



A Long-Term Experiment on Child Development Accounts *Update and Impacts of SEED for Oklahoma Kids*

CSD Research Report No. 21-07
March 2021



Center for Social
Development

BROWN SCHOOL AT WASHINGTON UNIVERSITY

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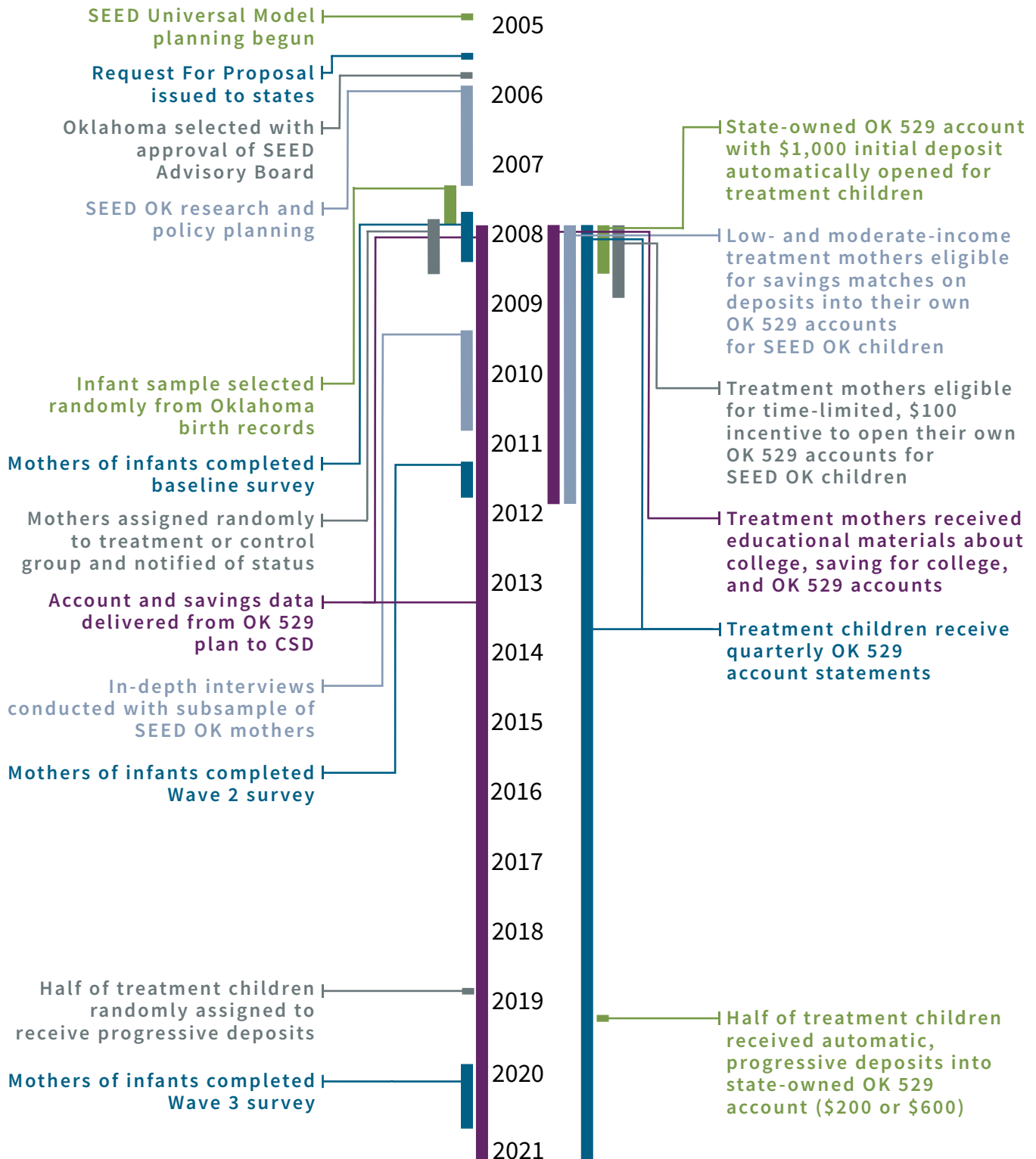
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Washington University in St. Louis

Figure 1

SEED for Oklahoma Kids Research Experiment Timeline 2005 to 2021



A major first step toward inclusive asset building would be to begin with *all children as early as birth*.... [CDAs] are an emerging policy concept to advance inclusive asset-based social policy.

This report is part of a growing body of evidence, theory, and research on the distribution and role of wealth—that is, assets, not just income—in household economic security and development and on policies that might make asset holding more inclusive. Inclusive asset holding emerged as a policy topic some years ago (Sherraden, 1991; also see Howard, 1997; Oliver & Shapiro, 1995) at a time when the term “asset-based social policy” was not in use. Today this language and the associated policy discussion have become mainstream, with a growing body of research supporting inclusive and progressive asset building (Cramer & Shanks, 2014; Huang et al., 2020; Keister, 2000; McKernan & Sherraden, 2008; Sherraden, 2005).

Key motivations for the study of an inclusive *asset-based social policy* include the following:

- » Current social policy helps those who already have resources to build assets (mostly through the tax system), but this approach does little (typically nothing) to help the poor.
- » The stagnation of labor income and extreme income inequality put severe strain on the potential of labor income alone to support tens of millions of households.
- » Asset holding supports both economic stability and targeted investments in particular assets—such as postsecondary education and homeownership—that fulfill primary life goals for many households.
- » Asset holding fosters additional, nonfinancial changes in outlook and behaviors, changes that benefit families, communities, and the nation (Sherraden, 1991, 2005).

A major first step toward inclusive asset building would be to begin with *all children as early as birth*. In this regard, Child Development Accounts (CDAs) are an emerging policy concept to advance inclusive asset-based social policy. CDAs are asset-building accounts that are universal and automatic (all children included), progressive (greater support for more disadvantaged children), and potentially lifelong (starting as early as birth). This policy concept first appeared in *Assets and the Poor* (Sherraden, 1991).

SEED for Oklahoma Kids: Research to Inform Large-Scale, Asset-Based Social Policy

The project known as SEED for Oklahoma Kids (or SEED OK), a large-scale experiment with CDAs, has produced the most systematic scientific research on this policy model and its impacts on families and children. SEED OK drew a random sample from a statewide population of children at birth, oversampling of populations of color. The experiment began in 2007 in the state of Oklahoma with 2,704 newborns assigned randomly to treatment and control groups (Beverly et al., 2015; Nam et al., 2013; Sherraden et al., 2015). It continues to the present. In 2020, the point of data collection for analyses reported here, children were about 12 years old (see the timeline of SEED OK interventions and events in Figure 1). As far as we know, this is the longest-running randomized social experiment in the country. We hope that the experiment will continue to



follow the youth through postsecondary education and into their adult years of employment and family formation.

The purpose of the SEED OK experiment is to model and test CDAs that are universal, automatic, progressive, and opened at birth (Sherraden & Clancy, 2005). SEED OK has demonstrated that it is possible to (a) use state birth records to automatically include every child, (b) use a state 529 plan as the financial platform for CDAs, and (c) provide more funding to children with greater disadvantage (Beverly et al., 2015; Clancy et al., 2016; Sherraden et al., 2015).











Our hope as researchers is that evidence from SEED OK will inform policy, and in fact this is already occurring (more on this below; Clancy et al., 2019a; Huang et al., in press). If evidence continues to support inclusive asset

building, then CDAs might one day become one pillar of a lifelong asset-building policy that spurs productive human investment and increases security for U.S. households. One potential application for CDAs is as a significant funding source for postsecondary education (Elliott et al., 2014). The funding, in turn, may inspire children and youth to study hard and plan for their future education. The funding also has the potential to reduce current policy's overreliance on student debt.¹

This report provides background and context on SEED OK, summarizes key financial results, and provides the first analyses of nonfinancial results from the Wave 3 survey. This is not a fully comprehensive research report (academic papers will be published later) but will serve as an informative overall assessment.

Figure 2

SEED for Oklahoma Kids: A Large-Scale Test of Universal, Automatic, and Progressive CDAs

 Universal eligibility	SEED OK began with a random selection of 2007 Oklahoma newborns across the full socioeconomic and geographic (rural and urban) spectrum.
 Automatic enrollment  At-birth start  Automatic initial deposit	Using state birth records, SEED OK automatically opened a state-owned OK 529 account and made an initial \$1,000 deposit for every newborn in the treatment group.
 Automatic progressive subsidy	In early 2019, SEED OK made an automatic, progressive supplemental deposit into the state-owned accounts of treatment children (\$600 for low-income children, \$200 for others).
 Centralized savings plan  Investment growth potential  Targeted investment options	SEED OK's partnerships with the state Treasurer's office and the OK 529 plan ensured a sustainable financial platform with investment growth potential, beginning at birth. The SEED OK initial deposit was originally invested in the OK 529 Plan's Balanced Option and is now in the Moderate Age-based Option.
 Restricted withdrawals	SEED OK funds will be sent directly to accredited postsecondary schools and training programs.
 Means-tested public benefit exclusions	Money in OK 529 accounts is no longer counted as a family resource in eligibility determinations for TANF, SNAP, or the Low-Income Home Energy Assistance Program.

Note. The CDA policy design elements are identified and described in detail in Clancy & Beverly (2017); Clancy, Sherraden, and Beverly (2019a); Sherraden, Clancy, and Beverly (2018). Figure from *Financial Outcomes in a Child Development Account Experiment: Full Inclusion, Success Regardless of Race or Income, Investment Growth for All*, by M. M. Clancy, S. G. Beverly, M. Schreiner, J. Huang, and M. Sherraden, March 2021, CSD Research Summary No. 21-06. <https://doi.org/10.7936/fnjg-n539>

The SEED OK Policy Model, Research, and Impacts Prior to Wave 3

Our purpose as applied researchers in this experiment goes beyond testing outcomes for children and families. The SEED OK policy design is purposeful (Sherraden & Clancy, 2005, and Figure 2). It is built on the college savings (529) plan, an existing, trusted, widely available, and sustainable platform. These characteristics facilitate efficient policy development and garner bipartisan political support. The experiment may illustrate the aphorism, attributed to Sun Zi (2007), on military planning: “Battles are won before they ever start.”²

We have specified 10 essential features for successful CDA policy (Clancy & Beverly, 2017; Clancy et al., 2019a; Sherraden, Clancy, & Beverly, 2018). Figure 2 shows how the CDA in SEED OK models all of these essential policy-design elements within the context of a long-running social experiment.

SEED OK has been a productive applied-research project. Findings have been published in reports, briefs, and more than 30 refereed journal articles (see Appendix). Research suggests that the CDA tested in SEED OK transforms the 529 college savings plan from serving very few children in the United States to one capable of serving 100% of newborns.³ Growing cohort by cohort, this policy model eventually will cover all children.

Using data from the Wave 2 survey, conducted in 2011, SEED OK research has identified positive impacts of CDAs on parental educational expectations, maternal depressive symptoms, parenting practices, and children’s social-emotional development (see, e.g., Huang et al., 2017, 2019; Huang, Sherraden, Kim, & Clancy, 2014; Huang, Sherraden, & Purnell, 2014; Kim et al., 2015, 2018).

We have used these findings to inform CDA policy development in a number of U.S. states—red, purple, and blue—which have decided to open accounts for *all* children at birth. California, Illinois, Maine, Nebraska, Nevada, Pennsylvania, and Rhode Island have adopted statewide, universal, and automatic CDAs by legislation or administrative rules (Clancy, Sherraden, & Beverly, 2019a).

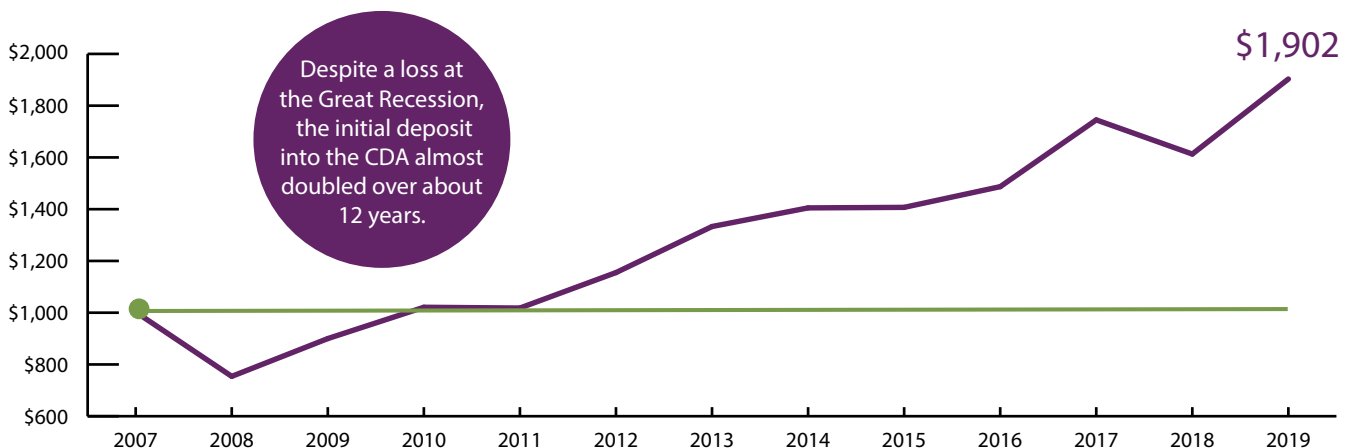
In addition, SEED OK has informed policy in several other countries (Huang et al., 2020; Sherraden, Cheng, et al. 2018). For example, Israel started a universal CDA policy in 2017. It covers all Israeli citizens from birth to age 18, as well as all noncitizen Palestinian children in East Jerusalem (Grinstein-Weiss et al., 2019). In CDA policy, full inclusion across race and income—and indeed, across other differences among people—is fundamental to the policy’s design. This vision goes beyond development of individuals and families, aiming for a meaningful social bond and unifying project across the whole society.

SEED OK Financial Outcomes at Wave 3

We summarize below the financial outcomes for SEED OK children as of December 31, 2019, just before the Wave 3 survey began (see the Research Summary by Clancy et al., 2021, for a full presentation of this work). As we noted above, asset accumulation matters not only because assets can eventually finance postsecondary education, but also because the existence of designated college savings is expected to change education-related attitudes and behaviors (Sherraden, 1991). The SEED OK financial data come from quarterly account data managed by TIAA-CREF Tuition Financing, the program manager for the Oklahoma College Savings Plan (OK 529). The Oklahoma State Treasurer’s office has electronically transmitted account

Figure 3

Growth of the SEED OK \$1,000 Initial Deposit: Early CDA Deposits and Investments Matter



Adapted from *529 Plan Investment Growth and a Quasi-Default Investment for Child Development Accounts*, by M. M. Clancy and S. G. Beverly, November 2017, CSD Policy Brief No. 17-42, p. 1. <https://doi.org/10.7936/K7F76C1Z>

data to the Center for Social Development (CSD) after each calendar quarter since 2008. The data are very accurate. There are no missing data and no self-report errors.

Key findings on the latest financial outcomes in SEED OK are presented below:

- » After 12 years (2008–2019), SEED OK continues to have very large impacts on OK 529 asset holding. Nearly 100% of treatment children have OK 529 savings, compared with 4% in the control group.⁴
- » Despite a loss during the Great Recession, the \$1,000 initial deposit into the CDA almost doubled over 12 years (see Figure 3). Early deposits and investment growth are central to asset accumulation in the CDA in SEED OK.
- » On average, as of December 31, 2019, each treatment child had \$3,243 in OK 529 assets, which is 3.4 times the average for control children (\$952).
- » The universal and automatic features of the CDA in SEED OK especially benefit disadvantaged children. Because the CDA provided OK 529 assets to *all children*, it increased OK 529 asset holding by (a) 99 percentage points among low-income children (with household income below 200% of the federal poverty line), (b) 98 percentage points among children of color, and (c) 99 percentage points among children of mothers with less than a 4-year college degree.
- » The first columns of Figures 4–6 reveal how advantaged OK 529 asset holders are under current OK 529 policy (note the preponderance of purple in these columns). The differences between the first and second columns in those figures show how the universal, automatic CDA in SEED OK achieved inclusion and progressivity. Because every child in the treatment group received OK 529 assets, the demographic characteristics in the second columns of the figures mirror the characteristics of children across Oklahoma.⁵
- » Between December 2007 and December 2019, treatment children were about five times more likely than control children to have had an OK 529 account opened by a parent (18.3% vs. 3.6%; Figure 7).⁶
- » Figure 8 summarizes key financial outcomes in SEED OK when children were about 12 years old.

SEED OK Child and Family Outcomes at Wave 3

We turn now to child and family outcomes measured through the Wave 3 survey, which treatment and control parents completed via telephone or online. We begin with the arrival of the COVID-19 pandemic because it landed disruptively in the middle of the research discussed here.

Wave 3 Data Collection During the COVID-19 Pandemic

We began implementing the Wave 3 survey in January 2020 (Clancy et al., 2019b). After the start of data

Figure 4

Children With OK 529 Assets: Household Income-Poverty

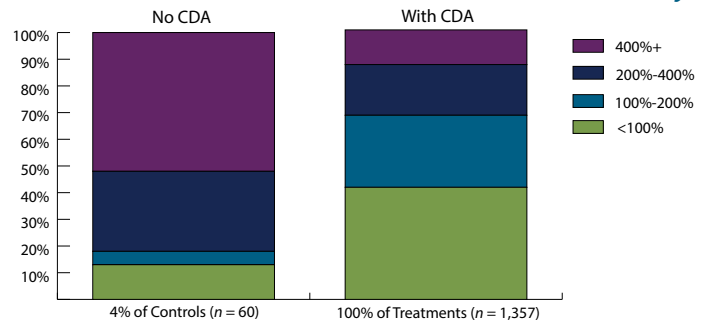


Figure from *Financial Outcomes in a Child Development Account Experiment: Full Inclusion, Success Regardless of Race or Income, Investment Growth for All*, by M. M. Clancy, S. G. Beverly, M. Schreiner, J. Huang, and M. Sherraden, March 2021, CSD Research Summary No. 21-06. <https://doi.org/10.7936/fnjg-n539>

Figure 5

Children With OK 529 Assets: Race/Ethnicity

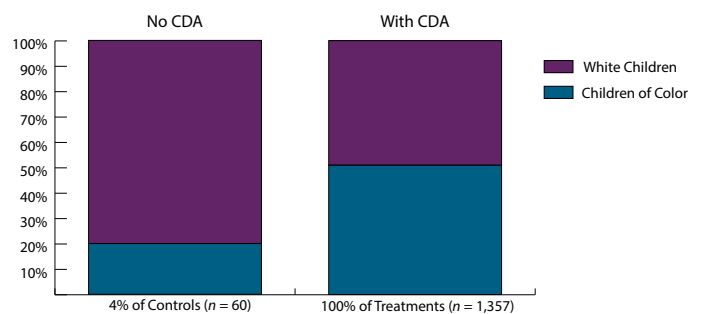


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Figure 6

Children With OK 529 Assets: Mother's Education

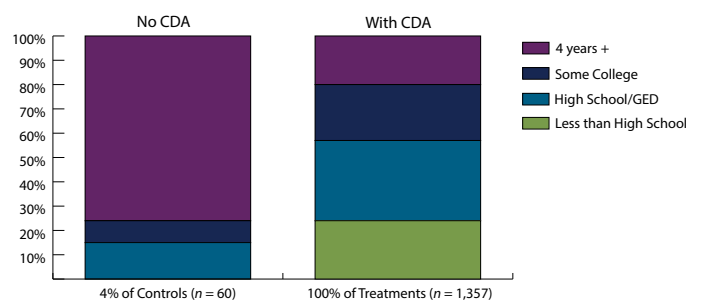


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Figure 7

Parent-Owned OK 529 Accounts: Treatment and Control Children

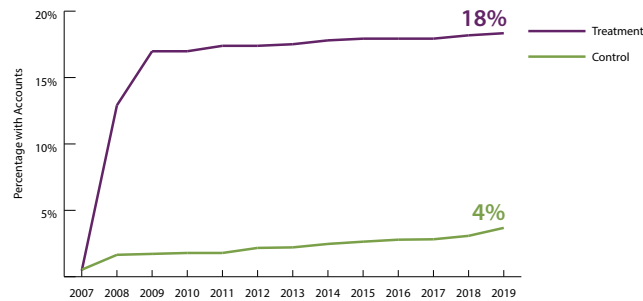


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collection, the COVID-19 pandemic changed life routines, activities, and arrangements for everyone involved in the experiment. For example, parent-child interactions around educational activities changed after the closure of schools. Indeed, the pandemic has triggered the biggest change in schooling and home relationships in many decades.

The disruption caused by the COVID-19 pandemic affected SEED OK children and their families and so may have affected CDA outcomes. For example, families managing the stress of pandemic life may have not paid attention to their CDAs. The pandemic also may have changed some of the arrangements, activities, and expectations that were the focus of the Wave 3 survey. Specifically, COVID-19 forced several changes in survey data collection.

The call center closed and a virtual call center was created. CSD originally contracted with a highly regarded data-collection firm, RTI International, to conduct all SEED OK Wave 3 surveys by telephone, with all interviewers working at an RTI call center, with supervisors present. COVID-19 prompted RTI to close its call center facility and transition to a virtual, off-site, call-center model. Interviewing ceased for 8 days while RTI converted the work accommodations of interview staff to the virtual arrangement.

In-person field visits were cancelled. RTI cancelled in-person field visits, which were designed to secure telephone interviews with participants whom RTI had not previously reached. Cancelling field visits reduced the number of completed telephone surveys.

An online survey was created and implemented. Because the pandemic disrupted parents' and children's lives, CSD and RTI gave parents the option to complete an online survey, which RTI created and implemented in close collaboration with CSD. These tasks included

revising the existing survey, updating programming specifications, reviewing procedures, and crafting new communications with participants (letters, postcards, emails, and texts) about the online survey and extended data collection period. Allowing online completion of the survey without an interviewer affects data quality.

Strategy for the Initial Survey Analysis

These COVID-related disruptions to daily living and to the research methodology increased the risk that survey findings could be affected by errors in the data, complicating the estimation of CDA impacts on children and parents in SEED OK. It is prudent to sort out the data and analyses before final reporting, and we continue to do that.

In this initial report from the Wave 3 survey, we balance constraints by using the data that are known to be unaffected by COVID-19 or by changes in survey mode. We examine data collected prior to the arrival of COVID-19 (with a demarcation date of April 1, 2020). Out of 1,799 total Wave-3 surveys completed, 707 were completed before April 1, 2020. With data from this pre-COVID sample, the report covers basic analyses related to hypotheses identified at the outset of the study. The reduction from 1,799 to 707 participants limits the power of statistical analyses, making it more difficult to achieve statistical significance. As a result, the estimates from the pre-COVID sample will be more conservative. In other words, by limiting analyses to data from the sample unaffected by COVID, we are less likely—all else constant—to observe statistically significant CDA impacts on children and parents. For nonfinancial outcomes in this report, we make no claim beyond the comparison of treatments and controls in the pre-COVID sample. These initial results begin to illuminate how SEED OK children and families were faring in early 2020 and whether there were differences by treatment status.

Sample and Analyses

The treatment group ($n = 369$) and the control group ($n = 338$) in the pre-COVID sample ($n = 707$) had similar demographic and socioeconomic characteristics at baseline. Table 1 suggests that the two groups differ to a statistically significant extent (at the .05 level) on just one variable: Treatment families have larger households. In addition, treatment children are more likely to be male and to live in metropolitan areas, and control mothers had a higher employment rate, though none of the three differences is statistically significant. Overall, the treatment and control groups are balanced in the pre-COVID sample. This suggests that the report's analyses assessing CDA impacts for families and children have strong internal validity; we have reasonable confidence that differences between treatments and controls in this sample are due to the effects of the policy experiment.

Figure 8

SEED for Oklahoma Kids Financial Facts: Age 12


 <h2 style="text-align: center;">FINANCIAL FACTS: Age 12</h2>		
All OK 529 Assets		
<p>100% Treatment children with OK 529 savings for college or vocational school</p>	<p>\$3,243 Total OK 529 assets for the average treatment child</p>	<p>3.4x Increase in total OK 529 assets for the average treatment child (treatment/control ratio)</p>
<p>40% Share of total OK 529 assets from investment earnings for the average treatment child</p>	<p>\$2,132 Assets in the state-owned OK 529 account for the average treatment child</p>	<p>\$937 Investment earnings in the state-owned OK 529 account for the average treatment child</p>
Parent-Owned OK 529 Assets		
<p>18% Treatment children whose parent opened an OK 529 account (versus 4% for control children)</p>	<p>5x Increase in OK 529 account-opening by parents (treatment/control ratio)</p>	<p>\$9,820 Average balance in parent-owned OK 529 accounts of treatment children, savers only</p>
Inclusion via the SEED OK CDA		
<p>99 percentage points Increase in OK 529 asset holding for low-income children</p>	<p>99 percentage points Increase in OK 529 asset holding for children with less educated mothers</p>	<p>98 percentage points Increase in OK 529 asset holding for children of color</p>

Figure from *Financial Outcomes in a Child Development Account Experiment: Full Inclusion, Success Regardless of Race or Income, Investment Growth for All*, by M. M. Clancy, S. G. Beverly, M. Schreiner, J. Huang, and M. Sherraden, March 2021, CSD Research Summary No. 21-06. <https://doi.org/10.7936/fnjg-n539>

To enable further adjustment for sampling variation between the treatment and control groups on demographic and socioeconomic characteristics, the analyses reported below control for all variables reported in Table 1. The control variables include demographic and socioeconomic characteristics of children, mothers, and families. Since CDAs may affect child development through improved parent-child interactions, we also control for parents’ attitudes about parenting. The control variables (except child’s age) are taken from the 2007 baseline survey that parents completed before their children were assigned to treatment and control groups. We apply a one-tailed

(directional) test with a significance level set at $p < .05$. We also note near significance—that is, differences with p values between .05 and .10.

Overall Pattern of Survey Results

The hypotheses tested with Wave 3 survey data and the themes chosen for this initial report are guided by the theory of asset effects for families and children (Sherraden, 1991). The theory suggests that parents with designated assets for children will have higher educational expectations for those children, relative to the parents who lack such

Table 1

Sample Characteristics of Treatment and Control Groups in the Wave 3 Survey, Pre-COVID Sample

Variable	The Pre-COVID Sample	
	Treatment	Control
<i>Child's characteristics</i>		
Age at the end of 2019	12.44	12.45
Male (%)	54.20	49.07
<i>Mother's characteristics</i>		
Age	27.18	26.95
Race and ethnicity (%)		
Non-Hispanic White	74.19	72.16
Non-Hispanic Black	8.23	7.42
Non-Hispanic American Indian	8.12	7.54
Non-Hispanic Asian	1.61	2.59
Hispanic	7.85	10.29
Married (%)	72.33	73.26
Education (%)		
Below high school	13.28	11.81
High school	24.75	29.01
Some college	24.81	24.12
College degree and above	37.16	35.06
Employed (%)	56.63	62.99
General health ^a	4.21	4.18
Parenting attitude ^b	11.10	11.10
<i>Household characteristics</i>		
Income-poverty	261.66	277.01
TANF receipt (%)	6.82	6.51
SNAP receipt (%)	25.79	25.59
Homeownership (%)	57.49	60.17
Tries to save a regular amount each month (%)	62.72	70.68
Household size ^{***}	3.25	2.94
Only English spoken at home (%)	95.81	91.71
Residence area (%)		
Metropolitan	71.27	64.21
Micropolitan	16.92	21.84
Others	11.80	13.95

Note. TANF = Temporary Assistance for Needy Families; SNAP = Supplemental Nutrition Assistance Program. The pre-COVID sample includes 707 SEED OK participants who completed the Wave 3 survey before April 1, 2020 (treatment = 369, control = 338). All variables were measured in the 2007 baseline survey except child's age. Weighted percentage and average scores for the treatment and control groups are reported in the table. We conduct bivariate two-tailed tests with a significance level of .05 to compare differences between the treatment and control groups. Sample size varies slightly for each variable due to missing values.

^a Response options range from 1 (*poor*) to 5 (*excellent*).

^b Response options range from 6 to 14. A higher value indicates more positive parenting attitude.

^{***} $p < .01$.

Table 2

Wave 3 Survey Items with Expected Treatment–Control Differences, Pre-COVID Sample

Survey question	P value
1. Parent expects child to complete graduate school	<.05
2. Family is actively thinking about preparing for the child’s future education	<.05
3. Family has taken concrete steps to prepare for the child’s future education	<.05
4. Family has taken concrete steps to prepare for the financial costs of the child’s future education	<.05
5. Parent has heard of 529 plans or 529 accounts	<.05
6. Family has 529 savings for some child in the household	<.05
7. Parent understands that money in 529 accounts is for postsecondary education and training	<.10
8. Parent has savings specifically for the child’s future education	<.05
9. Family has received a statement for an account with money for the child’s postsecondary education	<.05
10. The child has his/her own savings account	<.10
11. Parent is handling the day-to-date demands of raising children very well	<.10
12. Number of days per week parent or spouse/partner eats a meal with the child	<.05
13. In the past 30 days, parent had crying spells	<.05
14. In the past 30 days, parent felt sad	<.10
15. Child feels or complains that no one loves him/her	<.05
16. Child is too fearful or anxious	<.10
17. Child feels worthless or inferior	<.05
18. Child believes that being a student is one of the most important parts of who he/she is	<.05
19. Child likes going to school	<.05
20. Child has strong math skills	<.10
21. Child took the Oklahoma standardized tests in 2019	<.10

Note. The sample includes 707 SEED OK participants who completed the Wave 3 survey before April 1, 2020 (Treatment = 369 and Control = 338). All questions, including questions about children, were answered by the child’s parent (usually the mother). One-tailed multivariate tests are conducted, controlling for all demographic and socioeconomic characteristics in Table 1. Positive CDA impacts with p values below .10 are shown. We consider p values between .05 and .10 to be nearly significant. Sample size varies slightly for each statistical test due to missing values.

assets. It also suggests that, compared with children who lack designated savings for postsecondary education, counterparts with such assets will have higher educational expectations for themselves, better academic engagement, and higher educational attainment (e.g., Elliott et al., 2011; Oyserman, 2013; Shanks & Destin, 2009; Shanks et al., 2010; Sherraden, Clancy, Nam et al., 2018; Zhan & Sherraden, 2011). The mere existence of college accounts and college savings likely sends a message to parents and students about their future education long before the funds in those accounts are used for postsecondary educational expenses. They may lead to a “college-bound” mindset (Elliott et al. 2011, p. 1104; see also Beverly et al., 2013; Oyserman, 2013). Parents play an important role in children’s academic engagement and educational expectations, and the parents of children who automatically receive funded college accounts may have higher expectations and may thus more effectively support children’s academic development and

achievement (Kim et al., 2015, 2017).⁷ These forces may be at work even if account opening and asset accumulation are automatic.⁸ Some or all of these pathways may be especially strong for disadvantaged parents and children, as they are more likely to otherwise view college as unattainable (Beverly et al., 2013; Sherraden, Clancy, Nam, et al., 2018). In short, CDAs are an asset-building intervention that is expected to increase parents’ and children’s engagement in education, with potentially stronger impacts for more disadvantaged families.

Specifically, we hypothesize that CDAs impact children’s and parents’ attitudes and behaviors in the directions that support educational achievement. For example, CDAs may raise parents’ educational expectations. They may motivate children to work harder in school, and they may motivate parents to monitor children’s schoolwork more closely.

Table 3
Parent's Educational Expectations for Child (percentages)

Survey question	Treatment	Control
Parent expects child to graduate from at least a 2-year college	79.24	78.43
Parent expects child to complete graduate school**	25.26	22.21

Note. Parent's educational expectations in Wave 1 are controlled in multivariate analyses.

** $p < .05$.

In the Wave 3 survey, 93 questions relate to education attitudes and behaviors of parents and children. We observe that the treatment group has statistically significantly better performance than the control group on 14 of the 93 survey questions (15%). The survey items with statistically significant treatment-control differences ($p < .05$) in the expected direction are shown in Table 2.⁹ We would expect 5% (4.7 questions) to be positive by chance alone. Thus, the overall pattern of positive results is three times as great as expected chance findings, and this difference indicates that the intervention has positive impacts. When we also include nearly significant findings ($p = .05-.10$), the treatment group has better performance on 21 of 93 outcome questions (23% compared with 10% by chance). This provides additional support for the overall assessment of positive impacts. In statistical terms, we reject the null hypothesis that all of these desired, statistically significant results are jointly spurious (all due purely to chance and not to CDA-caused impact) with a statistical significance at the level of $p < .01$. In common terms, the results reported here are not due to fishing for chance positive outcomes.

Overall, these significant and near-significant results show that treatment parents report better educational expectations for their child, more preparation for the child's future education, greater knowledge of 529 plans, a greater likelihood of saving for children's postsecondary education, and more positive parenting practices. They more actively monitor schoolwork and have less frequent symptoms of depression. In the results from parental reports, treatment children are more hopeful about the future, have fewer behavioral problems, have a more positive academic self-concept, and have stronger math skills. We discuss some of the specific results in the following section.

Results for Specific Variables

We turn next to results for specific nonfinancial variables in the SEED OK Wave-3 research findings. We

control for all variables in Table 1, and we apply one-tailed tests because we have clearly stated directional hypotheses. The sample varies from 605 to 673 due to the deletion of cases with missing data. We include statistically significant ($p < .05$) and nearly significant ($p = .05-.10$) results on important outcomes related to child educational development. As noted above, because positive results substantially exceed chance findings, we can claim these as true results caused by the SEED OK intervention. However, we also want to emphasize that not all hypotheses are supported in the study, so we include some survey items for which no statistically significant impacts are detected. In other words, while many results of SEED OK at Wave 3 are positive and meaningful, we do not find this for every outcome. We provide brief comments on these results.

Parent's educational expectations. The majority of parents in both groups (nearly 80%) expect their children to graduate from at least 2-year colleges; the treatment-control difference on this measure is not statistically significant (Table 3). However, the treatment parents are statistically significantly more likely than the control parents to expect children to complete graduate school.

Treatment children are more hopeful about the future, have fewer behavioral problems, have a more positive academic self-concept, and have stronger math skills.

Table 4
Preparation for Child's Future Education (percentages)

Survey question ^a	Treatment	Control
Family is actively thinking about what we need to do to prepare for the child's future education**	55.89	49.06
Family has taken concrete steps to prepare for the child's future education**	37.07	29.62
Family is actively thinking about the financial costs of the child's future education	48.50	47.72
Family has taken concrete steps to prepare for the financial costs of the child's future education***	32.40	25.68
Family is currently on track to meet the financial costs of the child's future education	15.73	11.94

^a Response options for original survey questions ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). We collapsed these response options into two categories: 1 (*strongly agree*) and 0 (*otherwise*).

** $p < .05$. *** $p < .01$.

Table 5
Knowledge of 529 Plans and Saving for Child's Postsecondary Education (percentages)

Survey question	Treatment	Control
Parent has heard of 529 college savings plans***	66.90	50.41
Parent's family has 529 college savings plan for any child in the household***	49.15	17.79
Parent understands that 529 funds are to be used for postsecondary education*	42.22	37.04
Parent has savings for child's postsecondary education***	47.57	28.72
Parent receives account statements for education***	54.22	19.78
Child has a savings account*	43.65	40.93

* $p < .10$. *** $p < .01$.

Preparation for child's future education. As Table 4 indicates, the treatment parents have statistically higher percentage values on three of five survey questions measuring families' preparation for the child's future education: whether they are actively thinking about the child's future education, taking concrete steps to prepare for the child's future education, and preparing for financial costs of the child's future education.

In addition to the five individual tests for these items, we also generated an overall scale of families' preparation for the child's future education that simultaneously considers all five of these survey questions.¹⁰ The family college-preparation score of treatment parents is 0.10 standard deviations higher than that of control parents ($p < .05$). That is, if the five questions are considered together, treatment parents have prepared more actively than control group counterparts for the child's future education.

Knowledge of 529 plans and saving for child's postsecondary education. The Wave 3 survey includes questions on parents' understanding of 529 plans and their saving for children's postsecondary education. In contrast to the financial-account data, the data from these survey questions very likely have some self-report measurement errors. Nevertheless, they may still provide information useful for understanding families' perspectives and preparation for children's future education.

Treatment parents are more likely to have heard about 529 college savings plans, to have 529 plans for any child in the household, and to understand the purpose of 529 funds correctly (Table 5). Also, treatment parents are



more likely to save for the child’s future education and to receive statements for accounts that hold savings for the child’s future education. In the treatment group, more parents report receiving account statements than having savings for the child’s education. This may be due to the fact that treatment families receive quarterly statements for the state-owned SEED OK account. In addition, treatment children are more likely than control children to have their own savings accounts (a personal, non-529 plan account in their own name). All treatment–control differences in Table 5 are statistically significant at the .01 level or nearly significant at the .10 level.

Parenting practices. Data from the Wave 3 survey suggest that treatment parents have better parenting practices (Table 6). Compared with counterparts in the control group, treatment parents are almost 8 percentage points more likely to report handling the demands of raising children “very well.” Also, treatment parents more frequently have meals with children: about one more meal per month.

Parental involvement in the child’s education. Table 7 reports on responses to five survey questions concerning parent educational involvement in fall 2019. Reports from treatment and control parents indicate that they have similar levels of educational involvement, and there is no statistically significant difference on any of these indicators. We also created a parent educational involvement scale that combines responses for these five survey questions. The treatment–control difference for this scale is not statistically significant.



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Table 6
Parenting Practices

Survey question	Treatment	Control
Parent handles day-to-day demands of raising children very well (%)*	71.05	63.41
Frequency of having meals with child (days per week)**	5.52	5.30

Note. Percentages and average values are reported in table.

* $p < .10$. ** $p < .05$.

Table 7
Parent Involvement in Child’s Education, Fall 2019

Survey question	Treatment	Control
Parent attended parent-teacher conference (%)	81.98	81.98
Parent attended a meeting of parent-teacher association (%)	41.94	41.24
Parent attended general school meeting such as open house or back-to-school night (%)	89.95	89.15
Frequency of talking with other parents about child’s school experiences ^a	2.90	2.90
Frequency of using online resources to help children in school ^a	2.77	2.70

Note. Percentages and average values are reported in table. No treatment-control difference is statistically significant at $p < .10$.

^a Response options: 1 = never, 2 = once or twice, 3 = three or four times, and 4 = more than four times.

Treatment children are more likely than control children to have their own savings accounts.



Photo by Honey Yanibel Minaya Cruz on Unsplash

Parent monitoring and education-related conversations with the child. For our seven indicators of parents’ monitoring of schoolwork and education-related conversations, no treatment–control difference is statistically significant at the .05 level (Table 8). In addition to examining these seven items individually, we also created an education monitoring and conversation scale that combines all seven items. The treatment–control difference on the overall scale is not statistically significant.

However, treatment and control parents do differ on a scale that is generated from the first four items related to monitoring (those on report card, grades, daily homework, and big assignments). Treatment parents are more likely to monitor children’s schoolwork; their score is 0.08 standard deviations higher than that of the control group ($p < .10$).

Parent’s depressive symptoms. For these items, *higher* scores indicate less frequent depressive symptoms. Compared with control group counterparts, treatment parents are less likely to have had crying spells and to have felt sad in the 30 days prior to the Wave 3 survey (Table 9). We created a depression scale that combines responses for all four items. The treatment–control difference on the depression scale is not statistically significant.

Table 8
Parent Monitoring and Education-Related Conversations with Child, Fall 2019

Survey question	Treatment	Control
Parent discussed report card (%)	95.31	94.53
Frequency of checking grades online in a typical month ^a	2.80	2.72
Frequency of asking whether child had completed homework in a typical month ^b	4.40	4.32
Frequency of asking about upcoming tests and big assignments in a typical month ^b	3.46	3.45
Frequency of talking about study skills in a typical month ^a	2.89	2.78
Frequency of talking about careers or jobs ^c	2.98	2.89
Frequency of talking about educational plans after high school ^c	2.61	2.62

Note. Percentages and average values are reported in table. No treatment–control difference is statistically significant at $p < .10$.

^a Response options range from 1 (*never*) to 4 (*at least three times a week*).

^b Response options range from 1 (*never*) to 5 (*every school day*).

^c Response options range from 1 (*not at all*) to 4 (*more than four times*).

Table 9
Parent’s Depressive Symptoms, “Last 30 Days”

Survey question ^a	Treatment	Control
Parent felt depressed	3.58	3.54
Parent felt lonely	3.74	3.76
Parent had crying spells**	3.80	3.73
Parent felt sad*	3.45	3.39

Note. Values reported in the table are average scores.

^a Response options range from 1 (*all of the time*) to 4 (*none of the time*). A *higher* score indicates *fewer* depressive symptoms.

* $p < .10$. ** $p < .05$.

Table 10
Child's Hope

Survey question ^a	Treatment	Control
The child expects good things to happen to him/her	3.88	3.84
The child feels excited about his/her future	4.12	4.05
The child trusts that his/her future will turn out well	4.20	4.16

Note. Responses are provided by parents. Average values are reported in the table. No treatment-control difference is statistically significant at $p < .10$.

^a Response options are from 1 (*not at all like my child*) to 5 (*exactly like my child*).

Table 11
Child's Diligence

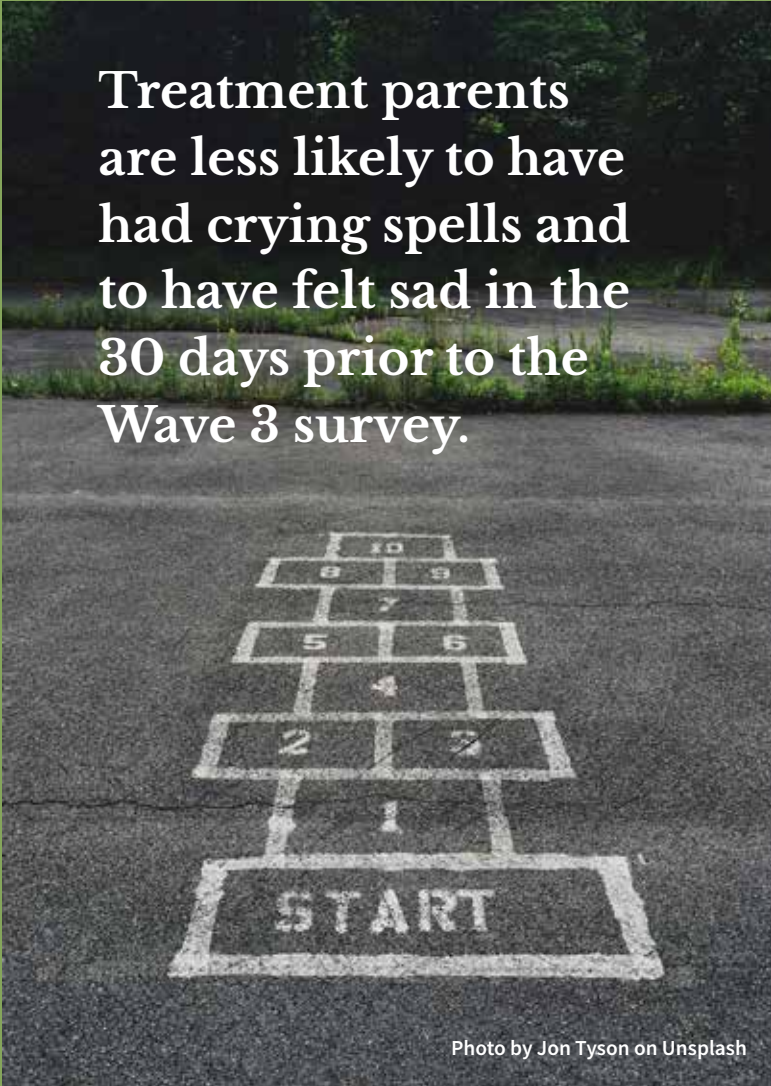
Survey question ^a	Treatment	Control
The child works harder than others his/her age	3.75	3.75
The child does as little work as he/she can get away with (reverse coded)	3.47	3.45
The child finishes the tasks he/she starts	4.04	3.96
The child gives up when things get difficult (reverse coded)	3.63	3.62

Note. Responses are provided by parents. Average scores are reported in the table. No treatment-control difference is statistically significant at $p < .10$.

^a Response options range from 1 (*none of the time*) to 5 (*all of the time*). A higher value indicates more child's diligence.

Child's hope. As Table 10 indicates, the treatment-control differences for responses to these three survey questions are not statistically significant. Again, we used these three items to create a children's hope scale. The scores reported by treatment parents are higher than those by control parents, suggesting that treatment children are more hopeful; specifically, the scores for treatment children are 0.06 standard deviations higher than those for control children ($p < .10$).

Child's diligence. Treatment-control differences in responses for the four survey questions on children's diligence are not statistically significant (Table 11). Also, treatment and control parents have similar scores on the child diligence scale created from these four questions.



Treatment parents are less likely to have had crying spells and to have felt sad in the 30 days prior to the Wave 3 survey.

Photo by Jon Tyson on Unsplash

Table 12
Child's Behavior Problems

Variable ^a	Treatment	Control
Internalizing behavior problems		
The child has sudden changes in mood	2.46	2.48
The child feels or complains that no one loves him/her**	2.89	2.84
The child is too fearful or anxious*	2.62	2.55
The child is unhappy, sad, or depressed	2.71	2.71
The child feels worthless or inferior**	2.80	2.74
Externalizing behavior problems		
The child is disobedient at school	2.78	2.84
The child has trouble getting along with other children	2.79	2.82
The child is disobedient at home	2.53	2.55

Note. Responses are provided by parents. Average scores are reported in the table.

^a Response options include 1 (*often true*), 2 (*sometimes true*), or 3 (*not true*) for their children. A *higher* score indicates *fewer* behavior problems.

* $p < .10$. ** $p < .05$.

Child's behavior problems. For these items, *higher* scores are better because they indicate less frequent behavior problems. Responses from the parents in both groups indicate that treatment children less frequently feel that no one loves them, less frequently are fearful or anxious, and less frequently feel worthless or inferior (Table 12). Results from an internalizing behavior-problem scale created by combining the first five survey questions indicate that the score for treatment children is 0.09 standard deviations greater than that for control children and the treatment-control difference is nearly statistically significant at the .10 level. Treatment children have fewer internalizing behavior problems than control children. However, the treatment-control difference is not statistically significant in the scale created by combining items on externalizing behavior problems.

Child's academic self-concept. As results in Table 13 show, responses from parents indicate that treatment children are more likely than control children to believe that being a student is one of the most important parts of who they are, and that treatment children are more likely to like going to school. We created a scale combining the three academic self-concept scale items presented in Table 13. Results from the scale indicate that the academic self-concept scores for treatment children are 0.08 standard deviations higher than those for control children ($p < .10$).

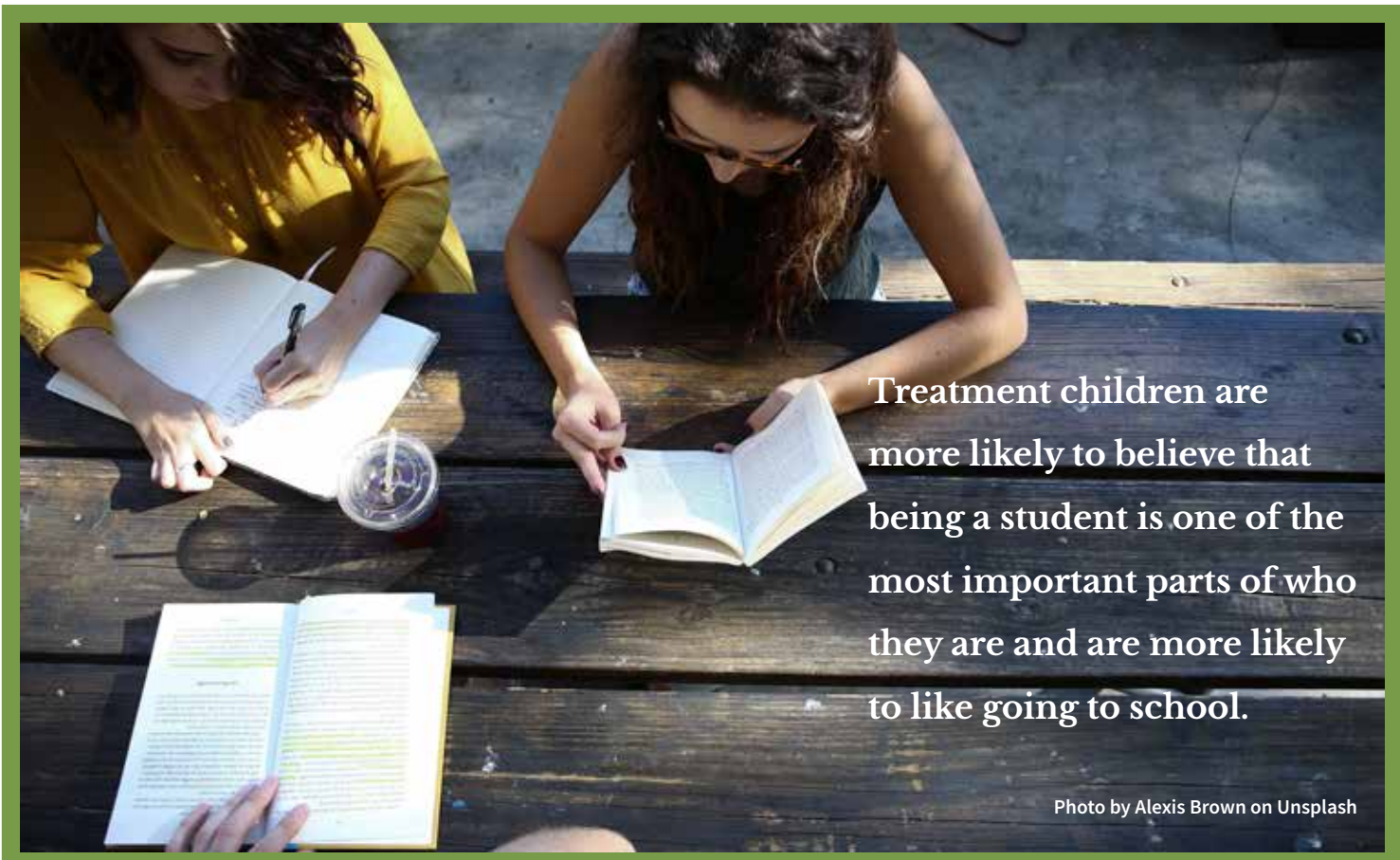


Photo by Alexis Brown on Unsplash

Table 13
Child's Academic Self-Concept

Survey question ^a	Treatment	Control
The child believes that being a student is one of the most important parts of who he/she is**	3.88	3.79
The child likes going to school**	4.17	4.06
The child believes that he/she is a good student	4.48	4.47

Note. Responses are provided by parents. Average scores are reported in the table.

^a Response options range from 1 (*strongly disagree*) to 5 (*strongly agree*).

** $p < .05$.

Table 14
Child's Academic Performance and Skills

Survey question	Treatment	Control
The child has strong reading skills ^a	4.15	4.25
The child has strong math skills ^{a*}	4.16	4.04
The child has trouble keeping track of when assignments are due (reverse coded) ^a	3.47	3.51
The child knows how to study effectively for tests ^a	3.93	3.93
The child took advanced or accelerated math last fall (%)	27.55	28.60
The child's schoolwork overall ^a	3.94	4.07
The child's overall final course grades last fall ^b	2.26	2.35
Whether the child took OK standardized tests in 2019 (%) [*]	86.52	81.43
The child's score on the standardized math test ^c	3.02	2.95
The child's score on the standardized ELA test ^c	2.93	3.05

Note. ELA = English and language arts. Responses are provided by parents. Percentage and average scores are reported in table.

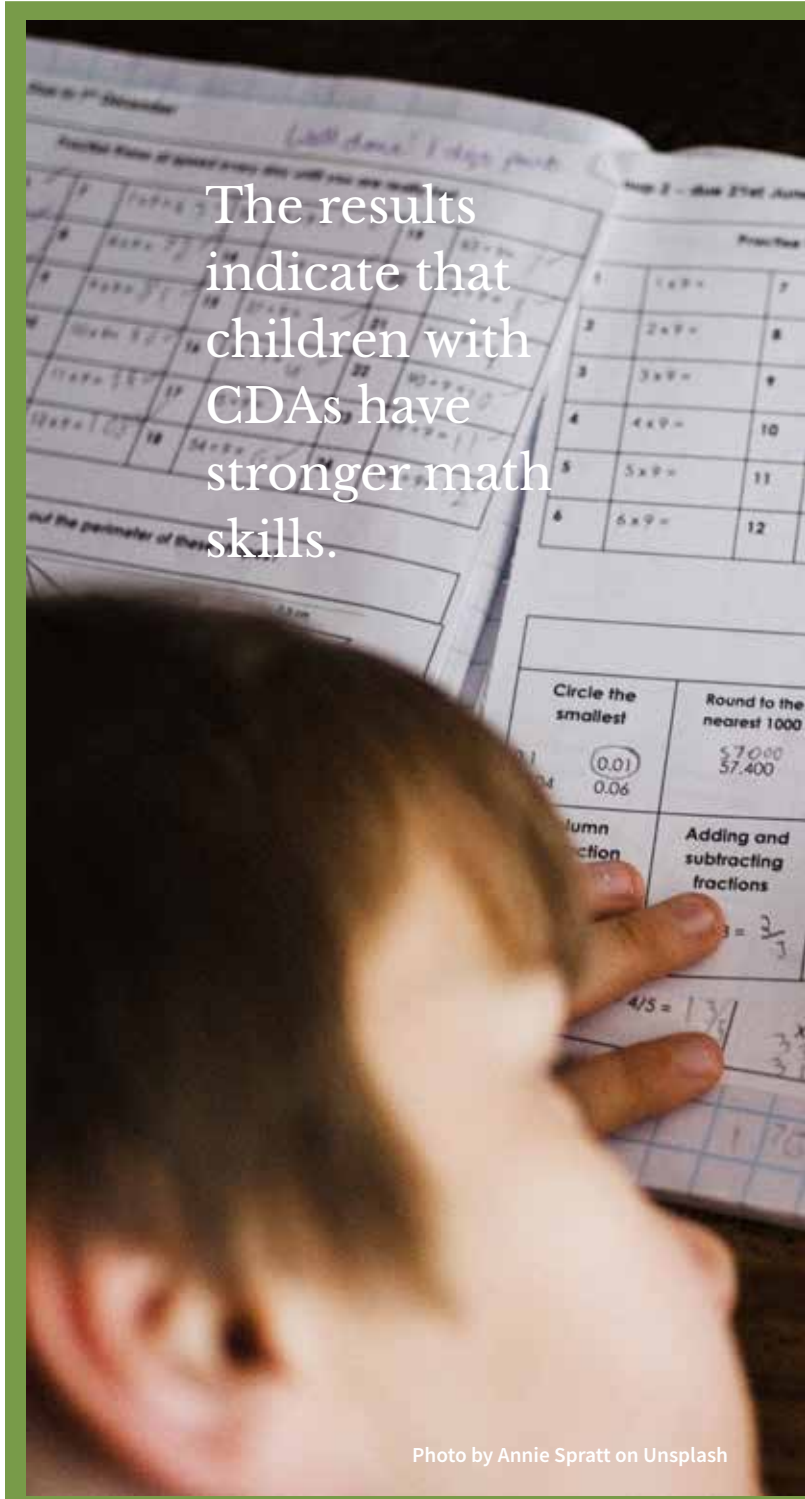
^a Response options range from 1 to 5, with a larger value indicating better skill or performance.

^b Response options are 3 = *all or mostly As*; 2 = *a mix of As and Bs*; and 1 = *all Bs or lower grades*.

^c Response options are 1 = *below basic*; 2 = *basic*; 3 = *proficient*; and 4 = *advanced*.

* $p < .10$.

Child's academic skills and performance. As Table 14 shows, the treatment-control differences for eight of 10 parent-reported indicators of academic skills and performance are not statistically significant. However, the results indicate that treatment children have stronger math skills and were more likely to have taken the Oklahoma standardized tests in 2019.



The results indicate that children with CDAs have stronger math skills.

Photo by Annie Spratt on Unsplash



Key findings include modest but statistically significant or nearly significant and positive results on

- » Parent’s educational expectations for the SEED OK child
- » Family preparation for the child’s future education, including saving
- » Parenting practices
- » Parent monitoring of child’s schoolwork
- » Parent’s depressive symptoms
- » Child’s hope
- » Child’s behavior
- » Child’s academic self-concept
- » Child’s math skills

Photo by Kimberly Farmer on Unsplash

Think of assets in the CDAs of SEED OK as an endowment, as a seeding of future possibilities, and the seeds have begun to take root.

Discussion and Conclusions: Looking Ahead to Both Research and Policy

For 12-year-old children and their families, the CDA in SEED OK had very large positive impacts on financial outcomes and some positive impacts on nonfinancial outcomes, even though the experiment had little intervention over the past 9 years. We were in a position to test only a limited version of the original CDA policy proposal, with much lower deposits by government than as first proposed (Clancy et al., 2021). The CDAs did not receive regular, ongoing deposits—for example, an annual deposit for the completion of each year of schooling, as the original proposal envisioned, and communications with families occurred primarily in the early years of the study (see Figure 1).¹¹

Therefore, perhaps the way to understand SEED OK is that a modest treatment was put in place during the first 4 years of the study, and it remains in place over a decade later. In this sense, Wave 3 of SEED OK is like a long-term follow-up of a treatment that mostly ended 9 years ago. We know from many prior social experiments that impacts tend to decay over time, though not always. SEED OK appears to be among the exceptions because positive outcomes have been retained.

In addition, we might think of assets in the CDAs of SEED OK as an endowment, as a seeding of future possibilities, and the seeds have begun to take root. Even without much intervention over the last 9 years, the CDAs still exist and assets are growing over time. The account and its balance may be present for treatment families due to quarterly account statements (and if CDAs were a universal policy, they also would be present in public discussion). If so, this in itself, might be a good reason to shift more social policy over time toward asset building for particular purposes (in contrast to providing income support when the resources are needed).

Even though it is a limited CDA policy application, SEED OK has been constructed and implemented with robust science. The experimental findings show the dynamics of asset accumulation (both the amount of assets and their effects on families) between the treatment group

and the control group. These research results have been informative and productive in CDA policy development in several U.S. states and abroad.

The experimental results continue to show support for a number of the hypothesized impacts (though not all). Results remain encouraging as the focal children reach their early teen years. At the end of 2019, when SEED OK children were about 12 years old, the CDA in SEED OK had very large positive financial impacts. The treatment group had over three times the OK 529 assets as the control group, with much larger effects among disadvantaged subgroups (measured by household income, child's race/ethnicity, and mother's education). We also find positive effects on parental participation in saving for the focal child (Clancy et al., 2021).

The fact that treatment parents are more likely to open and save in an OK 529 account suggests that automatic CDA deposits do not replace parental participation, but instead may spur greater levels of such participation. This is no surprise to social workers and others who work with ordinary people in the community. In a very unequal society and economy, inclusive asset building, supported through efficient policy arrangements, can give families a pathway to develop, which is good for them and for the country as a whole.

We also note strength in nonfinancial impacts in the form of child and family development. Key findings include modest but statistically significant (or nearly significant, $p < .10$) positive results on: parent's educational expectations for the SEED OK child; family preparation for the child's future education, including saving; parenting practices; parent monitoring of child's schoolwork; parent's depressive symptoms; child's hope, child's behavior, child's academic self-concept, and child's math skills. The number of positive nonfinancial effects exceeds what we would expect by chance. With this result in a rigorous research design, we can say that the SEED OK experiment has positive and causal impacts, and we are able to specify what these are.

Informed by SEED OK results, CDAs are building assets for millions of children around the world and hundreds of thousands in the United States. The CSD team has advised in all of these settings.

Although we do not know as yet, it is possible (and we posit) that nonfinancial effects of CDAs will become more important than the financial ones. Even if CDAs increase educational attainment only a small amount across the whole population, there will be large long-term payoffs in the growth and stability of households and the country. In this sense, asset building, although discussed in terms of money, is not primarily about the money; it is instead about developing people.

Regarding impacts on children and families, we also know from SEED OK research that meaningful positive effects are occurring as the children grow up—long before the money is actually spent on education. In this regard, asset-based social policy is very different from most income-based policy, which is directed at consumption support. Asset-based policy is forward-looking, not only in future consumption but also in changing outlooks and behaviors in positive ways. In fact, this is not a new idea; it is a basic American idea. Consider, for example, the Jeffersonian view that small landowners are the basis of democracy (Griswold, 1946). We see a glimpse of this dynamic in SEED OK results. But as yet, the United States has not constructed much social policy around the idea of asset-building that includes the poor. CDA research results may inform a different policy emphasis.

As a practical policy matter, SEED OK results may also suggest a better alternative to heavy reliance on student loans (debt) as the major source of funding for postsecondary education. Even if the United States moves toward tuition-free college education (which seems a long reach from where we are today), there will be expenses for college education and the poorest families will be deterred by these expenses. If all children in the United States—of every race/ethnicity, color, national heritage, income level, gender identity, and every other difference—had a CDA with resources to support postsecondary education and training, then college graduates would not be saddled with as much debt. As a result, they would be in a little better financial position for family formation, career development, contributions to society, and retirement security. CDAs are not a panacea, but they can help to reduce the burden from a dysfunctional policy that generates massive student-loan debt.

As another practical policy matter, the United States may be finally recognizing a historical legacy of stripping assets from non-White populations, especially from Native peoples and African Americans. Most Americans remain underinformed about the scope and violence of these harms, but this is changing. Proposals are growing for historical acknowledgment and some form of reparations (a helpful recent book is by Darity & Mullen, 2020). This is a huge topic that understandably makes many White Americans uncomfortable, but with the demographic transition toward a majority non-White population, this topic is unlikely to be swept back under the rug. As a nation, we will likely be dealing with it, and we can become a much better country as a result. Yet at the same time, creating effective policy solutions is daunting, with risks of losing the money in misguided—even predatory—finance. As this issue is discussed, the country will be wise to think about feasible, constructive, and sustainable strategies to develop, grow, and protect assets of Black, Native, and Brown populations. In this regard, opening an efficient, proven, and trusted system of accounts for all children at birth can be an important beginning.

Altogether, the initial results of the SEED OK experiment at Wave 3 are informative as an assessment of the potential of a fully inclusive asset-building policy that would start for all children automatically at their birth. We cannot know where this policy concept and research will lead, but based on this evidence, we have very good reasons to take the next steps.

As applied scholars, we remain grounded in the data, and we are careful about our conclusions. Yet, we also know how this evidence is valued because we are seeing its impacts. Informed by SEED OK results, CDAs are building assets for millions of children around the world and hundreds of thousands in the United States. The CSD team has advised in all of these settings, and the SEED OK experiment began before most CDA policy developments (before all of those in the United States). In this sense, SEED OK knowledge is ahead of the field, and policymakers will want to know what to expect. We look forward to continuing SEED OK research, learning as we go, and making the knowledge available in policy formation.



Notes

¹ Student debt for postsecondary education now totals \$1.7 trillion in the United States (Friedman, 2021), exceeding total credit card debt. This debt stunts lifetime development (e.g., Fry, 2014; Mezza et al., 2020) and is so large that it has also become a concern for macroeconomic stability.

² For a recent translation of *The Art of War*, see Sun Zi (ca. 300 B.C.E./2007).

³ Data from the Survey of Consumer Finances show that, in 2010, just 6% of families with children under age 25 had a 529 plan or Coverdell account (U.S. Government Accountability Office, 2012).

⁴ One SEED OK mother opted out of the CDA early in the study, and her child's account was closed. Under future CDA policy, parents could opt out of CDA communications, but children would still receive deposits and could use accumulated funds for postsecondary education.

⁵ More precisely, the characteristics in the second column mirror those of the population of children born in Oklahoma in 2007. SEED OK created a representative sample through the use of probability sampling and sample weights (Clancy et al., 2021).

⁶ This ratio is not exactly comparable with a higher ratio reported previously by Beverly and associates (2016), which used SEED OK financial data from December 31, 2014. The ratio reported here using 2019 financial data is for OK 529 accounts opened by a SEED OK child's mother or father.

⁷ In an in-depth interview, one SEED OK treatment mother said of her 2-year-old child: "I'm going to have to get him through school so he can use this and go to college" (Gray et al., 2012, p. 57).

⁸ Previous research found that the CDA in SEED OK had positive impacts on many nonfinancial outcomes, regardless of whether parents had opened and saved in their own OK 529 accounts (Huang, Sherraden, & Purnell, 2014; Huang, Sherraden, Kim, & Clancy, 2014; M. S. Sherraden et al., 2013). It is noteworthy that these positive nonfinancial impacts occurred while assets were being held—that is, before assets were spent for education.

⁹ Overall, consistent results are obtained in bivariate tests comparing the treatment and control groups on these outcome measures.

¹⁰ We use confirmatory factor analysis (Brown, 2015) to test whether these survey questions are valid and reliable indicators for the construct we intend to measure. Such a model with selected survey questions then is used to

assess the CDA impacts in SEED OK; we call the model a measurement "scale" in this report. All scales discussed in this report are tested by confirmatory factor analysis.

¹¹ SEED OK has deposited about \$1,200 into the account of each treatment child, and no additional deposit is planned. This can be compared with the original proposal to deposit \$14,780 into each child's account by age 18 (Sherraden, 1991). Adjusted for inflation, the proposed sum would be about \$28,000 in today's dollars. In other words, the financial support in SEED OK is less than 5% of the original proposal.

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About the Center for Social Development

The Center for Social Development is a hub for implementing and testing applied social innovations that broaden well-being for individuals, families and communities. We incubate ideas that can be scaled to reach millions, and we create new fields of study to meet social needs. We also train emerging scholars and practitioners in the effective conduct of engaged social-science research.

Our Mission

The Center for Social Development's mission is to create and study innovations in policy and practices that enable individuals, families and communities to formulate and achieve life goals, and contribute to the economy and society. Through innovation, research and policy development, CSD creates intellectual and applied contributions in social development theory, evidence and policy.

Our Work

We employ critical inquiry and applied multi-method research to test scalable policy and practice innovations that have the potential to expand opportunities for marginalized families and communities. Internationally recognized for contributions to financial inclusion and asset-based social policy, we seek to advance a just and inclusive society through interdisciplinary engagement in seven areas of impact. We collaborate with our sister centers in Singapore and South Africa as well as with other strategic partners around the globe. We are deeply engaged in the collaborative efforts to address the Grand Challenges for Social Work.

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