achievement find that a type of household asset (e.g., net worth, liquid or non-liquid assets) has a significant positive relationship with math achievement (see Appendix 1 & 7). However, findings vary by type of asset, age of child, and race. In regard to type of asset, net worth and liquid assets (i.e., easily turned into cash) are consistent predictors of children's math achievement. In contrast, there is little evidence to suggest that illiquid assets (i.e., assets that are not easily turned into cash such as a home or business) are significant predictors of math achievement. Further, among children younger than six, no asset examined is significantly related to children's math achievement, but among children aged six to 14, net worth and liquid assets are generally significant positive predictors of math achievement. With respect to race, researchers have only examined household asset effects among Black and White children, to date. In the only household asset study to separately analyze samples of Black and White children, Williams Shanks (2009) suggests that asset effects may vary across racial groups depending on the type of asset. Among the ten studies examining math, reading, or the combined achievement variable, only two studies find income is significant when controlling for assets.

Overall, researchers find that household assets have a significant independent effect on whether children attend and ultimately graduate college (see Appendices 2 & 3). Although findings among studies that include academic achievement as a control are mixed, it is important moving forward that researchers establish whether household assets have an independent effect on college attendance and graduation that is not explained by children's academic achievement. In the case of college attendance, Huang, Guo, Kim, and Sherraden's (2010) study may provide some insight. They find that early liquid assets have a significant relationship with children's long-term effects. That is, early liquid assets (i.e., liquid assets the household has between ages 2 to 10) work through children's academic ability to influence whether or not they attend college. The effect is stronger for low-income children than it is for high-income children. Liquid asset findings are similar to those for income in their study. However, unlike in the case of income, late liquid assets (between ages 14 to 19) also seemed to be important for short-term effects (i.e., paying for college). In the case of net worth, the effect of early net worth is not correlated with children's academic ability. That is, there is

no evidence to suggest that early net worth works through children's academic ability to affect their attendance; however, there is evidence to suggest that late net worth does have a direct effect on college attendance.

In general, liquid forms of assets have been more predictive of children's college attendance than net worth and illiquid forms of assets, particularly when researchers control for children's academic achievement or cognitive ability (Jez, 2008; Huang, Guo, Kim and Sherraden, 2010; Nam & Huang, 2009). However, in the case of college graduation both liquid assets and net worth appear to be equally important predictors. Given this, it appears that the liquid assets may be more valuable for preparing children for college but both net worth and liquid assets may be important for determining whether children who get to college, graduate.

Later, our identity-based conceptual framework will model specific ways that assets may influence early achievement and cognitive ability. The next section, however, focuses on children's savings as a unique form of assets that may carry particular effects on achievement and identity.

Review of Children's Savings and Children's Educational Attainment

In this section we review existing research on children's savings and academic achievement. We discuss children's savings separately from household assets for several reasons. First, low- and moderate-income children may not be able to count on household assets in the same way that they can count on money saved in their own account, and in many ways these are the children most in need. Unlike children living in high-income households, children living in low- and moderate-income households are far more likely to experience household assets being drained by such things as unexpected car repairs, having to replace appliances that break, paying college expenses for older siblings draining down savings for young children, temporary bouts of unemployment, and so forth. Thus, it is conceivable that children's savings may instill more of a sense of ownership and control in these children (Barone, 1999; Belk, 1988; Furby, 1980; Meeks, 1998; Wallendorf & Arnould, 1988). For example, in a study of 51 fourth-grade children in a college savings program, Elliott, Sherraden, Johnson, and Guo (2010) find that children who are in the school savings program are statistically more likely to perceive that saving is a way to help pay for college than children in a comparison group.

Also, the correlation between children's savings and household assets is modest at best. For example, Elliott and Beverly (in press-a) report that children's school savings is significantly correlated with household net worth ($r = .27$, $p < .001$) and parent's savings for their child ($r = .12$, $p < .001$) but only modestly. Correlations remain modest when separate samples of Black and White children are examined. Children's savings has a significant but modest correlation with net worth ($r = .189$, $p < .01$) among children living in Black households (Elliott, Jung, Kim & Chowa, 2010). Among children living in White households, the correlation is higher ($r = .343$, $p < .001$), but still relatively modest.

Unlike the research in the previous section on household assets, when examining children's academic achievement (math and reading), research that includes children's savings has only employed a cross-sectional design (i.e., children's savings and achievement are measured in the same year) to date (see Appendix 4). In the two studies that use aggregate data, children's savings has a positive, significant association with math achievement. When including children's savings, net

worth and parents' savings are not significantly associated with math achievement. Findings from Elliott, Jung, and Friedline (2010) provide some insight into why household assets may not be significantly related to math achievement when children's savings are included in the same model. They find that children's basic savings fully mediates the relationship between net worth and children's math achievement. However, the mediating relationship is moderated by net worth. That is, as net worth increases among children with basic savings, math achievement rises more sharply. No studies examine reading achievement using aggregate data.

When the aggregate data are separated into separate samples of Black and White children (i.e., comparing Black children with savings to Black children without savings), to date, findings suggest that children's savings is a significant predictor of White but not Black children's math achievement (e.g., Elliott, Kim, Jung, & Zhan, 2010). Consistent with the previous study, when the sample is farther divided by both race and gender, children's school savings remain a positive predictor of White children's math scores regardless of gender, and non-significant among Black children (Elliott, Jung, Kim, & Chowa, 2010). This may be because far fewer Black children (26%) have savings of their own than White children (40%), reducing the overall predictive power of children's savings among Black children. Speculatively, another reason may be that White children who save may be more likely to be high achievers than Black children. Therefore, they do better not because they have savings but because they start off more prepared to do well in math than Black children who have savings. In line with this, there is considerable evidence that Black children start off school behind their White counterparts (e.g., Lee & Burkham, 2002). In regard to reading, Elliott, Jung, Kim, & Chowa (2010) find that children's schools savings does not have a significant association with children's reading achievement regardless of race or gender.

Four studies in this area examine children's college attainment. All four studies use a longitudinal design with children's assets being measured at an earlier time (2003 or earlier) than the outcome variable (2005 or 2007) (see Appendix 5). Findings across the four studies consistently show a strong association between children's savings and college outcomes. Elliott and colleagues use aggregate data, a separate sample of low- to moderate-income (below $50,000) and high-income ($50,000 or above) children, a separate sample of Black and White children, and a sample that only includes children who expect to graduate from a 4-year college to examine the effects of children's savings on their educational attainment. The first three studies use college progress (on course/off course) as the outcome variable. Children who are currently enrolled in or who have graduated from a 2-year or 4-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 last study discussed uses college attendance as the outcome variable (attended/never attended). Since only small portions of children have actually graduated from college by age 23 in the Transition to Adulthood (TA) supplement to the Panel Study of Income Dynamics (PSID) in 2007, college graduation has not been used as an outcome variable in this area of research.

In the aggregate sample, Elliott and Beverly (in press-a) find that children who have designated a portion of their own savings for school purposes are approximately two times more likely to be currently attending college or have already graduated. In the study examining differences across income groups, Elliott, Constance-Huggins and Song (2010) find that among low-to moderate-income children, those having savings designated for school are about two times more likely to be currently enrolled in college or already graduated. In the case of high-income children, children's savings is not statistically significant. They suggest that this may support the proposition that at a

certain level of income, having children's savings no longer matters. That is, income might be high enough that children cannot reasonably doubt that they will be unable to afford college. In a study examining differences across racial groups, Elliott and Nam (2010) find children who have designated a portion of their savings for school are two times more likely to be attending college or have graduated from college among both samples of Black and White children.

In the final study, Elliott and Beverly (in press-b) restrict the sample to children who are certain they will graduate from a 4-year college. They do this to determine the amount of "wilt" that occurs and whether children's savings helps to reduce wilt. Wilt is the percent of children who expect to graduate from a 4-year college prior to leaving high school but do not attend college shortly after leaving high school (between ages 17 to 23). More than half of children (55%) who do not have savings of their own experience wilt. But, when children expect to graduate from a 4-year college, they find that having basic savings is associated with children being approximately six times more likely to attend college while children who have designated a portion of their basic savings for school are approximately three times more likely to have attended college. While it may be somewhat surprising that basic savings has a larger effect on college attendance than school savings, this may be explained by the sample being restricted to children who expect to graduate from a four-year college. That is, among children who expect to graduate from college, whether they have savings designated specifically for school may matter less, it is not as though they need to develop more positive attitudes toward school. They may benefit more from simply having money for day-to-day expenses. However, more research is needed to fully understand these results. In either case, whether children have basic savings or school savings, effects are still fairly large.

There is a noteworthy methodological advancement in the studies on children's savings for the field of assets and education. Elliott's (2009) study on children's school savings and math achievement introduces an important methodological innovation to the field by using multiple imputations to complete missing data (Little & Rubin, 2002). While the extent of missing data is not generally clearly reported in most of the studies reviewed throughout this paper, large national data sets collected over multiple years using a survey design typically have a substantial amount of missing data that cannot be ignored. It appears that most household and children's studies account for missing data through the use of list-wise deletion. However, list-wise deletion can reduce the power of the study and the generalizability of findings (Saunders, Morrow-Howell, Spitznagel, Dore, Proctor, & Pescario, 2006). The use of multiple imputations may help further strengthen research in this area. At the very least, researchers need to be sure to clearly identify the extent of missingness and how it was handled.

Lastly, we should note that there are several important differences between the accounts examined in the studies reviewed in this section, CDA accounts that have been proposed in the ASPIRE act, and other popular education accounts such as Coverdell Education Savings Accounts, Uniform Gifts to Minors Act (UGMAs), 529 College Savings Plans, and Roth Individual Retirement Arrangements (IRAs). These differences have significant implications for policy. Popular educational accounts offer their owners protection from taxation and in some cases an infrastructure that provides such things as direct deposit and matched savings to encourage and promote savings. In order not to be taxed, however, savings in these accounts typically cannot be withdrawn without penalty until children reach college age, and the savings must be spent on college related expenses. As a result, these accounts can more aptly be defined as being non-liquid in nature. In contrast to these popular education accounts, children can easily withdraw money from the accounts in this

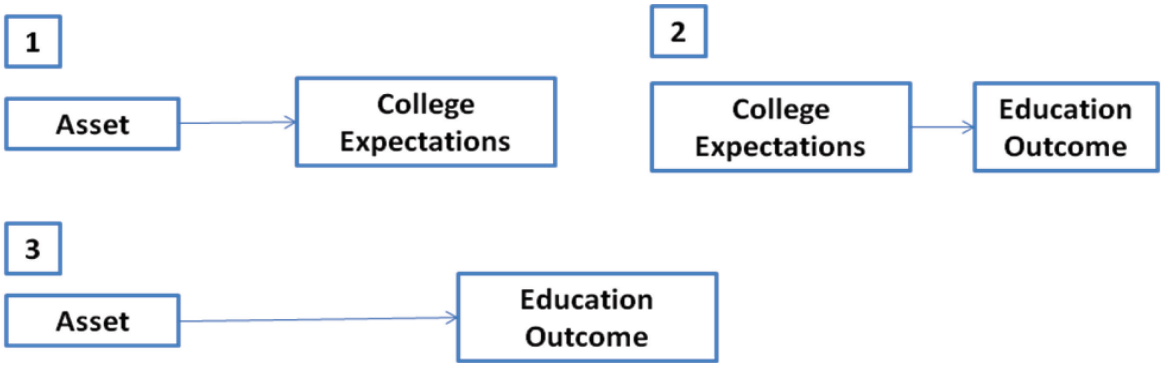
study and use that money without penalty. Conversely, the basic savings accounts examined in the studies in this section do not encourage saving through such things as tax incentives, a match (e.g., save a dollar and it is matched with another dollar), initial deposit, and incentives for reaching bench marks as is the case in some popular education accounts. This may weaken children's perceptions of what can be accomplished through having savings.

Review of Research on the Asset/Expectation Relationship

Overall, asset researchers are increasingly turning to college expectations as a way to help explain a part of the asset/education relationship. Beyond the asset field, research consistently shows that higher college expectations may lead to increased academic efforts and achievement (e.g., Cook, et al., 1996; Marjoribanks, 1984; Mau, 1995; Mickelson, 1990). We suggest that college expectations are related to children's visions of themselves in a future state, what may be called their possible future self or "college-bound identity" (Destin & Oyserman, 2010; Oyserman & Destin, 2010). Appendix 5 provides detailed information on research examining the assets/expectations relationship. In this section, we review 13 studies that examine the relationship between assets and college expectations. Unlike in the previous section, we do not separate out studies focused on household assets from studies focused on children's savings.

Many asset researchers conceptualize college expectations as a "linking mechanism."[2] In this conceptualization, assets are associated with expectations (see Figure 1, diagram 1) and expectations, in turn, are associated with the education outcome in question (see Figure 1, diagram 2).[3] Thus, college expectations act as a link between assets and educational attainment, but a direct relationship between assets and educational attainment is *not* tested while controlling for expectations (see Figure 1, diagram 3). In addition, this perspective generally focuses on explaining the relationship between assets and expectations, not the relationship between assets and educational attainment. We refer to this as the "linking model" of indirect effects.[4]

Figure 1. Linking model of indirect effects



[2] For discussion on indirect effects and linking, see Mathieu & Taylor, 2006, p. 1039

[3] For information on the relationship between expectations and children's educational outcomes see Mau (1995).

[4] It should also be noted that some researchers refer to "linking" as a form of mediation (see e.g., Zhao, Lynch, & Chen, 2010). To be specific, Zhao, Lynch and Chen (2010) call this form of mediation indirect-only mediation (p. 200). However, the concept of linking is more in line with how Sherraden (1991) has conceptualized asset effects not mediation.

Yadama and Sherraden's (1996) study is an example of a linking study. Using a path analytic technique with 1968 and 1972 data from the PSID, Yadama and Sherraden (1996) simultaneously test whether assets (household savings and home equity) increase the chance of having more positive attitudes and behaviors (prudence, efficacy, horizons, connectedness, and effort) or whether attitudes and behaviors increase the chance of having assets (Yadama & Sherraden, 1996). They find evidence of what they call a "virtuous circle," where assets increase the chance of having more positive attitudes and behavior, and attitudes and behavior, in turn, increase the chance of having assets (Yadama & Sherraden, 1996, p. 11).

Another example is a study done by Williams Shanks and Destin (2009). They draw a sample of Black parents and their children from the PSID and its supplements, the Child Development Supplement (CDS) and the TA supplement. They perform a two-stage model using regression where they test the relationship between net worth (measured in 1994), parents' college expectations (measured in 1997 and 2002), and children's college attendance (measured in 2005). In the first stage, they find that net worth has a significant association with parents' expectations in 1997 and 2002. In the second stage, they test the relationship between net worth and children's college attendance. They find that net worth is significantly related to children's college attendance. However, they do not attempt to establish the case that the association between net worth and college attendance is statistically mediated by college expectations.

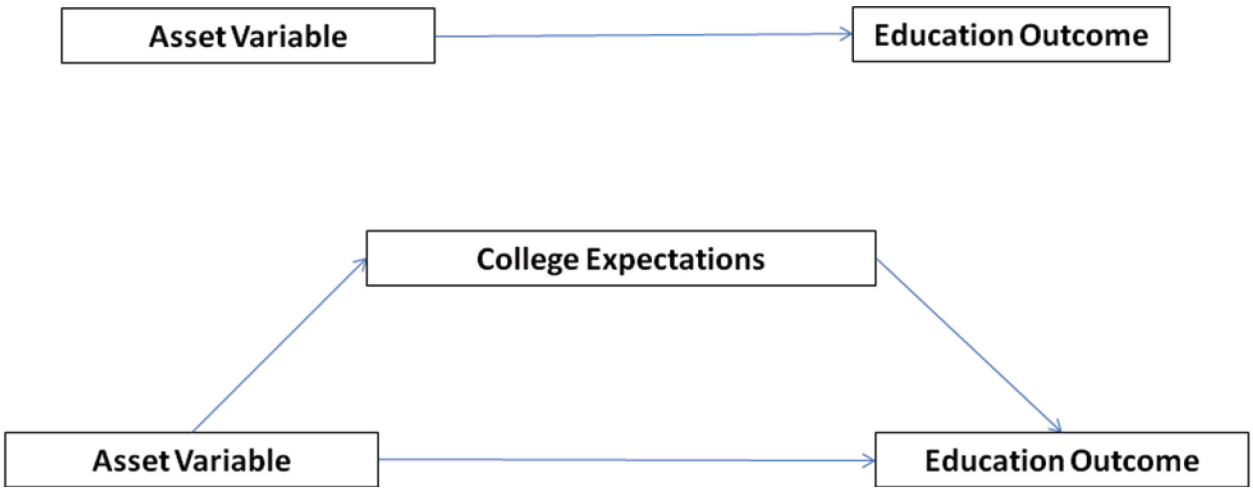
In the final linking study identified, Elliott, Choi, and Kim (2010) conduct a simultaneous test of whether children's savings predicts children's college expectations or college expectations predict children's savings using path analytic technique with SEM. According to Mathiew and Taylor (2006), because the same data can support various models, simultaneously testing competing theories in the same model can provide additional evidence for a specified order (p. 1039). The study design has three desirable features: it is longitudinal in regards to the asset/expectation relationship (both are measured in 2002 and 2007), it simultaneously considers whether assets predict college expectations or vice versa, and it uses data collected recently. They find that children's savings has a slightly stronger relationship with children's expectations than children's expectations has with savings. Similar to Yadama and Sherraden (1996) and Zhan and Sherraden (2003), they suggest a pattern of two-way causation or a "virtuous circle".

A more recent approach, which builds on Sherraden (1991), conceptualizes expectations as a mediator rather than a linking mechanism. The focus of this approach is to explain how assets affect children's educational attainment. This new line of theorizing was first articulated by Shobe and Page-Adams (2001) who stated that expectations "may play an intermediate role in the relationship between assets and other positive social and economic outcomes." In addition, Shobe and Page-Adams make clear that assets can precede expectations: "savings *first* provide people with otherwise unattainable opportunities to hope, plan, and dream about the future for themselves and their children" (italics in original, 2001, p. 119). Thus, they suggest a causal ordering in which assets precede expectations, and expectations carry at least part of the effect of assets onto educational attainment.

Researchers have conducted eight studies on indirect effects using a mediational model (see Appendix 6). Four of these studies rely exclusively on the Baron and Kenny (1986) method – what may be referred to as the causal sequence method – to test for mediation. The causal sequence method suggests that statistical evidence of mediation can be determined by estimating a series of

linear regressions that test whether (a) assets are related to the educational outcome, (b) assets are related to college expectations, and (c) college expectations are related to the educational outcome in a model controlling for the effects of assets.

Figure 2. College expectations as a mediating variable between assets and college progress



Zhan and Sherraden (2003), using the causal sequence method, find evidence that two-way causation may be present; that is, assets may affect expectations and expectations may also affect accumulation of assets. In a more recent study by Zhan and Sherraden (2009), they test whether the assets/college graduation relationship is mediated by parents' and children's college expectations, using the Baron and Kenny method to test for mediation. They find that financial assets are positively related to parents' and children's educational expectations (i.e., financial assets are associated with college expectations). Moreover, they find that both financial assets (i.e., financial assets are associated with college graduation) and expectations (i.e., college expectations are associated with college graduation) are associated with whether children graduate from college. However, because the effects of financial assets are not reduced when expectations are included in the model, they conclude that there is no evidence of mediation.

Then again, some scholars claim that the Baron and Kenny test is susceptible to error because of its inability to detect confounding, suppression, and interactive effects that could mitigate any overall effects that the independent variable has on the dependent variable; as a result, researchers may erroneously conclude that there is no mediation (Mathieu & Taylor, 2006). Zhao, Lynch, and Chen (2010) suggest that a direct effect does not need to be present between the independent and dependent variables in order for mediation to occur. Moreover, contrary to the Baron and Kenny test, they suggest that the strength of mediation should be determined by the size of the indirect effect (i.e., size of the effects of assets on expectations), not by the lack of or the reduction in direct effects (also see, Mathieu and Taylor, 2006; Preacher & Hayes, 2004).

Given the growing criticism of the Baron and Kenny method (see e.g., Zhao, Lynch & Chen, 2010), scholars increasingly suggest using a direct test of mediation, such as bootstrapping (Mathieu and

Taylor, 2006; Preacher & Hayes, 2004; Zhao, Lynch, & Chen, 2010).[5] Bootstrapping is a nonparametric approach to effect-size estimation and hypothesis testing (Mooney & Duval, 1993). Bootstrapping does not make assumptions about the shape of the distribution of the 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 non-normality in the sampling distribution of the indirect effect. Bootstrapping is accomplished by taking a large number of samples of size n (where n is the original sample size) from the data, sampling with replacement, and computing the indirect effect in each sample (Preacher & Hayes, 2004). Three of the eight studies testing mediation use bootstrapping (Elliott, 2009; Elliott & Beverly, in press-a; Elliott, Kim, Jung, & Chowa, 2010). All three studies find evidence of indirect effects.

Table 1: Total number of studies (N=38) that include measures of household assets and children's savings and their relationships with children's education and college expectation outcomes

	Total Number of Studies	Number Significant in Any Model	Number Significant in Any Final Model
Achievement	14	--	--
Math	10	--	--
Household assets	6	6	6
Children's savings	4	4	4
Reading	6	--	--
Household assets	5	2	2
Children's savings	1	1	1
Combined or Other Measure	3	--	--
Household assets	2	2	2
Children's savings	1	1	1
College Attendance	14	--	--
Household assets	10	10	9
Children's savings	4	4	4
College Graduation	6	--	--
Household assets	6	6	5
Children's savings	0	--	--
College Expectations	13	--	--
Household assets	6	5	5
Children's savings	7	7	7
Test for mediation	8	--	--
Evidence of mediation	7	--	--

Notes. The tallies of studies measuring some form of household asset include any measure of net worth, such as liquid assets, illiquid assets, secured debt, unsecured debt, parents' savings, and various transformations of combined net worth values. College attendance includes findings from research on college progress, which measures a combination of college attendance and graduation. A number of studies measure more than one outcome so they fall into more than one category.

[5] A macro for running bootstrapping in SAS and SPSS by Preacher and Hayes can be found at the following cite: http://www.comm.ohio-state.edu/ahayes/spss%20programs/indirect.htm.

Overall, research findings provide evidence that suggests assets and expectations are correlated. Since experimental data are not currently available, researchers have used controls (known predictors of expectations) to help rule out the possibility that the assets/expectations relationship is spurious. They have controlled for a wide variety of factors to include such things as race, family income, marital status, head's level of education, employment status, residency, number of children, special education status, and academic achievement. After controlling for all of these different factors, in most cases the assets/expectations relationship remains significant. Table 1 provides a summary of total number of studies that include a particular outcome variable and its findings (significant or non-significant) for both household assets and children's savings.

Moreover, in the studies reviewed, asset researchers have measured expectations as children's perceptions of the level of certainty they have about how far they will go in school. However, a better measure may be whether or not children expect to enter a career as an adult that is education-dependent (e.g., expect to become a lawyer, doctor, etc.) (Destin & Oyserman, 2010). Destin and Oyserman (2010) point out that most low-income and minority children value college and desire to attend (i.e., most have positive college expectations), despite low rates of actual college attainment. They suggest this occurs because, for many of these children, engaging in school activities does not feel like it is an investment toward attaining a meaningful goal, particularly for children who expect to enter a career that is education-independent (e.g., sports, entertainment, etc.). Future research may want to examine whether education-dependent career expectations better explain the asset-education relationship than children's college expectations do.

Theory

Despite the growing body of research on assets and children's college-bound identity, much of this work has not had a strong theoretical grounding. Researchers have largely relied on asset theory developed to understand welfare effects of assets. Theory is needed that specifically attempts to understand the asset/education relationship. Elliott, Choi et al. (in press) offers the real first attempt to provide a conceptual framework for how a college-bound identity is formed, reinforced, and influences children educational outcomes. Their conceptual framework is grounded in an Identity-Based Motivation (IBM) theory of children's motivation and behavior (for more information on IBM, see Oyserman & Destin 2010). Using the IBM framework, Elliott, Choi et al. (2010) propose that three principal components explain the relation between assets, college-bound identity and motivation: 1) identity salience, 2) congruence with group identity, and 3) interpretation of difficulty. In the IBM research, these principles have been shown to be important predictors of children's school behaviors (Oyserman & Destin, 2010).

Salience captures the idea that children are more likely to work toward a goal when images of their own future are at the forefront of their mind. This assumes that people pay attention to things that they believe are the causes of things that matter to them. For example, Elliott, Sherraden et al. (2010) find that children see savings as a way to pay for college. Another way of stating this finding is that owning savings may be seen as a cause of being able to attend college. As such, owning savings may help make college more salient.

Another important factor in the connection between context, college-bound identity, and behavior is a link to group identity. Congruence with group identity occurs when an image of the self feels

tied to ideas about relevant social groups such as friends, classmates, family, and cultural groups. When this occurs, the congruent personal identity is reinforced. Elliott, Choi et

al. (in press) point out that assets are almost always connected to the family. For example, when children open an account they are supported by parents or other family members. Further, parents are often a primary source of children's income through gifts or allowances, for example.

As Elliott, Choi et al. (in press) state, "When children and their families 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" (p. 16).

Finally, Elliott, Choi et al. (in press) highlight the importance of having a means for positively interpreting and overcoming difficulty. From this perspective, in order for children to sustain effort and work towards an image of themselves as being college-bound, the context must provide a way to address inevitable obstacles to the goal of attending college, such as being able to finance college. It is clear how having savings provides children with a strategy for financing college.

Elliott, Choi et al. (in press) use of IBM to develop a conceptual framework for how a college-bound identity is formed, reinforced, and influences children educational outcomes. However, more theory development is needed. Further, a direct test of the entire conceptual framework has yet to be undertaken. Given this, their theoretical framework can be seen as a starting point but more research is needed.

Toward a Children's Savings/College-Bound Identity Intervention

In this section we build on existing research and make suggestions about how current CDA policies can be changed to better fit what we know about the assets/education relationship. Initially in the 1990s, CDAs were proposed as a way to create an inclusive and accessible opportunity for lifelong savings and asset building (Sherraden, 1991). Singapore, the United Kingdom, South Korea, and Canada are examples of countries that already have implemented some form of national CDA policy (Loke & Sherraden, 2009). In the United States, more focus has been placed on CDAs during the last five years as a potentially novel and promising asset approach for helping children to finance college. While no national CDA policy has been adopted in the US, several proposals have been introduced into Congress. Examples of policy proposals are the America Saving for Personal Investment, Retirement, and Education (ASPIRE) Act, Young Savers Accounts, 401Kids Accounts, Baby Bonds, and Portable Lifelong Universal Savings Accounts (Cramer, 2010). These policies have garnered support from both liberal and conservative politicians.
The ASPIRE ACT is probably the most recognizable of the proposals. ASPIRE would create "KIDS Accounts," or a savings account for every newborn, with an initial $500 deposit, along with opportunities for financial education. Children living in households with incomes below the national median would be eligible for an additional contribution of up to $500 at birth and a savings incentive of $500 per year in matching funds for amounts saved in accounts. When account holders turn 18, they would be permitted to make tax-free withdrawals for costs associated with post-secondary education, first-time home purchase, and retirement security.

Given the wide spread interest in CDAs, there is a great need for conducting tests in advance of enacting them using the best available data and methods. However, many of these policy proposals

were introduced prior to the research that has been conducted and reported over the last five years on the relationship between assets and children's educational attainment. For example, the ASPIRE Act was first proposed in 2004 and most others discussed in this section by the end of 2006 (Cramer and Newville, 2009). Prior to 2006, only nine of the 38 studies included in this review had been completed. Given this, it seems appropriate to take stock of what has been learned and to offer some potential changes to the current policy based on existing evidence. Table 2 provides a summary of suggested intervention strategies, supporting empirical evidence, and the core principal(s) of IBM that would be influenced by such changes to the policy.

Findings of two-way causation suggest that asset-building policies that seek to build both children's savings along with children's college-bound identity may be most effective at increasing the number of children who have savings as well as their educational attainment. Given this, we propose that CDAs should be designed so that, in addition to promoting savings, they include aspects that help make children's college-bound identity salient, congruent with children's group identity, and that help children develop strategies for overcoming difficulties. How CDAs can be better designed to incorporate aspects of an IBM intervention based on theory and empirical findings will be discussed in the remainder of this section.

In addition to illiquid assets and net worth, findings generally suggest that liquid forms of assets, like savings, that can be used for immediate expenses are also an effective way to increase children's college attainment rates. Yet, current CDA proposals, in regards to college, do not reflect this in part because they have been primarily thought of as a solution to the short-term problem of paying for college rather than as a means of preparing children for college. For example, children are typically not allowed to withdraw any of their savings from these accounts until they reach college age. In contrast, basic savings accounts allow children and their families to make withdrawals to cover such expenses as buying school clothes, paying fees, buying books, or paying for school lunch when needed. Such day-to-day purchases may help provide everyday cues that make the link between having savings and school performance more salient.

Given findings on liquid assets, we suggest that CDAs should be conceptualized as a three-in-one account while acknowledging the potential political challenge that providing children with "discretionary" money may present.[6] In particular, we suggest currently proposed CDAs should be designed to include an Education Expense Account (EEA), an Education Development Account (EDA), and an Education Growth Account (EGA) that can be used, respectively, for short-term, intermediate, and long-term education developmental needs. The EEA would be non-interest yielding and it would be used for such things as buying books, clothes, paying school- and after-school-related fees, paying for lessons, paying for tutoring, SAT/ACT prep, and so forth. The EDA would be a low-yield interest-bearing account that could be used for such things as beginning of the year school clothes or uniforms, buying an instrument, going on a field trip or study abroad, buying a computer, and so forth. The EGA would be a high-yield interest-bearing, tax sheltered account used for paying for children's postsecondary education much like the account currently proposed in the ASPIRE Act.

[6] In this case, it would not be purely discretionary, there would be restriction confining the use to approved educational/human development uses.

An account that meets multiple needs is in line with research in behavioral economics that builds on Maslow's hierarchy of needs theory. As described by Xiao and Anderson (1997), Maslow contends that people will attempt to fulfill higher-level needs only after lower-level needs have been met. Building on Maslow's theory, Xiao and Anderson (1997) identify three categories of financial need based on peoples' tolerance for risk taking: survival needs, security needs, and growth needs which are based on research conducted by Xiao and Noring (1994). Xiao and Noring (1994) find that low-income consumers are more likely to report saving for daily expenses (i.e., survival needs), middle-income consumers are more likely to report saving for emergencies (i.e., security needs), and high-income consumers are more likely to report saving for future opportunities (i.e., growth). In contrast to Maslow's hierarchy of needs, however, we do not suggest that benefits cannot be had from higher order needs at all; it is more of a matter of the size of the effect that can be anticipated. For example, low-income children may benefit from having a savings account designated specifically for college, but they may benefit even more from having a basic savings account that can be used for multiple purposes (e.g., buying books, computers, food, clothes, etc.).

Assuming that various financial accounts can be used to represent different financial needs, we suggest that savings vehicles designated exclusively to meet growth needs (such as CDAs proposed in the ASPIRE Act) may have less of an effect on the behavior of children living in disadvantaged households than savings accounts that also help them meet their survival needs. In suggesting this, we are not suggesting that disadvantaged children may not perceive the value of fulfilling growth needs, only that they are likely to behave in ways that align with fulfilling survival needs at least until survival needs are adequately met. From this perspective, a savings vehicle that has the flexibility to allow children to meet all three levels of needs may do more to positively affect their behavior than one designed solely for the purpose of financing college costs, particularly in the case of low- and moderate-income children.

The concept of EEAs and EDAs is similar to but not the same as Singapore's Edusave accounts (Loke & Sherraden, 2009). Edusave accounts were implemented by the Singaporean government in 1993. The accounts are set up for children ages six to 16. The main objective of the accounts is to maximize children's educational opportunities during their primary school years (Loke & Sherraden, 2009). According to Loke and Sherraden (2009), these accounts are automatically opened for each child in Singapore and the government makes annual contributions to each account ranging from $112 to $132 in 2007. Singapore funds the Edusave program by interest earned from a $3.3 billion Edusave Endowment Fund established by the government. Any funds left over in the Edusave account when children reach age 17 are rolled over into Post-Secondary Education Accounts, the equivalent of a CDA.

However, unlike Singapore's system, we suggest a one-account system. Children and their families would be able to designate a portion of their savings for short-term and intermediate use. The idea of having multiple uses for the same account is logistically possible. PNC's innovative Virtual Wallet is an example of a three-in-one account. It allows participants to designate savings for short-term, intermediate and long-term goals in the same account. More specifically, there is a spending account for every day expenses, a reserve account for short-term savings, and a growth account for bigger items.

Moreover, while asset effects appear to occur from simply owning an account or what we have speculated is children's perceptions of expected savings, at some point children must have saved

enough to purchase a particular item. Research suggests that, on average, children do not have enough saved to pay for college or even a semester of college (Elliott, 2009). A way to help children increase the amount they have saved is by providing them with monetary incentives. In the Singaporean system, in addition to annual contributions, children earn monetary incentives (between $33 and $330) if they perform well in academic or co-curricular activities. In line with this, we propose that CDAs should offer incentives to low and moderate income children similar to Edusave accounts. This suggestion is based as much on theory as empirical evidence. In regards to theory, incentives may help make low- and moderate-income children's college-bound identity even more salient. Equally important they may provide children with strategies for overcoming difficulties they face academically and financially. Fryer (2010) describes how incentives can help children develop strategies to succeed in school. He finds that income incentives that are targeted at strategies for doing well in school such as completing homework assignments, reading books, and attending class (inputs) are more effective than incentives for performance on tests (outputs) for example. According to Fryer (2010), this is because children, particularly low and moderate income, are unfamiliar with what it takes to do well in school. Given this, it may make sense to direct incentives at inputs and not outputs; however, more research is needed. In addition to more strongly linking CDAs to strategies related to difficulties associated with school, incentives would have the practical implication of helping low- and moderate-income children and their households accumulate the savings they need to pay for college as well as other human capital investments.

Moreover, evidence suggests when children have savings of their own future identities may be particularly salient, as children are actively involved in the process that is linked to their college goals. We posit that children, particularly low- and moderate-income children, may not be able to count on household assets in the same way they can count on money they have saved in their own account. What they experience is their parents' savings being drained on a regular basis for such things as car repairs, home repairs, appliances, vacations, and so forth. So, while low- and moderate-income children have a host of experiences with their parents' savings failing them, evidence from behavioral economics suggests that children are given greater latitude over their own money to spend and save it as they see fit (Meeks, 1998). Greater latitude might instill in children a greater sense of perceived control, which can improve persistence towards short- and long-term school goals

A pragmatic reason for why some researchers and policy makers may not want to have CDAs in children's names (in the ASPIRE Act the accounts are in the child's name, tied to their social security number) is because assets in children's names are more highly penalized by federal financial aid policies than are assets in a parents' name.[7] However, we contend that current policies that penalize savings in children's names are not an adequate reason for why researchers and policymakers should not investigate the importance of children's savings. New policies are adopted every year, particularly when they are supported by convincing evidence that suggests changes are likely to be effective and the gain from changes outweighs not making them. An example of this is recent policy changes in regards to asset limits that prohibit welfare recipients from accumulating wealth in excess of certain thresholds (Nam, 2008). For example, the Omnibus Budget Reconciliation Act (OBRA) of 1981 set limits at $1,200 for vehicle assets and at $1,000 for countable assets such as cash on hand, values in saving and checking accounts, bond, stocks, and so

[7] For more information on savings and federal financial aid reductions, see Executive Office of the President, Office of Management and Budget (2009). *Simplifying student aid: The case for an easier, faster, and more accurate FAFSA.*

forth. Nevertheless, in response to the concept of assets as distinct from income and a growing body of research that suggests asset limits prevent low-income families from accumulating assets and escaping welfare (e.g., Powers, 1998; Sherraden, 1991), Nam (2008) finds that by the year 2000, 43 states had liberalized the rules (i.e., increased the amount of assets families can own and still receive welfare benefits) on countable asset limits to some degree and all states had raised vehicle asset limits.

Table 2: Intervention strategies, empirical support and the core principal(s) of IBM that are influenced

Suggested Intervention Strategy	Main Empirical Support	Core Principal(s) of IBM that are Influenced*
Combined Asset/IBM	Two-way causation	Salience, congruence with group identity, and interpretation of difficulty
Education Expense Accounts and Education Development Accounts	Liquid asset findings	Provides everyday cues that make the link between having savings and school performance more salient
Incentives	Low savings among children	More strongly links CDAs to strategies related to difficulties associated with school
Ownership	Children's savings findings	Evidence suggests when children own savings future identities may be particularly salient, as children are actively involved in the process that is linked to their college goals When children, their families, a community member, or the state save money for their college education, 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
College-Bound Identity Education	IBM research**	Salience, congruence with group identity, and interpretation of difficulty

Note. IBM = IBM
***** The core principals of IBM are salience, congruence with group identity, and interpretation of difficulty.
****** Empirical evidence for IBM is not reviewed in this manuscript. For more information on IBM see Oyserman and Destin (2010).

Further, there may also be ways to simulate child ownership without the account actually being in the child's name. An alternative to account ownership by the child may be state ownership, where the account resides with the child who is named as the irrevocable account beneficiary. CDAs that are in the state's name with the child as the beneficiary are being tested in a large experiment in Oklahoma called SEED for Oklahoma Kids (SEED OK).[8] An example of how this may work can be found in an oft-cited story of a multimillionaire industrialist, Eugene Lang, who made a pledge in the 1980s to 61 sixth-graders in Harlem to pay their college tuition if they graduated from high school. Most of these children were black or Hispanic and poor. In a school with a 50% to 75%

[8] For more information on SEED OK, see http://csd.wustl.edu/AssetBuilding/SEEDOK/ .

drop-out rate, half of the 52 students who remained in the New York area went on to college (Sherraden, 1991). Several said, " . . . they thought that Lang's concept had worked because many children in the neighborhood had, in the past, put ideas of college out of their minds at an early age, thinking that it was a luxury beyond their reach" (Sherraden, 1991, p. 152).[9] While these children did not own savings of their own, savings was held in their name for them apart from family wealth and assets. It appears that when the financing of college becomes a reality, college attendance also becomes a reality. However, when children doubt whether they can pay for college, the route to college may appear more like a dream, rather than a well-defined pathway.

In any case, children's savings is almost always connected to a larger social unit or family. When children, their families, a community member, or the state save money for their college education, according to Elliott, Choi, Destin and Kim (in press) 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.

Finally, CDA proposals often have written in them some provision for financial education. We suggest that they should also include a provision for stimulating positive college-bound identities. This may be particularly important for Black children. Findings suggest that assets effects are weaker among Black children with regard to math and reading scores. If children's college-bound identity helps carry part of the effect of assets onto children's academic achievement, smaller effects may be in part due to Black children having less positive expectations about attending college. While Black children typically desire to graduate from college at equal or higher rates as Whites, they may be less likely to actually expect to graduate from college (Mickelson, 1990) or to choose a job that requires college (Destin and Oyserman, 2010). Therefore, combining savings strategies with college-bound identities may be needed if CDAs are to have a stronger effect on Black children's math and reading. However, more research is needed.

There are many ways that the financial education curriculums could be adapted to make a link to college-bound identities. For example, they could be designed to also teach children about the cost of college, about financial aid, and the role savings can play in meeting college costs. They could be taught about how much they can expect to save by earning incentives, initial deposits, matched savings (i.e., for every dollar saved an additional dollar is placed in the child's account up to a certain amount each year), and interest, for example.

Further, if CDA are designed as a three-in-one account, financial education classes could be designed to instruct children on how they might save for short-term (paying for school clothes, books, fees, and so forth) and intermediate goals (computer, school field trip, an instrument, and so forth) as well as the long-term goal of college. In this manner, financial education classes would serve as a cue to children's college-bound identity. Additionally, most CDA proposals suggest teaching financial education as part of public education system. If this is the case, these classes would also reinforce the college-bound identity through their congruence with the actions and goals of the larger group. Maybe most importantly, they would reinforce the college-bound identity by teaching children strategies to overcome perceived difficulties related to attending college. Because children would actually have accounts, this would not only be book knowledge, but they would have

[9] For more information on Eugene Lang and the "I Have a Dream Foundation" go to http://www.ihad.org/index.php.

the opportunity to actually put to use what they were learning. This may make this knowledge particularly salient (e.g., Johnson & Sherraden, 2007).

Conclusion

While a great deal of progress has been made in respect to understanding the potential effects assets may have on children's educational attainment, much more work is needed. Future research may want to include different racial groups in their analyses. Currently, most research focuses on Black and White households. Further, while it has been about 20 years since Sherraden (1991) drew a theoretical distinction between assets and income, additional studies are needed that provide empirical evidence of this distinction. When submitting articles to journals, it has been the authors' experience that it is still common for some reviewers to indicate that they do not recognize the distinction between assets and income.

There is also a need for research examining whether a threshold exists where household asset effects begin to occur and when the lack of assets might begin to have a negative effect. That is, for example, what amount of household assets is required before children's perceptions about their environment begin to change creating a positive college-bound identity? More research is also needed on whether children's savings have unique effects and whether household assets act as a moderator between children's savings and educational attainment. Further, all of the studies on children's savings have used the PSID and its supplements, new measures of children's savings and new data sets must also be identified and used. Currently there are no longitudinal studies on children's savings and children's math and reading achievement. Research is needed that uses a longitudinal design. Moreover, while there is evidence that suggests asset effects vary by race, age, and income level, we know little about why in either the case of household assets or children's savings. Similarly, little is known about why asset effects occur more consistently in regards to children's math achievement but not reading. Finally, there is clearly a need to test the conceptual model presented in this review.

On the whole, research suggests that asset policies are likely to promote higher rates of educational attainment both due to their direct and indirect effects. Assets' potential for multiple effects make it a particularly alluring policy intervention. Asset effects seem to be amplified when combined with college-bound identities. To understand how a college-bound identity is formed, reinforced, and influences outcomes, we utilize the theory of identity-based motivation. If our conceptual model is confirmed in future research, then policies that include both asset accumulation and IBM strategies may be a particularly powerful tool for promoting educational attainment.

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Appendix 1: Review of research on household assets and academic achievement (math and reading scores)

Name & Date	Asset Variables	Methods / Data	Outcome variable	Findings
Philips, Brooks-Gunn, Duncan, Klebanov, & Crane (1998)	Categorical net worth (1) < $0; (2) $0 to $2,184; (3) $2,185 to $10,194; (4) $10,194 to $34,011; (5) > $34,012)	***Data sets***: Children of the National Longitudinal Survey of Youth (CNLSY) & the Infant Health & Development Program (IHDP); ***Longitudinal***: Baseline measured at birth between 1980 & 1987; Outcome measured at ages 5 to 6 in 1986, 1988, 1990, or 1992; N = 1,626	Reading	Net worth is not significant; Net worth does not improve the Black - White test score gap
Orr (2003)	Net worth; Income-generated assets (stocks, bonds, CDs, other cash accounts); Non-income generated assets (total assets for home and vehicle minus debt)	***Methods***: Ordinary least squares (OLS) regression; ***Data Set***: National Longitudinal Survey of Youth (NLSY79) Mothers & Child file; Mother & young people only; ***Cross sectional***: Measured at ages 5 to 14 in 1996; N = 2, 098	Math	Net worth is significant; it has the largest effect on a young person's math scores compared to other indicators in model ; Controlling for race, Blacks score significantly lower compared to Whites; Net worth reduces the Black - White test score gap in math
Zhan & Sherraden (2003)	Amount in savings; Recoded as no reported savings, $1-$2,999 and $3,000 or above	***Methods*** : Ordinary least squares (OLS) regression; Hierarchical regression; ***Data Set***: The National Survey of Families and Households (NSFH); Female headed households only; ***Longitudinal*** : Baseline measured at 12 to 18 in 1987 to 1988; Outcome measured at ages 18 to 26 in 1992 to 1995; N = 406	Academic performance (mother's report of grades)	Savings is not significant; Controlling for race, Blacks perform significantly lower compared to Whites
Campbell (2006)	Net worth	***Methods***: Ordinary least squares (OLS) regression; ***Data Set***: National Longitudinal Survey of Youth Mother-Child file (NLSY79); ***Longitudinal***: Baseline measured in 1979; Outcome measured at ages 10 to 11 between 1985 & 2000; N = 5,789	Math	Net worth is positive and significant; Controlling for race, Blacks and Latinos (non-Whites) score significantly lower compared to Whites; Race is not significant in the full model controlling for mother's educational aspirations for young people

Name & Date	Asset Variables	Methods / Data	Outcome variable	Findings
Zhan (2006)	Net worth	***Methods***: Ordinary least squares (OLS) regression; ***Data Set***: National Longitudinal Survey of Youth (NLSY97); Mother & young person only; ***Longitudinal***: Baseline measured at ages 5 to 12 in 1998; Outcome measured at ages 7 to 14 in 2000; N = 1,370	Math & Reading	Net worth is a significant predictor of reading and math scores; Controlling for race, Blacks score significantly lower on math and reading compared to Whites
Easton-Brooks & Davis (2007)	Income generated assets; Non-income generated assets; Liquid assets; Illiquid assets	***Methods***: Multiple regressions (Separate regressions for Blacks & Whites); ***Data Set***: National Education Longitudinal Study (NELS:88); ***Longitudinal***: Baseline at 10th grade in 1990; Outcomes measured at 12th grade in 1992; N = 7,664	Academic Achievement (combined score math / reading)	Income generated assets & liquid assets are significantly associated with Black's achievement; However, confidence intervals cross zero; None of the asset variables are significant for Whites; the effect size for race decreases when asset variables are added to the models
Williams Shanks (2007)	Net worth; Cash Accounts; Debt/Credit Cards; Stocks/IRA	***Methods***: Ordinary least squares (OLS) regression; Hierarchical regression; ***Data Sets***: Panel Study of Income Dynamics (PSID) & Child Development Supplement (CDS); ***Longitudinal*** Baseline measured in 1994; Outcomes measured at ages 3 to 12 in 1997; N = 1,466 (Math); 1,473 (Reading)	Math & Reading	***Reading***: Asset variables are not significant; ***Math***: High net worth is positive and significant; Debt/credit cards are negative and significant; Black young people score higher when someone in their household owns tocks/IRAs; White young people score higher when someone in their household has cash accounts and debt/credit cards
Yeung & Conley (2008)	Net worth; Categorical net worth (quartiles); Liquid assets; Illiquid assets; Debt	***Methods:*** Stepwise regression; ***Data Sets:*** Panel Study of Income Dynamics (PSID) & Child Development Supplement (CDS); ***Cross sectional:*** Measured at ages 3 to 12 in 1997 (Preschool ages 3 to 5 & school ages 6 to 12); N = 1,177	Math & Reading	**Ages 3 to 5**: Reading: Debt is negative and significant when controlling for mediators; Math: Debt is negative and significant; Net worth does not significantly reduce the Black - White test score gap **Ages 6 to 12**: *Reading*: Liquid assets ($p < .10$) & stocks are significant; *Math*: Net worth, above-median net worth, the value of liquid assets, & stocks are positive and significant; Net worth does not significantly reduce the Black - White test score gap

Name & Date	Asset Variables	Methods / Data	Outcome variable	Findings
Loke & Sacco (2009)	Net worth	***Method:*** Latent growth curve modeling (LGCM); **Data sets**: National Longitudinal Survey of Youth, Children & Young Adults (NLSY79CYA) & the National Longitudinal Survey of Youth (NLSY79); ***Longitudinal:*** Baseline measured at ages 5 & 6 in 1994; Outcome measured at ages 11 & 12 in 2000; N = 541	Math & Reading	**Math**: Initial net worth amounts are positive and significant Higher rates of net worth accumulation have no effect on changes in math scores; Controlling for race, Blacks have significantly lower scores compared to Whites **Reading**: Initial net worth amounts are not significant; Higher rates of net worth are associated with slower rates of decline; Controlling for race, Blacks have significantly lower scores ($p < .10$) compared to Whites

Appendix 2: Review of research on household assets and college attendance

	Name & Date	Asset Variables	Methods / Data	Findings
1.	Conley (2001)	Net worth	***Methods*** :Ordinary least squares (OLS) regression; Logistic regression; ***Data Set***: Panel Study of Income Dynamics (PSID); ***Longitudinal***: Baseline measured in 1984; Outcome measured at ages 19 to 30 in 1995; N = 545	Doubling of assets results in a 8.3% increase in the probability of attending college; When net worth is included in the model, Black young people are more likely to attend college than White young people
2.	Charles, Roscigno, & Torres (2007)	Parents' savings for college; Amount of parents' savings for college	***Methods*** : Multinomial logistic regression; ***Data Set***: National Educational Longitudinal Survey (NELS:88); ***Longitudinal***: Baseline measured at 8th grade in 1988 to 12th grade in 1992; Outcome measured at 2 years out of high school in 1994; N = 13,699	Controlling for race, the following results are significant: ***Asian***: Asian young people with an immigrant mother are significantly more likely to attend a 2- and 4-year college compared to Whites; ***Black***: Significantly less likely to attend a 2-year college compared to Whites but not 4-year college attendance; ***Latino***: Latino young people with a U.S. born mother are significantly less likely to attend a 4-year college compared to Whites; Latino young people with an immigrant mother are significantly more likely to attend a 4-year college compared to Whites; ***Native American***: Native American young people are significantly less likely to attend a 4-year college compared to Whites but not a 2-year college
3.	Haveman & Wilson (2007)	Net worth; Negative net worth	***Methods*** :Regression; ***Data Sets***: Panel Study of Income Dynamics (PSID) & Census data on neighborhood poverty; ***Longitudinal***: Baseline measured in 1968; Outcome measured at ages 25 or 29 in 1985; N = 1,202	Net worth is a significant predictor of college attendance; 22% of young people from families from the lowest net worth bracket attend college compared to 71% of young people from families in the highest quartile
4.	Jez (2008)	Net worth; Categorical net worth (Top, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, bottom)	***Methods*** :Binary logistic regression; ***Data Set***: National Longitudinal Study of Youth 1997 (NYLSY:97) & the Integrated Postsecondary Education Data System (IPEDS); ***Longitudinal***: Baseline measured at birth between 1980 to 1984; Outcome measured at ages 23 to 27 in 2005; N = 8,984	Net worth is not significant in the final model; Young people whose families have greater amounts of assets are more likely to attend a 4-year college prior to entering academic achievement in the model; Young people who are in the highest asset decile are 4 times more likely to attend a 4-year college than those from the lowest asset decile; Approximately 50% of young people from the top asset decile attend a 4-year college; When the sample is broken down by group, assets are not a significant predictor for Blacks, Asians, or Latinos

	Name & Date	Asset Variables	Methods / Data	Findings
5.	Destin (2009)	Net worth; Categorical net worth (use median of $13,821.50 to divide sample into low net worth and high net worth)	***Methods*** : Logistic regression; ***Data Sets***: Panel Study of Income Dynamics (PSID) & Transition to Adulthood (TA); ***Longitudinal***: Baseline measured at ages 2 to 5 in 1989; Outcome measured at ages 17 to 21 in 2005; N = 745	Net worth is significant; 83.5% of young people whose households have early low net worth enrolled in college compared to 93.5% for young people living in high net worth households
6.	Nam & Huang (2009)	Net worth; Categorical net worth: negative (household liquid assets are less than unsecured debt); modest ($1 - $10,000); high (more than $10,000); Liquid assets	***Methods*** :Logistic regression; Multiple regression; ***Data Set***: Panel Study of Income Dynamics (PSID); ***Longitudinal:*** Baseline measured at ages 15 to 17 in 1994; Outcome measured at ages 26 or 27 in 2003 or 2005; N = 365	Liquid assets are significant
7.	Williams-Shanks & Destin (2009)	Net worth; Categorical net worth (median of $3,502 used to divide sample into low net worth and high net worth)	***Methods*** :Logistic regression; ***Data Sets***: Panel Study of Income Dynamics (PSID) & Transition to Adulthood (TA); Black young people only; ***Longitudinal***: Baseline measured in 1994; Outcome measured at ages 18 or older in 2005; Sample size for logistic regression not specified	Net worth (log transformation) is a significant, positive predictor of college attendance for Black young people
8.	O'Connor, Hammack, & Scott (2010)	Parents' school savings	***Methods***: Logistic regression; Oaxaca decomposition; Multiple imputations; ***Data Set***: National Educational Longitudinal Survey:1988-2000; Sample restricted to those who attended college prior to 2000, whose previous academic performance met minimum qualifications for college, and who aspired to complete a bachelor's degree; N = 4,213 Whites; 436 Latinos	Parents' school savings when treated as a background difference is not significant for either group; ***Whites***: Significantly lower attendance when living in a state designated as having a high concentration of Latinos (New York, California, Texas, and Florida); ***Latinos***: The effects of expected returns on parents' school savings is significant in explaining the gap in attendance between Whites and Latinos (Latinos experience a greater penalty related to enrollment when their parents do not have school savings on their behalf)

	Name & Date	Asset Variables	Methods / Data	Findings
9.	Huang, Guo, Kim, & Sherraden (2010)	Net worth; Liquid assets; Early assets (average value of assets (both net worth and liquid assets) in 1989 and 1994); Late assets (average value of assets (both net worth & liquid assets) in 2001 and 2003)	***Methods***: Structural equation modeling (SEM); ***Data Set***: Panel Study of Income Dynamics (PSID) & Transition to Adulthood (TA); ***Longitudinal***: Baseline measured in 2002 or earlier; Ages 18 to 21 years old in 2005 when outcome measured; Outcome measured mean age of approximately 19 in 2005; N = 650	Support for direct and indirect effects of early liquid assets on college attendance; Effect smaller than income but liquid assets more important for young people living in poor households; The simultaneous model of early & late liquid assets, late liquid assets have significant effect on college attendance but model fit is poor; provides some support for short-term effects of liquid assets; Net worth findings are similar to liquid assets; however, no indirect effect on academic ability No significant direct effect; Race may have an indirect effect on college attendance through academic ability, with Blacks scoring lower on academic ability in comparison to Whites
10.	Zhan & Sherraden (2010)	Liquid assets; Illiquid assets; Secured debt; Unsecured debt	***Methods***: Logistic regressions; ***Data Set***: National Longitudinal Survey of Youth (NLSY); ***Longitudinal***: Young people ages 11 to 17 years old in 1994; ages 23 to 29 years old in 2006 when outcome measured; N = 1,162	Liquid assets and illiquid assets are significant; Secured debt is significant ($p < .10$); Unsecured debt is negative and significant; Black/White gap is eliminated once assets are included in model; Latino/White gap is eliminated ***prior*** to assets being added

Appendix 3: Review of research on household assets and children's college completion

	Name & Date	Assets Variables	Methods / Data	Findings
1.	Conley (1999)	Net worth; Liquid assets; Illiquid assets; Net value of parent's business	***Methods***: Logistic regression; ***Data Set***: Panel Study of Income Dynamics (PSID); ***Longitudinal***: Baseline measured in 1984; Outcome measured at ages 18 to 30 in 1995; N = 1,113	Net worth is significant; Liquid assets are the second best predictor when different forms of assets are examined ; When only race is considered, Black young people are only 38% as likely as White young people to have graduated from college; When accounting for assets and other social class factors, Black young people have a slight advantage over White young people in odds of having graduated from college
2.	Conley (2001)	Net worth	***Methods*** :Ordinary least squares (OLS) regression; Logistic regression; ***Data Set***: Panel Study of Income Dynamics (PSID); ***Longitudinal***: Baseline of measured in 1984; Outcome restricted to ages 22 to 30 in 1995; N = 223	Net worth is significant ($p < .10$); The chances of graduating increase by 5.6% when net worth are doubled
3.	Haveman & Wilson (2007)	Net worth; Negative net worth	***Methods*** :Longitudinal regression; ***Data Sets***: Panel Study of Income Dynamics (PSID) & Census data on neighborhood poverty; ***Longitudinal***: Baseline measured in 1968; Outcome measured at ages 25 or 29 in 1985; N = 1,202	Net worth is significant; Negative net worth is not significant; 22% of college graduates come from the bottom half of families in terms of the level of net worth; A 1% increase in net worth is associated with a nearly equivalent (.92) percentage increase in the probability of graduating college; The probability of graduating from college for young people in the highest assets quartile is .30 compared with .08 for those in the lowest quartile
4.	Nam & Huang (2009)	Net worth; Categorical net worth: negative (household liquid assets are less than unsecured debt); modest ($1 - $10,00); high (more than $10,000); Liquid assets	***Methods***: Logistic regression; Multiple regression; ***Data Set***: Panel Study of Income Dynamics (PSID); ***Longitudinal***: Baseline measured at ages 15 to 17 in 1994; Outcome measured at ages 26 or 27 in 2003 or 2005; N = 218	Net worth and liquid assets are not significant
5.	Zhan & Sherraden (2009)	Financial assets; Nonfinancial assets; Secured debt; Unsecured debt	***Methods***: Logistic regression; Ordinary least squares (OLS) regression; ***Data Set***: National Longitudinal Survey of Youth (NLSY79); ***Longitudinal***: Baseline measured at ages 11 to 14 in 1994; Outcomes measured at ages 23 to 26 in 2006; N = 750	Financial assets and nonfinancial assets are significant; Unsecured debt is negative and significant; Secured debt is not significant; Controlling for mother's race, the Black/White gap is not significant; Controlling for mother's race, the Latino/ White gap is significant ($p < .10$)

	Name & Date	Assets Variables	Methods / Data	Findings
6.	Zhan & Sherraden (2010)	Liquid assets; Illiquid assets; Secured debt; Unsecured debt	***Methods***: Logistic regressions; also run separate regressions for Whites, Blacks, & Latinos; ***Data Set***: National Longitudinal Survey of Youth (NLSY); ***Longitudinal***: Baseline measured in 1994 at ages 11 to 17 years old in 1994; Outcome measured at ages 23 to 29 years old in 2006; N = 1,162	Liquid assets and illiquid assets are significant; Unsecured debt is negative and significant; Secured debt is significant ($p < .10$); Controlling for race, the Black/White and Latino/White gaps are eliminated once assets are included in model

Appendix 4: Children's savings and academic achievement (math, reading or combined scores)

	Name & Date	Asset Variables	Methods / Data	Outcome variable	Findings
1.	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); Young people's school savings; Young people's school savings amount	***Methods***: Logistic regression; Multiple regression; ***Data sets***: Panel Study of Income Dynamics (PSID) & Child Development Supplement (CDS); ***Cross sectional***: Measured at ages 12 to 18 in 2002; N = 1,071	Math	Net worth is not significant; Young people's school savings is significant; Young people's school savings is associated with a 4.57 increase in math; Controlling for race, Blacks score significantly lower compared to Whites
2.	Elliott, Jung, & Friedline (2010)	Net worth; Young people's savings account; Young people's savings amount	***Methods***: Hierarchical linear modeling (HLM); ***Data Sets***: Panel Study of Income Dynamics (PSID) & Child Development Supplement (CDS); ***Cross sectional***: Measured at ages 12 to 18 in 2002; N = 1,063	Math	Net worth is only significant when young people's savings is excluded from the model; Young people's savings is significant; There is a significant cross-level interaction between young people's savings and net worth on math scores; Math scores of low-net worth young people increase by 2.13, middle-net worth young people's increase by 4.36, while high-net worth young people's increase by 6.59 points; Controlling for race, Whites score significantly higher than Blacks
3.	Elliott, Jung, Friedline, & Chowa (under review)	Net worth; Categorical net worth (negative: < $0; modest $0 to $10,000; high > $10,000); Parents' school savings for young people; Young people's basic savings account; Young people's school savings	***Methods***: Heirarchical linear model; (HLM); Multiple imputations; ***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	Academic Achievement (combined score math / reading)	Negative compared to modest net worth is positive and significant; Young people's basic and school savings is significant when categorical net worth is included; Blacks score significantly lower compared to Whites
4.	Elliott, Kim, Jung, & Chowa (2010)	Net worth; Young people's school savings	***Methods***: Multi-group structural equation model (SEM) (Race & gender used as the grouping variables); ***Data Sets***: Panel Study of Income Dynamics (PSID) & Child Development Supplement (CDS); ***Cross-sectional***: Measured at ages 12 to 18 in 2002; N = 1,063	Math & Reading	***Math***: Net worth has a positive, significant relationship with Black young men, negative with Black young women, and negative with White young men; School savings is significant for White young people ***Reading***: Net worth not significant; School savings is significant for Black young men

	Name & Date	Asset Variables	Methods / Data	Outcome variable	Findings
5.	Elliott, Kim, Jung & Zhan (2010)	Net worth; Young people's school savings	***Methods***: Path analytic technique using structural equation modeling (SEM); ***Data Sets:*** Panel Study of Income Dynamics (PSID) & Child Development Supplement (CDS); ***Cross sectional***: Measured at ages 12 to 18 in 2002; N = 1,063	Math	Net worth is not significant for Blacks or Whites; Young people's savings is significant with Whites' math scores; Young people's savings is not significant with Blacks' math scores

Appendix 5: Review of research on children's savings and their college attendance and college progress

	Name & Date	Asset Variables	Methods / Data	Findings
1.	Elliott & Beverly (In press-a)	Net worth; Categorical net worth: negative (< $0 - household liquid assets are less than unsecured debt), modest ($0 - $10,000), and high (≥ $10,000); Young people's savings (young people's basic account; young people's school savings; no account); Parents' savings for young people	***Methods***: Logistic regression; ***Data Set***: 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 2005; Sample restricted to young people who expected to graduate from a 4-year college; N = 494	Net worth is negative and significant when home equity is excluded; Net worth is not significant when home equity is included; Negative net worth is positive and significant when compared to high net worth when home equity is excluded; There are no differences between categories of net worth when home equity is included; Young people with basic savings are 7 times more likely to attend a 4 year college than young people with no account; Young people with school savings are 4 times more likely to attend a 4 year college than young people with no account; Black young people are approximately 3 times more likely to attend college when compared to White young people
2.	Elliott & Beverly (In press-b)	Net worth; Young people's school savings; Parents' school savings for young people	***Methods***: Logistic regressions; ***Data Set***: 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	Net worth is not significant; Parents' school savings is significant prior to controlling for educational expectations; Young people's savings is significant
3.	Elliott, Constance-Huggins, & Song (under review)	Net worth; Parents' savings for young people; Young people's school savings	***Methods***: Logistic regression; ***Data Set***: Panel Study of Income Dynamics (PSID), Child Development Supplement (CDS), & Transition to Adulthood (TA); ***Longitudinal***: Baseline variables measured in 2002 or earlier; Outcome measured at ages 17 to 23 in 2007; Sample divided between low-to-moderate income (LMI, < $50,000) and high income (HI, ≥ $50,000); N = 495 LMI; 508 HI	**Low-to moderate income**: Adolescent school savings is significant; Net worth is not significant; **High income**: Adolescent school savings is not significant; Net worth is significant
4.	Elliott, Nam, & Song (under review)	Net worth; Parents' school savings; Young people's school savings	***Methods***: Multiple imputations; Propensity score matching, Multinomial logistic regression; Sensitivity analysis; ***Data Set***: Panel Study of Income Dynamics (PSID, Child Development Supplement (CDS), & Transition to Adulthood (TA); ***Longitudinal***: Baseline variables measured in 2002 or earlier; Ages 17 to 23 in 2007 when outcome measured; Sample	***Whites***: Young people's school savings is significant; Net worth is significant ($p < .10$)' ***Blacks***: Young people's school savings is significant

Name & Date	Asset Variables	Methods / Data	Findings
		restricted to Black and White young people; N = 534White; 469 Black	

Notes: College progress identifies young adults who are "on course", that is, those who are currently enrolled in, or who have a degree from, a two-year college, a four-year college, or graduate program.

Appendix 6: Review of research on assets and college expectations (parent and/or young people's)

	Name & Date	Asset Variables	Methods / Data	Outcome	Findings	Mediation Findings
1.	Pandey & Zhan (2000)	Savings amount; Savings account; Investment income; Retirement account; Pension plan; Stocks & bonds; Home ownership	***Methods***: One-way analysis of variance (ANOVA); Hierarchical regression; ***Data Set***: A survey of inner-city residents in Chicago collected by the National opinion Research Center; ***Cross sectional***: Measured for parents who have children under 18 in 1986 to 1987; N = 604	Parent's educational expectations	None of the asset variables are significant	N/A
2.	Zhan & Sherraden (2003)	Amount in savings; Recoded as no reported savings, $1-$2,999 and $3,000 or above	***Methods***: Ordinary least squares (OLS) regression; Baron & Kenny (1986); ***Data Set***: The National Survey of Families and Households; ***Longitudinal Cross-sectional***: Variables of interest and controls measured 1987 to 1988; also the outcome variable, academic achievement i measured at the same time; High school graduation is measured between ages; 18 to 26 in 1992 a 1995; N = 591	Mother's college expectations; High school completion; Mother's report of child's grades	Having savings account of $3,000 or more is significantly associated with mother's college expectations; Home ownership is significantly related w/ mother's college expectations	***Baron & Kenny findings***: The relationship between mothers savings and high school completion is partially mediated by mother's college expectations; The relationship between home ownership and mother's report of grades is partially mediated by mother's college expectations
3.	Zhan (2006)	Net worth (natural log transformation for one year of total family assets minus debt, including home equity)	***Methods***: Ordinary least squares (OLS) regression; Baron & Kenny (1986); ***Data Set***: National Longitudinal Survey of Youth (NLSY97); Mother and child only; ***Longitudinal***: Baseline measured at ages 5 to 12 in 1998; Outcome measured at ages 7 to 14 in 2000; N = 1,370	Mother's educational expectations; Math scores; Reading scores	Net worth is significantly associated with mother's expectations	***Baron & Kenny findings***: Net worth / math and reading relationship is partially mediated by mother's college expectations

	Name & Date	Asset Variables	Methods / Data	Outcome	Findings	Mediation Findings
4.	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); Young people's school savings; Young people'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	Young people's college expectations; Math scores	Net worth is not significant with young people's college expectations; Young people's school savings is significantly associated with young people's college expectations	***Baron and Kenny findings***: 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 young people's school savings on math scores is significantly reduced; ***Bootstrap findings***: Young people's school savings is indirectly related to math achievement through their college expectations
5.	Grinstein-Weiss, Yeo, Irish, & Zhan (2009)	Net worth	***Methods*** : Baron and Kenny (1986) tests; ***Data Sets***: Survey of Income and Program Participation (SIPP); Core module of 2001 wave 6; topical module of 2001 wave 6; topical module wave 7; White, Black and Latino children; ***Cross sectional***: Measured at ages 5 and 17 in 2002 and 2003; N = 7, 235	Parent's college expectations; Repeated grade; Expelled from school; Interested in school work	Net worth is a significant predictor of parent's educational expectations	***Baron and Kenny findings***: Parent's college expectations mediate the net worth/school outcome relationship
6.	Williams Shanks & Destin (2009)	Net worth; Categorical net worth (use median of $3,502 to divide sample into low net worth and high net	***Methods***: Logistic regression; ***Data Sets***: Panel Study of Income Dynamics (PSID) & Transition to Adulthood (TA) supplement; Black young	Parent's college expectations	Black families with high wealth have higher parent expectations whether or not they are in a low income or high income household; Net	N/A

	Name & Date	Asset Variables	Methods / Data	Outcome	Findings	Mediation Findings
		worth)	people only; ***Longitudinal***: Baseline of measured in 1994; Outcome measured at ages 18 or older in 2005; Sample size for logistic regression not specified		worth (log transformation) is significant	
7.	Zhan & Sherraden (2009)	Financial assets; Nonfinancial assets; Secured debt; Unsecured debt	***Methods*** : Logistic regression; Ordinary least squares (OLS) regression; Baron & Kenny (1986); ***Data Set***: National Longitudinal Survey of Youth (NLSY79); ***Longitudinal***: Baseline measured at ages 15 or 17 in 1994; Outcomes measured at ages 23 to 26 in 2006; N = 750	Young people's college expectations; Parent's college expectations; College completion	Liquid assets are significantly related to parents' college expectations for their child; Liquid assets are significantly related to young people's college expectations	***Baron & Kenny findings***: No evidence of mediation
8.	Elliott & Beverly (In print, a)	Net worth; Young people's school savings; Parents' school savings for young people	***Methods***: Logistic regressions; Baron & Kenny (1986); Bootstrapping (Bollen & Stine, 1992); ***Data Set***: 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	Young people's college expectations; College attendance	Net worth is not significant; Young people's savings is significant; Parents' school savings is significant	***Baron & Kenny findings***: Net worth/college attendance is not mediated by young people's college expectations; Parents' school savings / college attendance is not mediated by college expectations; Young people's school savings/ college attendance is partially mediated by young people's college expectations; ***Bootstrap findings***: Net worth has no indirect effect; Parental savings has an indirect effect on college attendance; Young people's school saving has an indirect effect on college

	Name & Date	Asset Variables	Methods / Data	Outcome	Findings	Mediation Findings
						attendance
9.	Elliott, Kim, Jung & Zhan (2010)	Net worth; Young people'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	Math & Reading	Young people's school savings are significantly related to young people'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 young people'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 young people's math scores are fully mediated by college expectations; not blacks or in the case of reading w/ Whites or Blacks
10.	Elliott, Choi, Destin, & Kim (in print)	Young people's savings	***Methods***: Path analysis using (SEM); ***Data Sets***: Panel Study of Income Dynamics (PSID) & its Child Development 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	Young people's savings; Young people's college expectations	Simultaneously tests whether savings leads to higher expectations or higher expectations lead to owning savings, Young people's savings has a modest effects on college expectations & vice versa	N/A
11.	Elliott, Jung, & Friedline (2010)	Net worth; Young people's savings account; Young people's savings amount	***Methods***: Hierarchical linear modeling (HLM); ***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	Math; Young people's college expectations	Young people's basic savings is not significant w/ their college expectations; Young people's school savings is significant w/ their college expectations; Parent's school savings for their child is significant w/ their child's college	N/A

	Name & Date	Asset Variables	Methods / Data	Outcome	Findings	Mediation Findings
					expectations; Net worth is not significant w/ young people college expectations; Head's education level and marital status interact with young people's savings in predicting young people's college expectations	
12.	Elliott, Jung, Friedline, & Chowa (2010)	Net worth; Categorical net worth (negative: < $0; modest $0 to $10,000; high > $10,000); Parents' school savings for young people; Young people's basic savings account; Young people's school savings	***Methods***: Heirarchical linear model (HLM); ***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	Academic Achievement (combined score math / reading); Young people's college expectations	Parents' school savings is significant in the full model; Young people's basic and school savings are significant in the full model	
13.	Elliott, Jung, Kim & Chowa (2010)	Net worth; Categorical net worth (negative: < $0; modest $0 to $10,000; high > $10,000); Parents' school savings for young people; Young people's savings account; Young people's savings amount	***Methods***: Multi-group structural equation model (SEM) (Race & gender used as the grouping variables); 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	Math & Reading; Young people's college expectations	Black males' & white females' schools savings are significantly related to their college expectations in the math but not the reading path; Net worth for Black females and white males are significantly related to their college expectation in the math & reading path	***Bootstrap findings:*** The effects of school savings on math and reading scores are not mediated by college expectations regardless of race or gender; The effects of net worth on math & reading are not mediated by college expectations regardless of race or gender