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Economic Intervention and Parenting: A Randomized Experiment of Statewide Child Development Accounts

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Abstract

Objective: We examine the effects of Child Development Accounts (CDAs) on parenting stress and practices. *Methods:* We use data from the SEED for Oklahoma Kids (SEED OK) experiment. SEED OK selected caregivers of infants from Oklahoma birth certificates using a probability sampling method, randomly assigned caregivers to the treatment ($n = 1,132$) or control group ($n = 1,098$), and provided college savings incentives only to the treatment group. We run regression analyses on a parenting stress scale and six continuous measures of parenting practices. *Results:* There were no significant differences in parenting outcomes between treatment and control groups, with the exception of frequency of screaming at the child. CDAs have more salient effects on American Indians than on other groups. *Conclusions:* We present weak evidence for CDAs' positive impacts on parenting outcomes. Further research is needed to determine whether these initial results change over time.

Keywords: *College savings, quantitative, parenting stress, parenting practices, randomized experiment, SEED for Oklahoma Kids, social welfare policy, children*

Introduction

In recent years, policy makers in the United States and other countries have shown increased interest in Child Development Accounts (CDAs). Empirical evidence increasingly demonstrates that household assets and savings are positively associated with markers of long-term socioeconomic success, including children's educational attainment, cognitive development, attitudes, and behaviors (Conley, 2001; Lerman & McKernan, 2008; Nam, Huang, & Sherraden, 2008; Yadama & Sherraden, 1996). As a result, several national governments (e.g., United Kingdom, Singapore, and South Korea) have adopted CDAs and provided children with seed money to be invested for their long-term development (Loke & Sherraden, 2009; Nam & Han, 2010). In the United States, legislative discussion continues and several bills have been proposed at the federal level, including the America Saving for Personal Investment, Retirement, and Education (ASPIRE) Act, 401Kids Accounts, and Baby Bonds (Cramer & Newville, 2009).

As a policy idea, CDAs are relatively new; therefore, there is limited evidence on the impacts of CDAs, especially the effects on parenting stress and practices. These outcome measures are critical in evaluating interventions for children. It is empirically well supported that stable and nurturing parenting practices improve children's cognitive, social, and emotional development; by contrast, child maltreatment can generate irreversible damages on children (Marsiglia, Williams, Ayers, & Booth, 2014; Ranson & Urchuk, 2006; World Health Organization, 2009).

To fill gaps in existing knowledge, this study investigates the effects of a CDA policy on parenting stress and practices. The data come from SEED for Oklahoma Kids (hereafter, SEED OK), a

statewide experiment testing universal and progressive CDAs. This study attempts to determine (a) whether SEED OK affects parenting stress and practices and (b) whether any observed effects differ by race and ethnicity. We pay special attention to racial and ethnic differences because previous literature indicated that experiences of parenting differ by race and ethnicity (e.g., Cheadle & Amato, 2011; Nam, Wikoff, & Sherraden, 2013; Nomaguchi, & House, 2013).

Conceptual Framework and Existing Evidence

According to asset theory, savings and assets confer multiple benefits on their owners (termed *asset effects*) that income does not provide (Nam, Huang, & Sherraden, 2008; Sherraden, 1991): Financial assets and physical property ownership may impart psychological and behavioral benefits by expanding owners' opportunity and hope for long-term achievement (e.g., college education or homeownership). Explorations of the relationship between asset ownership and children's outcomes suggest that assets may increase parents' expectations concerning their children's college education, and these heightened expectations may improve parenting behaviors, irrespective of poverty status (Zhan & Sherraden, 2003). A recent empirical study showed that homeownership is significantly and positively associated with children's chance of participation in organized activities (e.g., sports, Boy Scouts, or Girl Scouts), and is significantly negatively associated with the amount of time that children devote to TV, videos, and video games. These findings suggest some of the positive impacts of homeownership (Grinstein-Weiss et al., 2010).

Because they serve as a vehicle for accumulating assets, CDAs may convey spillover beneficial effects for caregivers and their children. Most parents in the United States, regardless of race or class, harbor the aspiration that their children will attend college (Elliott, 2008). Thus, having the economic means to contribute to children's college education may positively affect parenting. A CDA may heighten caregivers' expectations about their children's educational achievement, enhance caregivers' future orientation, and offset the stress caregivers feel about their ability to finance their children's higher education. Furthermore, CDAs may increase parenting efficacy: A key component of self-efficacy is the belief that one can achieve desired goals through one's actions (Bandura, 1997). Caregivers who perceive greater control over the future may feel less stress in the parenting role, and this may improve parenting practices. Recent empirical evidence also indicates positive effects of CDAs on caregivers' depressive symptoms, their expectations for their children's educational achievement, and children's socio-emotional development (Huang, Sherraden, Kim, & Clancy, 2014; Huang, Sherraden, & Purnell, 2014; Kim et al., 2013), which are closely associated with parenting stress and practices (Thomlison, 2004).

We have little empirical evidence on the impacts of CDAs on parenting stress and practices. The majority of evaluation studies on CDAs have focused on savings outcomes; they have shown that universal and progressive CDA programs are more effective than tax-based college-savings accounts in helping middle- and low-income families accumulate assets for their children's future (Dynarski, 2004; Jacobson, 2010; Mason, Nam, Clancy, Kim, & Loke, 2010; Nam & Han, 2010; Nam, Kim, Clancy, Zager, & Sherraden, 2013). Recent studies suggest that CDAs have positive effects on caregivers' depressive symptoms, their expectations for children's educational achievement, and children's socio-emotional development (Huang, Sherraden, Kim, et al., 2014; Huang, Sherraden, & Purnell, 2014; Kim, Sherraden, Huang, & Clancy, 2013). For example, treatment children from disadvantaged backgrounds (whose families have low income or receive welfare and whose parents have low levels of education) had significantly better scores for overall social-emotional

development, self-regulation, and interactions with people than similarly disadvantaged children in the control group had (Huang, Sherraden, Kim, et al., 2014). To our best knowledge, there is only one empirical study that examines the relationship between CDAs and parenting. A quasi-experiment showed a significant mean difference in parenting stress between baseline and follow-up surveys, suggesting that average parenting stress significantly declined over time among CDAs participants (Okech, 2012).

Methods

Data and sample

This study uses data collected for SEED OK, a statewide social experiment of CDAs. The SEED OK intervention promotes asset building for children's future by depositing seed money and encouraging parents to save in the Oklahoma 529 College Savings Plan (OK 529 hereafter), an existing state-sponsored 529 savings program. To encourage families to save for postsecondary education, 529 plans allow savings to grow tax-free and they offer state income-tax deductions for funds saved in the accounts (Oklahoma 529 College Savings Plan, n.d.). As described below, SEED OK offers incentives in addition to tax benefits included in the traditional OK 529s.

Constructed from birth certificate data provided by the Oklahoma State Department of Health, the sampling frame of SEED OK included all infants born in Oklahoma during two periods: April through June and August through October 2007. As shown in Figure 1, the study then randomly selected the birth records of 7,328 infants and invited their primary caregivers to participate in the experiment. A stratified random sampling method is used to ensure that the sample includes sizeable subgroups of African Americans, American Indians, and Hispanics (Marks, Rhodes, & Scheffler, 2008; Nam, Kim, et al., 2013).

From the 7,328 caregivers invited to participate, the SEED OK research team excluded 213 (2.9%) deemed ineligible due to the death of the infant or caregiver. The team succeeded in conducting a baseline survey by telephone with 2,704 of the 7,115 eligible primary caregivers between fall 2007 and spring 2008 (38% participation rate). Several factors may have contributed to the somewhat low participation rate for the baseline survey. First, participation rates have been very low in recent telephone surveys: 48% in the 2003 Survey of Consumer Attitudes (Curtin, Presser, & Singer, 2005) and 25% in a 2003 national survey by the Pew Research Center (Keeter, Kennedy, Dimock, Best, & Craighill, 2006). Second, privacy concerns may have impeded participation: SEED OK asked study participants to provide the infant's Social Security number, which is required to open an OK 529 account (the main intervention in the SEED OK experiment). Third, generous financial incentives (e.g., a 50% chance of receiving a \$1,000 deposit into an OK 529 account) may have dampened participation by raising suspicions that the offer was too good to be legitimate (Marks et al., 2008; Nam, Kim, et al., 2013).

After the baseline survey, the research team randomly assigned study participants to either the treatment or the control group (1,358 and 1,346 participants, respectively; Marks et al., 2008; Nam, Kim, et al., 2013). The experiment offered three financial benefits to the treatment group only. First, SEED OK deposited \$1,000 into a state-owned OK 529 account that was opened automatically for each treatment infant. Second, SEED OK offered a time-limited, \$100 account-opening incentive to

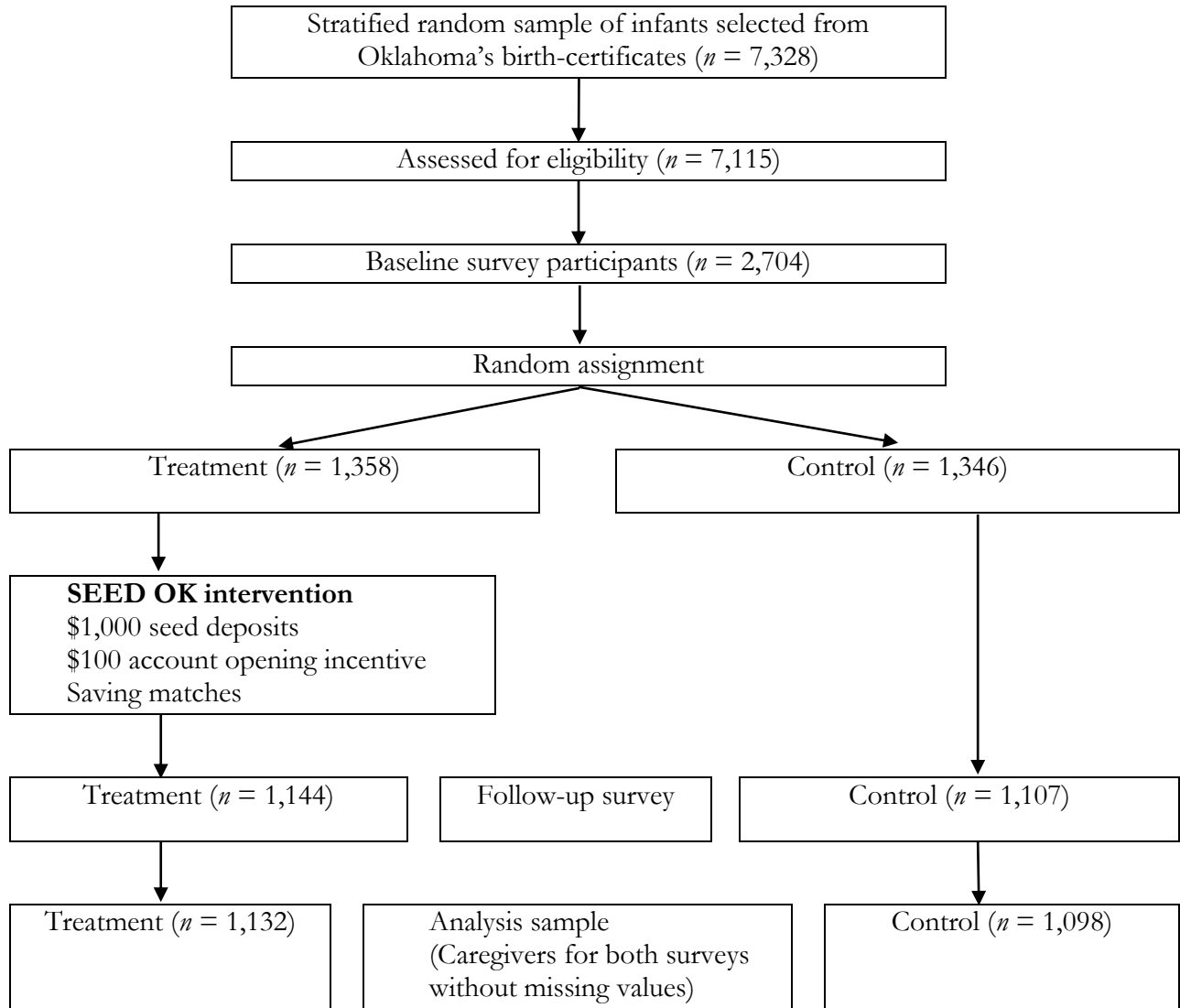


Figure 1. Flow of participants at each stage of SEED OK experiment ($N = 2,230$).

treatment caregivers who opened their own OK 529 account for the infant by April 15, 2009. Third, SEED OK provided savings matches to income-eligible treatment participants. The study also sent treatment members information packages that described SEED OK's benefits and provided general information on OK 529 accounts (Nam, Kim, et al., 2013). Treatment participants occasionally receive small gifts for their child (e.g., books). As described above, SEED OK provided financial incentives and information to encourage treatment participants to save for children's future college education. However, it offered no direct intervention related to parenting stress or practices.

Roughly three years after implementation of the SEED OK intervention, we conducted a follow-up survey, when SEED OK children were approximately four years old. SEED OK conducted the follow-up survey by telephone (spring 2011), using the same data collection method as in the baseline survey. Among 2,704 study participants recruited at the baseline survey, 2,251 completed the follow-up survey (83% retention rate).

Of those 2,251 participants, we excluded eight because they were no longer the main caregivers of SEED OK children by that time. We also excluded 13 cases because data from them lack values for independent variables used in regression analyses. The final analysis sample consists of 2,230 study participants: 1,132 in the treatment group and 1,098 in the control group.

This study uses data from three sources: birth certificates, the baseline survey, and the follow-up survey. Birth certificate data include basic demographic and health information about children and their birth parents. Data from the baseline and follow-up surveys provide detailed information from study participants on SEED OK children, caregivers, and families.

Measures

We created seven continuous dependent variables from the follow-up survey. The first is a parenting stress scale that summarizes participants' responses to four statements: "In my role as a parent, I often find that I have too little time for myself"; "I feel overwhelmed with the responsibilities of being a parent"; "I am happy with my role as a parent"; and "As a parent, I enjoy the time I spend with my child." These questions were selected and modified from Berry and Jones's (1995) 18-item Parental Stress Scale. Because survey time was limited, the follow-up survey could not include all 18 items. The survey asked the respondent to indicate his or her level of agreement with each statement (1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, and 4 = *strongly disagree*): In creating the scale, we reverse-coded the first two statements so that higher values in each statement indicated a more severe level of parenting stress. Then, we calculated a mean score for the four items. The scores from the scale range from 1 to 4 ($\alpha = .73$).

We assessed parenting practices using six continuous measures selected from the Alabama Parenting Questionnaire-Preschool Revision (Clerkin, Halpern, Marks, & Polycaro, 2007). These six variables indicate the number of times that caregivers engaged in the following behaviors during the 3 days leading up to the follow-up survey: (a) played a game or did other fun things with the child; (b) praised the child for behaving well; (c) calmly explained to the child why his or her behavior was wrong; (d) punished the child more severely than usual because of bad parental mood; (e) spanked the child; and (f) screamed at the child. We did not include these parenting-practice questions in the baseline survey because they were irrelevant for caregivers of infants.

The main independent variable in this study is treatment status. We assigned the value 1 to SEED OK treatment-group participants and 0 to control-group members.

Control variables include characteristics of the child, caregiver, and household that have been shown to influence parenting stress and practices (Abidin, 1992; Deater-Deckard, 2004; McLoyd, 1990). Four variables capture the child's characteristics: race and Hispanic origin, gender, age, and health status. The SEED OK research team followed the Vital Statistics protocol of the National Center for Health Statistics in creating the race and Hispanic origin variable from birth certificate data (Marks et al., 2008). Birth mother's and father's racial and ethnic identities in birth certificates were used to determine those of the SEED OK child. SEED OK children were assigned to four categories: Hispanic, White, African American, or American Indian. We categorized 19 Asian cases as White because the number of Asians in the sample is so small. Child's gender is a dichotomous variable (1 = *female*) created using birth certificate data. We generated the child's health status variable from the baseline survey data and measured it in two categories (1 = *good, very good, or excellent*; 0 = *poor or fair*). Child's age is a continuous variable that captures age at the time of the follow-up survey.

We included several variables that depict caregiver's characteristics: age, education, marital status, health, nativity, employment, parenting stress, and social supports. This study does not control for caregiver's gender because the sample includes only two fathers; all others are female. Caregiver's age is measured using three categories (*24 years or younger, 25 to 34 years old, or 35 years or older*), and the education variable has four (*less than high school degree, high school graduate [diploma or general equivalency diploma], some college, or bachelor's degree or more*). Marital status captures whether the caregiver was married at baseline. The study measured caregiver health in two categories (1 = *good, very good, or excellent*; 0 = *poor or fair*). The nativity variable distinguishes participants born in the United States or U.S. territorial areas from those born elsewhere. Employment status is a dichotomous variable that indicates whether a study participant was employed at the time of the baseline interview.

We constructed the baseline parenting stress scale in the same manner used to create the follow-up parenting stress scale (described above), based on responses collected at baseline to the same four parenting stress items. We assessed social support with a scale constructed from responses to four baseline survey questions that were adapted from Ceballo and McLoyd (2002). The questions asked participants (a) how often they talked to or visited with relatives, (b) how often they talked to or visited with close friends, (c) how easy it was to find someone to take care of their children, and (d) how easy it was to find someone to run errands for them. We created the social support scale by summing the responses to these four questions. Scores for this scale range between 0 and 16; higher scores indicate higher levels of social support ($\alpha = .82$). Social supports—emotional and instrumental supports from extended family members, friends, or neighbor—are estimated to improve parenting outcomes, including parenting stress and punishment (Ceballo & McLoyd, 2002; Duchovic, Gerkensmeyer, & Wu, 2009). All caregiver's characteristic variables were generated using the baseline survey data, except for the nativity variable, which came from the birth certificate data.

Finally, the baseline data enabled us to construct the household variables. Categorical variables capture household size (*two or three members, four members, or five or more members*) and the number of children (*only one child, two children, three or more children, or a missing value*). We generated a missing indicator for the number-of-children variable to prevent several cases ($n = 30$) from being excluded

from analyses. The household income variable indicates total household income before taxes and deductions for the 12 months prior to the baseline survey. To prevent exclusion of a sizeable portion of the sample ($n = 76$), this study includes an indicator of missing information for income; we assigned a value of 0 to the income variables for those whose household income information is missing.

Analytical approach

In estimating SEED OK's impacts on parenting stress and practices, we conducted simple difference-in-mean analyses that compare the mean outcome measures for the treatment and control groups. In addition, we ran regressions in consideration of the potential for sampling variability that may have occurred during random assignment of study participants into the treatment or control group. These regression analyses limit the influence of sampling variability on estimates of the intervention's impacts by controlling for observed treatment–control differences before the intervention (Orr, 1999). We employed ordinary least squares regressions because the dependent variables are continuous. We used logarithms of parenting-practice measures for regression analyses because the distributions of these six variables are skewed. The analysis model is expressed as follows:

$$Y_i = \beta_0 + \beta_1 * T_i + \beta_2 * \mathbf{X}_i + \epsilon_i, \quad (1)$$

where Y_i indicates the outcome measure (score from parenting stress scale or log of each parenting-practice measure at the follow-up survey) of caregiver i , T_i denotes the treatment status, \mathbf{X}_i is a vector of control variables, and ϵ_i indicates random error.

In this study, the coefficient for treatment status (β_1) is the parameter of interest: It shows treatment–control differences in the mean of an outcome measure observed at the follow-up survey. A statistically significant coefficient for treatment status would suggest that SEED OK affects the measured outcome. In addition, we ran four separate sets of regressions that assess whether SEED OK's treatment effects differ by race and Hispanic origin. In these analyses, we excluded Asians from the subsample of Whites.

We also ran supplementary regressions to check the robustness of our findings. First, we added two variables indicating changes in study participants' marital status between the baseline and follow-up surveys: from married to unmarried and from unmarried to married. We controlled for these variables because changes in marital status likely affect caregivers' parenting burdens and relationship with their children; these changes therefore likely influence parenting stress and parenting practices. A second model included scores from a scale that captures caregivers' depressive symptoms at the baseline survey, as the scores may predict subsequent parenting stress and practices (Conger et al., 2002). The third supplementary regression included only mothers in the analysis sample and excluded eight caregivers who are fathers, grandmothers, or sisters of the SEED OK child. We estimated the fourth model after removing 15 caregivers who resided outside of Oklahoma at the time of the follow-up survey. State-level differences in policy and living environments may affect caregivers. In addition, those who moved into other states after a child's birth may differ in unobserved ways from those who stayed in Oklahoma. The final supplementary model excluded 19 Asians from the analysis sample. As described above, our main analyses combined the small number of Asians with Whites. The supplemental analyses produced results that

are substantively identical to those reported in this paper. (Full results from these supplemental analyses are available from the authors.)

We used weighted data for all statistical analyses. The SEED OK research team created the weight variable to address oversampling of minority groups, nonresponse bias, and sample attrition at the follow-up survey (Marks et al., 2008; Schreiner, 2012).

Findings

Table 1 presents results from a comparison of the treatment and control groups at baseline. Except for one variable, the treatment and control groups were not significantly different from each other at the baseline interview. The one exception is the indicator for missing income: A significantly higher proportion of the treatment group (4.26%) had missing information for household income at the baseline survey than did the control group (2.37%). The difference in the proportions of missing income information is significant at the 0.05 level [$\chi^2(1) = 6.26; p = .02$]. We also compared the treatment and control groups by race and Hispanic origin. These results (not shown) indicated that the treatment and control groups differed significantly from each other on only a few variables. Among Whites, there was a significant treatment–control difference in the percentage of cases with missing income information [$\chi^2(1) = 3.54; p = .06$]. Among African Americans, average household income was significantly higher among treatment participants than their control counterparts [$F(1, 374) = 3.37; p = .07$]. Among American Indians, the average score from the social support scale was significantly lower for the treatment group than for the control group [$F(1, 424) = 2.85; p = .09$]. Among Hispanics, the treatment and control groups did not differ significantly on any variable (full results available from the authors). These results suggest that random assignment successfully created a treatment group equivalent to the control group in most observed characteristics. A few identified exceptions justify regressions to reduce the effects of sampling variability that occurred during the random assignment process.

Table 2 reports estimates of the relationships between treatment status and the outcome measures for parenting stress and practices. These represent associations at the time of the follow-up survey. The first two columns show results for the entire sample; the others present results by race and Hispanic origin. Results from the entire sample indicate that the treatment group did not differ significantly from the control group in terms of parenting stress or measured parenting practices. The one exception was the number of times caregivers screamed at the SEED OK child in the 3 days prior to the follow-up survey: Average frequency was significantly lower among the treatment group than the control (1.36 times vs. 1.61 times), and an adjusted Wald test shows that the difference is statistically significant [$F(1, 2224) = 2.98; p = .08$]. These results suggest that SEED OK may be effective in deterring this negative parenting practice. Analyses by race and Hispanic origin showed no significant differences between the treatment and control groups on any outcome measure. However, treatment–control differences were somewhat larger in certain analyses than in others. One difference was in the average number of times the caregiver praised the child over the 3 days prior to the survey: The treatment–control group differences were 1.64 for both the American Indians subsample (17.26 vs. 15.62) and the Hispanics subsample (13.39 vs. 11.75). A relatively large treatment–control difference (0.72) was also observed among American Indians in the average number of times a caregiver played with the child.

Table 1. Sample Characteristics by SEED OK Treatment Status (Weighted)

Variable	Control	Treatment	Total
Child's characteristics			
Race and ethnicity			
White, %	66.89	66.86	66.87
African American, %	8.89	9.03	8.96
American Indian, %	11.31	11.44	11.38
Hispanic, %	12.92	12.68	12.80
Female, %	47.52	46.47	46.99
Age, Mean years (LSE)	3.80 (0.01)	3.80 (0.01)	3.80 (0.01)
Good health, %	98.66	98.41	98.53
Caregiver's characteristics			
Age			
24 or younger, %	41.17	43.18	42.18
25–34, %	50.05	48.61	49.33
35 or older, %	8.77	8.21	8.49
Education			
Less than high school, %	21.29	20.56	20.92
High school graduate, %	33.53	32.71	33.12
Some college, %	25.44	25.38	25.41
Bachelor's or more, %	19.74	21.34	20.54
Married, %	63.56	62.55	63.06
Good health, %	93.30	93.70	93.50
U.S. native, %	90.93	91.05	90.99
Employed, %	50.88	50.94	50.91
Parenting stress at baseline, Mean (LSE)	1.75 (0.01)	1.74 (0.02)	1.74 (0.01)
Social support scale, Mean (LSE)	12.16 (0.10)	12.10 (0.10)	12.13 (0.07)
Household's characteristics			
Household size			
Two or three, %	33.36	31.39	32.38
Four, %	35.03	34.37	34.70
Five or more, %	31.60	34.24	32.92
Number of children			
One, %	34.64	34.57	33.11
Two, %	35.67	35.98	35.82
Three or more, %	28.72	30.79	29.75
Missing, %	0.97	1.66	1.32
Household income, Mean (LSE)	41,326 (1,819)	42,520 (1,947)	41,918 (1,331)
Household income missing, %*	2.37	4.26	3.32
Unweighted <i>n</i>	1,098	1,132	2,230

Note: SEED OK = SEED for Oklahoma Kids; LSE = linearized standard error; Unweighted *n* = Unweighted sample size. All results are weighted.

* The treatment–control difference is significant at the .05 level.

Table 2. Parenting Stress and Practices at Follow-Up by Treatment Status (Weighted Mean)

Outcome	Entire Sample		White		African American		American Indian		Hispanic	
	C	T	C	T	C	T	C	T	C	T
Parenting stress	1.82	1.80	1.81	1.80	1.82	1.82	1.78	1.74	1.89	1.85
LSE	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
(Unweighted <i>n</i>)	(1,098)	(1,131)	(512)	(544)	(199)	(189)	(211)	(214)	(170)	(171)
Played	8.72	8.91	8.49	8.55	8.15	8.32	8.57	9.29	10.54	10.67
LSE	0.31	0.31	0.40	0.39	0.64	0.74	0.71	0.77	1.02	1.03
(Unweighted <i>n</i>)	(1,090)	(1,121)	(509)	(540)	(197)	(186)	(211)	(212)	(168)	(170)
Praised	14.71	14.62	15.40	14.72	13.01	12.67	15.62	17.26	11.75	13.39
LSE	0.44	0.43	0.58	0.57	0.98	1.04	1.15	1.12	0.98	1.14
(Unweighted <i>n</i>)	(1,085)	(1,115)	(508)	(538)	(198)	(185)	(208)	(212)	(166)	(167)
Explained	9.72	9.39	9.97	9.35	8.51	7.97	10.41	9.98	8.93	9.45
LSE	0.35	0.37	0.46	0.49	0.82	0.79	0.88	0.82	0.96	0.94
(Unweighted <i>n</i>)	(1,092)	(1,128)	(509)	(543)	(197)	(188)	(210)	(214)	(170)	(170)
Punished	0.45	0.35	0.37	0.30	0.45	0.32	0.53	0.34	0.81	0.55
LSE	0.06	0.03	0.06	0.03	0.15	0.08	0.20	0.07	0.29	0.13
(Unweighted <i>n</i>)	(1,098)	(1,131)	(512)	(544)	(199)	(189)	(211)	(214)	(170)	(171)
Spanked	0.67	0.63	0.67	0.62	0.74	0.56	0.77	0.90	0.57	0.52
LSE	0.05	0.04	0.06	0.06	0.13	0.08	0.12	0.16	0.15	0.10
(Unweighted <i>n</i>)	(1,096)	(1,129)	(511)	(543)	(199)	(188)	(210)	(214)	(170)	(171)
Screamed	1.61	1.36 ⁺	1.53	1.31	1.79	1.72	1.46	1.22	2.00	1.55
LSE	0.11	0.09	0.15	0.12	0.24	0.21	0.25	0.17	0.31	0.24
(Unweighted <i>n</i>)	(1,096)	(1,129)	(512)	(543)	(210)	(214)	(210)	(214)	(170)	(171)

Note: SEED OK = SEED for Oklahoma Kids; C = control group; T = treatment group; LSE = linearized standard error; (Unweighted *n*) = Unweighted sample sizes. All parenting-practice indicators refer to reported behavior during the 3 days prior to the follow-up survey.

+ A difference between the treatment and control groups is significant at the .10 level.

Table 3 reports results from regression analyses with the entire sample, and the results for control variables were as we expected. Caregivers in good health experienced less severe levels of parenting stress than did their counterparts in poor health ($t = -2.68; p = .01$). Caregivers with higher levels of parenting stress at the baseline survey reported significantly higher levels of parenting stress at the follow-up survey ($t = 17.69; p = .00$). Parenting stress at the baseline survey was negatively associated with the frequency of playing with and praising the child ($t = -2.15; p = .03$; and $t = -3.28; p = .00$, respectively). However, it was positively associated with the frequency of punishing the child more severely than usual (due to bad parental mood; $t = 17.69; p = .00$), as well as with spanking the child and screaming at the child ($t = 3.93; p = .00$; $t = 4.39; p = .00$, respectively). Caregivers with higher levels of social support at baseline exhibited less severe levels of parenting stress and reported playing with the child more frequently ($t = -3.80; p = .00$; and $t = 2.24; p = .03$, respectively). Results for caregivers' education were somewhat unexpected: Highly educated caregivers experienced more severe levels of parenting stress (for some college, $t = 2.54; p = .01$; for bachelor's or more, $t = 3.43; p = .00$) and played with their child less frequently than did less educated caregivers (for high school graduates, $t = -1.78; p = .76$; for some college, $t = -2.16; p = .03$; for bachelor's or more, $t = -2.78; p = .01$). These results may be explained by differences in family-work conflicts: Individuals with higher education are likely to hold demanding jobs that require greater commitments of their time (Schieman, Whitestone, & Van Gundy, 2006). Such jobs potentially elevate parenting stress levels and minimize the time available to play with children.

Table 3. Regression Analysis Results: SEED OK Treatment on Parenting Stress and Practices (Weighted)

Independent Variables	Parenting Stress	Played	Praised	Explained	Punished	Spanked	Screamed
Treatment	-0.01 (0.02)	0.04 (0.04)	-0.01 (0.04)	-0.04 (0.05)	-0.01 (0.01)	-0.01 (0.02)	-0.06* (0.03)
Child's characteristics							
Race and ethnicity							
African American	-0.02 (0.02)	-0.06 (0.06)	-0.21** (0.06)	-0.24** (0.07)	0.02 (0.02)	-0.04 (0.03)	0.07 (0.05)
American Indian	-0.03 (0.02)	-0.04 (0.06)	0.02 (0.06)	-0.02 (0.06)	0.02 (0.02)	0.04 (0.03)	-0.02 (0.04)
Hispanic	-0.00 (0.03)	0.04 (0.08)	-0.20** (0.08)	-0.12 (0.08)	0.02 (0.03)	-0.03 (0.03)	0.09+ (0.05)
Gender (female)	-0.02 (0.02)	-0.07+ (0.04)	-0.02 (0.04)	-0.07 (0.05)	-0.03* (0.01)	-0.04* (0.02)	-0.11** (0.03)
Age	0.02 (0.04)	-0.01 (0.10)	0.02 (0.10)	-0.04 (0.11)	0.01 (0.03)	-0.10* (0.04)	-0.15* (0.07)
Good health	-0.07 (0.07)	0.23 (0.16)	-0.11 (0.20)	0.27 (0.22)	0.04 (0.04)	0.16** (0.03)	-0.03 (0.11)
Caregiver characteristics							
Age							
25–34	0.05* (0.02)	0.02 (0.05)	0.00 (0.05)	-0.00 (0.06)	0.02 (0.02)	-0.04 (0.03)	0.01 (0.04)
35 or older	0.04 (0.03)	0.04 (0.07)	-0.01 (0.09)	-0.23* (0.09)	-0.03 (0.03)	-0.04 (0.04)	0.02 (0.06)
Education							
High school	0.03 (0.02)	-0.12+ (0.07)	-0.06 (0.07)	-0.01 (0.07)	-0.02 (0.02)	-0.01 (0.03)	-0.01 (0.05)
Some college	0.07* (0.03)	-0.15* (0.07)	0.01 (0.07)	0.00 (0.08)	-0.02 (0.03)	0.01 (0.03)	0.01 (0.05)
Bachelor's or more	0.11** (0.03)	-0.23** (0.08)	-0.06 (0.09)	-0.02 (0.10)	0.01 (0.03)	-0.02 (0.04)	-0.06 (0.06)
Married	-0.03 (0.02)	0.03 (0.05)	0.04 (0.05)	0.06 (0.06)	0.01 (0.02)	-0.03 (0.03)	-0.03 (0.04)
Good health	-0.09** (0.04)	-0.02 (0.10)	0.02 (0.10)	-0.06 (0.09)	0.03 (0.03)	0.01 (0.04)	-0.04 (0.07)
U.S. native	-0.03 (0.03)	0.06 (0.10)	0.14 (0.09)	0.16 (0.10)	-0.09* (0.04)	0.06* (0.03)	0.12* (0.06)
Employed	0.01 (0.02)	-0.05 (0.04)	-0.05 (0.04)	-0.05 (0.05)	-0.01 (0.02)	-0.00 (0.02)	-0.01 (0.03)
Baseline parenting stress	0.41** (0.02)	-0.12* (0.06)	-0.20** (0.06)	0.09 (0.07)	0.10** (0.03)	0.12** (0.03)	0.19** (0.04)
Social support	-0.01** (0.00)	0.02* (0.01)	0.01 (0.01)	-0.00 (0.01)	0.00 (0.00)	0.01 (0.00)	-0.01+ (0.01)
Household characteristics							
Household size							
Four people	0.01 (0.03)	0.00 (0.07)	0.07 (0.07)	0.09 (0.08)	-0.01 (0.02)	0.04 (0.04)	0.01 (0.05)
Five or more	-0.01 (0.04)	0.02 (0.09)	0.00 (0.09)	0.09 (0.10)	0.01 (0.03)	0.04 (0.04)	-0.04 (0.06)
Number of children							
Two children	-0.02 (0.03)	-0.10 (0.07)	-0.08 (0.07)	-0.13+ (0.08)	-0.04+ (0.02)	-0.05 (0.03)	-0.05 (0.05)
Three or more	0.01 (0.04)	-0.16+ (0.09)	-0.03 (0.10)	-0.23* (0.10)	-0.06* (0.03)	-0.07 (0.04)	-0.03 (0.07)
Missing	-0.06 (0.07)	0.32+ (0.17)	0.31 (0.24)	-0.11 (0.24)	0.03 (0.10)	-0.10 (0.07)	0.04 (0.15)

Table 3 (continued)

Independent Variables	Parenting Stress	Played	Praised	Explained	Punished	Spanked	Screamed
Household income	0.01 (0.01)	0.01 (0.02)	0.04 ⁺ (0.02)	0.00 (0.02)	-0.00 (0.01)	-0.02 ⁺ (0.01)	-0.01 (0.01)
Income missing	0.08 (0.09)	0.31 (0.23)	0.48* (0.24)	0.08 (0.25)	-0.05 (0.07)	-0.14 (0.11)	-0.21 (0.15)
Constant	1.25** (0.18)	1.64** (0.47)	2.09** (0.49)	1.64** (0.51)	-0.06 (0.16)	0.28 (0.22)	0.92** (0.35)
R-squared	0.21	0.03	0.04	0.03	0.04	0.04	0.04
Unweighted <i>n</i>	2,229	2,211	2,200	2,220	2,229	2,225	2,225

Note: SEED OK = SEED for Oklahoma Kids; Unweighted *n* = Unweighted sample size; Played = played a game or did other fun things with the child; praised = praised the child for behaving well; explained = calmly explained to the child why his or her behavior was wrong; punished = punished the child more severely than usual because of bad parental mood; spanked = spanked the child; and screamed = screamed at the child. All parenting-practice indicators refer to reported behavior during the 3 days prior to the follow-up survey. Standard errors are in parentheses.

⁺ *p* < .10; * *p* < .05; ** *p* < .01.

As we indicated in the Methods section, this study focused on the effect of treatment status on parenting stress and practices. Table 3 shows that the treatment indicator coefficients are small and not statistically significant for all but one outcome measure. This suggests that the SEED OK treatment has had little effect on parenting stress and on most measured parenting practices. The sole exception is the result for the frequency of screaming: In regression analyses, the coefficient for the treatment indicator was significantly negative at the .05 level ($t = -1.98$; $p = .05$), indicating that treatment participants scream at their child 0.94 fewer times than control group participants do [$\exp(-0.06) = 0.94$]. These results imply that treatment group caregivers screamed at their children less frequently than did control group caregivers.

Table 4 presents results from regressions that analyze treatment–control differences in outcomes by race and Hispanic origin. We report only the estimates of the treatment indicator (full results are available from the authors). Most of these results were consistent with estimates for the entire analytic sample and showed that the treatment indicator was not significant. Among Whites, treatment status was significantly negative for the frequency of screaming at the child ($t = -1.65$; $p = .10$), suggesting that SEED OK reduced White caregivers’ risk for this outcome. Among the three minority groups, SEED OK had significant positive impacts on American Indians only; the treatment indicator was significantly positive at the .10 level for two parenting practices: the frequency of playing with the child ($t = 1.80$; $p = .07$) and the frequency of praising the child ($t = 1.75$; $p = .08$). American Indian caregivers in the treatment group played with their children 1.19 times [$\exp(0.17)$] more frequently than did those in the control group; the former praised their children 1.20 times [$\exp(0.18)$] more frequently than did the latter.

Discussion and Applications to Social Work

This study used data from the SEED OK experiment to examine the impact of an economic intervention on parenting stress and practices among caregivers of young children. The experiment tests the feasibility and effectiveness of using CDAs to promote saving for children’s future. It also evaluates the effects of CDAs on other outcome measures, such as caregivers’ perceptions (expectations for the child’s educational achievement), caregivers’ behaviors (parenting), and children’s developmental outcomes. The robust study design of the population-based randomized experiment enables us to test whether and how such an economic intervention is effective in improving parenting practices.

The early results from SEED OK provide weak evidence of CDAs’ impacts on parenting stress and practices among caregivers of young children. Both bivariate and regression analyses with the entire sample show that treatment–control differences are statistically significant for only one outcome measure: the frequency of screaming at the child. These results suggest that SEED OK does not affect parenting stress or practices but that the intervention is associated with less caregiver inclination to scream at their children.

Regression results presented by race and Hispanic origin also show that SEED OK does not significantly affect most measured outcomes. Among Whites, however, the treatment has a weak, but beneficial, effect on screaming. This similarity between results for the entire sample and those for the White participants may be explained by the fact that Whites constitute a majority of the SEED OK sample. Furthermore, SEED OK is estimated to have larger impacts on American Indians than on other minority groups. The results suggest that SEED OK was positively associated

Table 4. Weighted Regression Results on Treatment–Control Differences by Race and Hispanic Origin

Outcome	White	African American	American Indian	Hispanic
Parenting stress	-0.01 (0.02)	-0.02 (0.04)	-0.05 (0.04)	-0.01(0.04)
Sample size	1,056	388	425	341
Played	0.03 (0.05)	-0.03 (0.09)	0.17+ (0.09)	-0.00 (0.11)
Sample size	1,049	383	423	338
Praised	-0.06 (0.05)	-0.07 (0.10)	0.18+ (0.10)	0.07 (0.11)
Sample size	1,046	383	420	333
Explained	-0.09 (0.06)	-0.072 (0.11)	-0.05 (0.10)	0.13 (0.11)
Sample size	1,052	385	424	340
Punished	-0.01 (0.02)	-0.01 (0.04)	0.00 (0.04)	-0.01 (0.05)
Sample size	1,056	388	425	341
Spanked	-0.01 (0.03)	-0.03 (0.05)	0.01 (0.05)	0.02 (0.04)
Sample size	1,054	387	424	341
Screamed	-0.07+ (0.04)	-0.01 (0.07)	-0.02 (0.06)	-0.08 (0.07)
Sample size	1,055	386	424	341

Note. SEED OK = SEED for Oklahoma Kids; Unweighted *n* = Unweighted sample size. Standard errors are in parentheses. All parenting-practice indicators refer to reported behavior during the 3 days prior to the follow-up survey.

+ *p* < .10.

with American Indian caregivers’ frequencies of playing with and praising their children: American Indians in the treatment group practiced these positive parenting behaviors about 1.2 times more often than did American Indians in the control group. We are not able to explain why SEED OK appears to increase positive parenting practices among American Indians but not among other minority groups.

Overall, SEED OK’s treatment had little impact on most indicators of parenting stress and practices; however, the treatment showed positive impacts on a few parenting-practice indicators, most notably the impacts on practices among American Indian caregivers. Furthermore, the size of this treatment effect is not trivial. These results and the absence of harmful, statistically significant effects on any outcome suggest that it is not wise to disregard asset-based economic interventions as a way to improve parenting practices. We do not want to overstate the meaning of these results, but they are suggestive.

This study has some limitations. First, it examines the effects of SEED OK only in early childhood. The follow-up survey occurred when SEED OK children were about four years old, approximately three years after the intervention began. A 3-year period may be too short for an assessment of the economic intervention’s effects on behavioral changes. Second, this study relies on caregivers’ own reports concerning parenting practices. Accordingly, parenting practices reported here might be inaccurate because caregivers may not be aware of or remember their actions. It is also plausible that caregivers may overreport positive parenting practices and underreport negative ones.

The findings have several implications. They provide weak and suggestive evidence that CDAs may have positive impacts on parenting practices; those findings call for further study of the long-term effects of CDAs. It should be noted again that SEED OK has provided no direct intervention on parenting practices. That is to say, SEED OK offers only financial incentives and information

related to savings for children's future; it does not include any program component related to parenting (e.g., parenting education). Accordingly, it may take longer to demonstrate SEED OK's impacts on parenting than to show the effects of interventions that target parenting directly. An approach that combines CDAs with parenting education may provide a way to achieve optimal long-term development outcomes for children. For example, CDAs may be an efficient mechanism for delivering parenting education: A short brochure could be mailed along with a regular CDA statement to provide age-appropriate information on child development and suitable parenting strategies; offering additional savings incentives to those who attend parenting training may be another option. Although current results reveal only modest impacts on parenting practices, the pattern of effects is in the hypothesized direction and is worth watching. Future results may provide information useful in designing interventions and evaluations.

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