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ORIGINAL PAPER

The Role of Children's Savings Accounts in Promoting Savings for College Among Welfare Recipients: The Case of Harold Alfond College Challenge (HACC)

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Abstract
Research indicates that welfare receipt is an important predictor of household savings towards offspring's postsecondary education. Meanwhile, a growing body of literature suggests that Children's Savings Accounts (CSAs) are effective in promoting the saving rate of American households. In this study, we first examine whether there is a negative association between welfare receipt and saving for college and then test if participation in the Harold Alfond College Challenge (HACC) mitigates the negative association. As hypothesized, the predicted conditional probability of saving for college among welfare beneficiaries is 0.02 lower than non-welfare beneficiaries, regardless of their HACC account ownership. Welfare recipients who enroll in the HACC program are about 27% more likely to save for college than those who are not enrolled in the program. Research and policy implications are discussed.

Keywords HACC · Children's Savings Account · Welfare beneficiary · College education

Introduction

College attendance has long been considered a vehicle for upward economic mobility in the United States**.** In 2016, the median earnings of young adults with a bachelor's degree was 62% higher than those of young adults with high school diplomas (National Center for Education Statistics, 2018). However, for many, access to college remains tenuous, as the cost of higher education has continued to rise. Adjusted for inflation and family income growth, tuition prices in the United States have steadily increased for the past four decades (Advisory Committee on Student Financial Assistance, 2010; Ma et al., 2019, 2020; Webber, 2018). Despite massive public investments in financial aid, the current high price of a college education renders it unaffordable for many middle- to low-income families. While student loans make college more accessible, the detrimental impact of student loans on students' college experience and students' transition to adulthood help to propitiate inequality (Houle & Warner, 2017; Lewis & Elliott, 2015).

Even with access to student loans, in 2018, income and savings from parents and the student accounted for nearly half of college costs (47%) with nearly three-quarters of those funds paid by parents. Parents' income plays an oversized role, with more than half of funding coming from parents' income (Sallie Mae, 2018). Nonetheless, about two-fifths of college funding comes from a variety of savings sources (Sallie Mae, 2018). Therefore, families who have not saved and who have limited income at the time college comes around may be at a disadvantage, and households receiving public assistance may face a particularly steep climb. For instance, research consistently shows that poor families struggle to save for college (McKernan et al., 2010; O'Brien, 2008). More than half of parents who have not begun saving for college cite lack of money as their rationale for why they have not started to save (Sallie Mae, 2018).

Not surprisingly, given that low income families have very little discretionary money, savings rates among poor households are much lower than among high or middle-income households even after controlling for income (Ziliak, 2003). Lack of connections to financial institutions and assets place children from low-income households in a disadvantaged position from the outset compared to higher

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income families who are more likely to have relationships with banks, access to other institutional structures that support savings, and the accumulation of assets(Beverly & M. Sherraden, 1999; M. Sherraden, 1991).

Families receiving welfare benefits are placed at a particular disadvantage when it comes to saving for their child to attend college, not only because of a lack of income, but because of asset limits placed on receiving benefits. Asset limits place restrictions on the amount of assets a family can accumulate while remaining eligible to receive benefits (Clancy & Beverly, 2017). They often differ based on federal and state laws, however, most states set them at or below $3000 (Gehr, 2018). As such, asset limits act as a real structural impediment to saving for college for families receiving welfare benefits.

In line with the idea that asset limits place a structural barrier to saving, research shows that families that receive public assistance benefits are less likely to save (Zhan et al., 2004). But despite their lack of saving, the response of welfare recipients to savings incentives is not different from that of people who are not on welfare, after controlling for income, assets, debts, and a wide range of other characteristics (Zhan et al., 2004). Therefore, welfare recipiency itself does not appear to be linked to saving performance in the absence of asset limits. By depressing wealth holdings, asset limits may impair a household's ability to save to finance their children's future education.

In contrast to asset limited welfare programs, Children's Savings Account (CSA) programs provide families with an institutional structure that promotes rather than discourages saving for college. They promote saving by providing an initial "seed" (anywhere from $5 to $1000) deposits that helps families overcome initial deposit requirements for opening an account. These programs also frequently provide match deposits (often at 1:1 or 5:1 rate) that augment what they can save on their own. CSAs also sometimes provide progressive subsidies for low-and moderate-income children. These programs are often supported through a public–private partnership and have been implemented in several states (see Quezada et al., 2019). CSAs have been proposed at the federal level, prominently through the America Saving for Personal Investment, Retirement, and Education Act (Cramer et al., 2014).

Previous studies have examined the effects of CSAs on many nonfinancial outcomes. Early evidence from the SEED for Oklahoma Kids (SEED OK) CSA program indicates that the CSA has a positive impact on mothers' expectations for their children's education (Kim et al., 2015). Another study analyzing the SEED OK program found that, after about 3.5 years, participation in the SEED OK has significantly reduced depressive symptoms among mothers (Huang et al., 2014a). Positive changes in parental attitudes may improve parent–child interaction and thereby influence child development. Further studies demonstrate that the CDA in SEED OK has positive effects on the social–emotional development of children at about 4 years of age, and the effects are more powerful for children in several disadvantaged groups (Huang et al., 2014b).

While research shows that families who receive public assistance benefits are less likely to save, the response of welfare recipients to savings incentives is not different from that of people who are not on welfare, after controlling for income, assets, debts, and a wide range of other characteristics (Zhan et al., 2004). Therefore, college savings policies such as Children's Savings Accounts may be promising interventions for households across the income spectrum. However, no study has examined whether participating in a CSA program moderates (i.e., reduces) the negative association between receiving welfare and saving for college. To better understand the relationship between receiving welfare benefits, possessing assets, and saving for college, this study examines the association between households receiving welfare benefits and saving for college, and whether this association is moderated by the presence of CSAs.

Review of Research

Research indicates that asset limits may provide a disincentive to families to save (Nam, 2008). However, researchers suggest that eliminating asset limits is associated with a reduction in the time families spend on public assistance (Sprague & Black, 2012) and to families being more likely to have a bank account and to save (Nam, 2008; Ratcliffe et al., 2016). Further, some studies find that CSAs may provide their own type of disincentive. According to (Leonard & Di, 2014), participants in CSA programs are at risk of losing access to public assistance because of fear that the amount a family saves in their CSAs may exceed financial aid asset limits on the Free Application for Federal Student Aid (FAFSA). The FAFSA requires families to report assets owned by the parent and child, and colleges require them to use up to 20% of a child's own assets to help pay for college and 5.64% of the parents' assets, including money held in a state 529 account. Such policies may act as a disincentive to families saving in their CSA.

Research on Savings Behaviors of Welfare Recipients

There are not a lot of studies that examine savings behaviors of welfare recipients. Maybe it is just assumed that these families cannot save (M. Sherraden, 1991). Among those that do, they suggest that receipt of means-tested welfare has a negative association with saving behaviors. For example, O'Brien (2008) used qualitative data collected from a portion of families participating in the Temporary

Assistance for Needy Families (TANF) program to examine the relationship between welfare receipt and saving behavior. O'Brien (2008)found that the existence of asset limits, or the perception that they exist, was negatively associated with the saving behavior of TANF recipients.

Another study examined whether increasing or eliminating asset limits encourages families to build assets. In this article, Nam (2008) posits that researchers will not be able to detect impacts until after some time has passed from when asset limits are increased and when people begin to change their behavior and start to build assets. The researcher finds the earlier states raised asset limits, the more likely welfare recipients were to accumulate assets. While this study did not examine policies that liberalize asset limits, it provided evidence that asset limits can be a barrier to families receiving welfare saving. McKernan et al. (2010) investigated the effects of welfare, food stamps, and Individual Development Accounts (IDA) on asset accumulation among low-education families. The authors used household-level data (1990–2001) from the Survey of Income and Program Participation (SIPP). They found that more liberal asset limits were associated with higher liquid asset holdings for low-education families and low-education single-mother families. Additionally, they found that expanded categorical eligibility among low-education families in TANF was associated with higher net worth.

These first two studies did not use data from CSA program participants. In contrast, Huang et al. (2019a) used data from the SEED for Oklahoma Kids (OK) randomized-control experiment, a CSA program. They found the average total assets held by TANF recipients in the treatment group exceeded the average total assets held by families for children in the control group by nearly $1500 after seven years of operation of the program.

Association Between Asset-Building Programs and Saving

Currently, little research exists that examines whether CSAs can be a strategy for families overcoming structural disincentives for saving for college. In this section, four are reviewed. While not exhaustive, these studies provide us with insight into the effect asset-building programs may have on saving for college (Clancy et al., 2016; Elliott et al., 2017; Nam et al., 2013). Using data from SEED OK, Clancy et al. (2016) observed the effect of participating in a CSA program administered through a 529 account on savings for college. They found that treatment group participants had on average six times more assets than did participants in the control group. Nam et al. (2013), also using data from SEED OK, found evidence that the treatment group saved larger amounts in their accounts than the control group. Using data from one of the oldest CSA programs in the country, San Francisco' Kindergarten-to-College, Elliott et al. (2017) found that 15% of all CSAs had at least one contribution during the year the account was opened and students from higher-poverty schools were less likely to have a contribution than those from lower-poverty schools. Using data from the Harold Alfond College Challenge (HACC) from 2008 to 2013, O'Brien et al. (2017) found that approximately 40% of HACC recipients who opted into the program had made at least one family contribution to their account.

The studies in this section do not investigate whether CSA programs are associated with families receiving public assistance being more likely to save for college than their counterparts not in a CSA program. Further, these studies are primarily descriptive studies that do not control for factors that might help us better explain savings behaviors among families receiving welfare benefits that are participating in a CSA program. In the next section of this paper, we provide a rationale for why CSA programs might be associated with improved savings accounts among families receiving welfare benefits.

Theory

Psychological, sociological, behavioral, and neoclassical economic theories have been proffered in the literature to explain why families do not save. Psychological and sociological theories consider personality characteristics, personal goals, and social group influence as determinants of saving (Gutter et al., 2008). Behavioral economic theories have named several common human characteristics that shape financial behavior, including level of self-control, cognitive ability, or tendency to consider financial advice or use mental accounting techniques (Beverly et al., 2008; Maital & Maital, 1994; Thaler, 1985; Tversky & Kahneman, 1986). Neoclassical economic models take the behavioral economic theory traits for granted and also assume that individuals are rational beings who respond in predictable ways to changes in incentives (e.g., Fisher, 1930). Each of these theories emphasize individual deficiencies and assume that individuals have equitable knowledge and access to perfect markets.

Although neoclassical savings theories emphasize the importance of income in predicting savings and asset accumulation, other research, including much from the field of asset building for low-income Americans, has found income less determinant of these outcomes (Curley et al., 2005). In his 1991 book *Assets and the Poor*, Michael Sherraden theorized that ownership of assets is integral to long-term social development. Institutional theory posits that structural failures make it difficult for low SES families to provide their children with the connections within and between financial institutions they need to be able to save and accumulate assets. A primary feature of institutional theory is that the

act of saving is not purely an individual act determined solely by human capital or even social background, but it also requires access to the capabilities financial institutions provide (M. Sherraden, 1991).

Savings outcomes are only one of the benchmarks by which CSA success should be measured. One theory of change animating the CSA field incorporates savings objectives as goods in themselves and as catalysts of other positive outcomes (Lewis et al., 2017). One of the institutional barriers that negatively influences savings performance—lack of access to and knowledge about mainstream financial institutions—may prove amenable by features of or manipulation of CSA's design (Lusardi, 2008). National data suggest that many CSA account holders would be unlikely to engage in college saving absent a CSA intervention; however, having a savings account and receiving regular account statements provide a connection to mainstream financial institutions (Friedline et al., 2014). Participation in CSA programs also provides opportunities to learn basic financial concepts and the skills that may help participants navigate the often-complex rules of account ownership and available incentives (Nam et al., 2018).

The previous literature has documented that, with the institutional support and financial incentives gained from CSA programs, participants may accumulate more assets than they would by saving in basic savings accounts. One previous study documented the impact of CSA ownership on asset accumulation among public assistance recipients participating in the SEED Oklahoma CDA and found that, seven years after program implementation, the average total assets held by these low-income treatment families for their children exceeded the average total assets held for control beneficiaries by nearly $1,500 (Huang et al., 2019b). Earlier studies used qualitative data collected from a fraction of program participants to explore the relationship between receiving welfare benefits and saving behaviors in general (O'Brien, 2008) but not on college saving patterns in particular. Another previous study looked at the reception of CSAs as a moderator for the savings of public aid recipients, but only used TANF and Head Start program recipients (Huang et al., 2019a). This study seeks to refine the understanding of the effects of CSAs by using seven mainstream means-tested welfare programs to examine the relationship between CSA reception and college patterns for welfare benefit recipients.

Program Description: Harold Alfond College Challenge (HACC)

In 2008 Harold Alfond College Challenge (HACC) Children's Saving Account Program began as a pilot program in two hospitals in the state of Maine, and in 2009 it was offered to all newborns in Maine. Each year since 2009, HACC has offered a $500 grant to Maine resident who have a newborn. The first five years of the program employed opt-in enrollment, where families that received the HACC award had to open a NextGen 529 account (name of Maine's 529 plan) by the child's first birthday. Savings made by account holders were matched at a rate of 50 cents on the dollar, with a maximum annual match of $300. Account holders who set up automatic deposit were awarded an additional $100 (more information on the HACC program can be found in Lewis & Elliott, 2015). Money saved in NextGen accounts could be used for educational purposes that included qualified expenditure at eligible in-state and out-of-state colleges, community colleges, and vocational schools (Huang et al., 2013).

In 2014, HACC shifted from opt-in enrollment, under which families had to sign up for the $500 HACC grant, to opt-out enrollment, under which all families were automatically enrolled at the birth of a child. The shift to automatic enrollment was made retroactively to include all Maine children who were born on or after January 1, 2013 (Clancy & M. Sherraden, 2014). The shift in the enrollment mechanism of HACC reflected the consensus in the CSA field that automatic enrollment was the most effective in achieving inclusiveness (M. S. Sherraden et al., 2015, 2018).

The current study focuses on parents of babies who have a CSA account regardless of the phase of enrollment. We test the relationship between program participation, welfare receipt, and household savings for college to determine the association between receiving benefits and holding assets for college. As such, our first research question is whether receiving welfare benefits has a negative association with saving for college and the second question is whether enrolling in the CSA moderates the association between welfare receipt and saving for college.

Methods

Data for this study are from a 2019 survey of parents of children born in Maine between 2008 and 2017. Surveying was conducted by Pan Atlantic Research, a major consulting firm headquartered in Maine with experience in regional and national education-related public policy issues and other market research. Using a targeted online panel combined with cell-phone lists, a random sample of qualifying parents was contacted and screened for inclusion criteria: a parent or guardian or other adult responsible for making decisions for at least one child born in Maine between 2008 and 2017. In households with multiple eligible children, the child with the most recent birthday was selected as the focal child.

A total of 770 surveys ($n = 117$ online; 653 telephone) with eligible parents were completed. This sample included

children born during the original opt-in time frame as well as the automatic enrollment (or opt-out) time frame. In the current study, we focused only on the ownership of the HACC account, regardless of the enrollment phase when people were enrolled in the program, which allowed us to take advantage of the natural comparison group of non-participating families. Due to missing information, the final sample was $N = 744$. The sample was not weighted for comparison purposes.

Sample

The analytic sample for this study included 744 parents of children born between 2008 and 2017. In the 2018 Census report, the population in Maine consisted of 95% white and 41% married individuals. In addition, 30% of Maine residents had a 4-year college degree or higher, and the median household income of Maine residents was $53,024 (U.S. Census Bureau, 2018). The sample for this study was more concentrated among college-educated, married individuals. Table 1 presented descriptive statistics of the sample. The sample consisted of mostly white (99%), married (79%) parents with at least a 4-year bachelor's degree or higher (60%). Over half (59%) of the children were female, and slightly more than half (52%) of households made more than $55,000 in 2018—which was considered high-income. About half (48%) of the households received at least one type of welfare income in the past twelve months.

Table 1 Descriptive statistics of study sample (N = 744)

	Count (%)
Marital status	
Married	609 (79)
Not married	161 (21)
Parental expectation	
4-year college or above	608 (79)
Lower than 4-year college	162 (21)
Parent education	
Bachelor's degree or above	430 (61)
Less than bachelor's degree	270 (39)
Child health	
Good or better health	744 (97)
Fair or worse health	26 (3)
Child gender	
Female	452 (59)
Male	318 (41)
Child academic performance	
Above average	576 (75)
Average or worse	194 (25)
Alfond grant	
Have an Alfond Grant	541 (73)
Do not have an Alfond Grant	203 (27)
Receiving welfare income	
Yes	370 (48)
No	400 (52)
Saving for college	
Yes	577 (75)
No	193 (25)

Number of missing not included in the calculation of number or percent. Percentages are rounded off to the nearest integer

Survey Instrument

The survey consisted of 63 items and included questions about eligibility requirements, academic performance of children, household finances, children's health and education backgrounds, college savings and child saving accounts, college affordability, family relationship, and socio-demographic information. Items were developed by the study authors in combination with existing scales from previous studies in the education and CSA fields (e.g. Kim et al., 2017). The average survey duration was 16 min.

Measures

Outcome Variables

Saving for college was estimated by asking parents, *"Is your family (parents, spouse or partner, grandparents, guardians, aunts, and uncles) currently saving for child's future education, after high school?"* A dichotomous variable was constructed where 0 indicated not currently saving for future education and 1 indicated currently saving for future education. This was a self-reported measure.

Covariates

In the probit model, seven control variables were included in the analysis, including the HACC account, the child's gender, child's health, parents' perception of child's school performance, parents' marital status, parental educational expectations, and the level of parents' education.

A child's gender was coded 0 if male, 1 if female.

A child's health was estimated by asking parents, "*In general this child's heath is …*" Options were "*Excellent, Very good, Good, Fair, and Poor*." A dichotomous variable was constructed where 0 indicated fair or worse in terms of a child's health and 1 indicated good or better health.

A child's school performance was estimated by asking, "*Last school year, how would you describe this child's*

GPA (or overall school performance)?" Options were *"Very poor, Below average, Average, Above average, and Excellent."* A dichotomous variable was constructed where 0 indicated average or worse school performance and 1 indicated above average school performance.

Parents' marital status was coded 0 if the respondent reported not married, 1 if married.

Parental college expectations for each child were measured by asking, "*As things stand now, how far in school do you think the child will actually get?*" College expectations were coded into a dichotomous variable where 0 = Less than 4-year college and 1 = 4-year college or above.

Parental education was coded 0 if the respondent reported less than a bachelor's degree and 1 if they reported a bachelor's degree or above.

Welfare Beneficiary

Welfare beneficiary was estimated by the question, "*In the past 12 months, has your family received benefits from any of the following programs*?" Options were *"Did not receive welfare benefits, Received Temporary Assistance for Needy Families (TANF), Received State welfare program, Received Women, Infants, and Children (WIC), Received Food stamps or Supplemental Nutrition Assistance Program (SNAP), Received Medicaid or State Medicaid program, Received Child Health Insurance Program (CHIP) or State CHIP,* and *Received Sect. 8 Housing Assistance*." Welfare beneficiary was then coded into a dichotomous variable where 0 = Did not receive benefits any of the programs and 1 = Received benefits from at least one type of the programs if respondents reported receiving benefits from any of the listed programs.

Hypothesized Moderator: The HACC Account

The HACC account-owners group consisted of participants who received the HACC during the opt-in policy period (2008—2012) and the automatic enrollment period (since 2013). The non-account-owners group consisted of participants who did not apply for the HACC during the opt-in policy period. A dichotomous variable was constructed where 0 = Do not have a HACC account and 1 = Have an HACC account.

Analytic Strategy

The following hypotheses were tested in this study:

H_1 Being a welfare beneficiary in the past twelve months was associated with lower probabilities that families would save for college.

H_2 For welfare beneficiaries, participation in the HACC was associated with higher probabilities of saving for college.

Probit analysis was used to examine the statistical significance of welfare beneficiary status, the HACC, and other demographic variables on family savings behavior related to children's education. The model was evaluated using probit regression with the STATA computer program (StataCorp, 2017). Postestimation command *margins* was used to retrieve the predicted probabilities of saving for college. The probit model was as follows:

$$\Pr(Y_i) = \Phi(\beta_0 + \beta_1 * W_i + \beta_2 * AG_i + \beta_3 * (W_i * AG_i) + \beta_i * X_i) \quad (1)$$

where $\Pr(Y_i)$ indicated the probability of saving for children's education; W_i indicated family welfare beneficiary status; AG_i denoted family HACC ownership status; $W_i * AG_i$ was the interaction term between welfare beneficiary status and HACC ownership status; and X_i was a vector of covariates.

In Eq. (1), the coefficients of the welfare beneficiary indicator (β_1) and the interaction term between β_1 and β_2 (β_3) were the parameters of interest. The inverse normal transformation of β_1 indicated the difference in the probability of saving for education between those who received welfare benefits and those who did not, while that of β_3 indicated difference in the probability of saving for education among those who received welfare benefits alone, those who received welfare benefits and the HACC account, those who did not receive welfare benefits but received the HACC account, and those who received neither.

A moderator was a variable that changed the strength or direction of an effect between an independent variable and a dependent variable (MacKinnon, 2011). In the current study, we hypothesized the HACC account to be a moderator of the effect of households receiving welfare benefits on saving for children's future education. A test of moderation by the HACC account was examined using the chi^2 test for each marginal probability.

Listwise deletion was adopted to handle missing information for this analysis because Little's MCAR test revealed that the missing pattern is missing completely at random (MCAR) (Little, 1988). No imputation was performed on missing data.

Results

Descriptive Statistics

Tables 1 and 2 presents demographic and socioeconomic characteristics of the Maine HACC sample by families saving for college. The descriptive statistics indicate that fewer welfare recipients saved for college than those who did not

Table 2 Saving for college by model variables (N = 744)

	Saving for college		T-test[1]
	Yes (%)	No (%)	
Marital status			
Married	465 (60)	144 (19)	− 1.77*
Not married	112 (15)	49 (6)	
Parental expectation			
4-Year college or above	467 (61)	141 (18)	− 2.33*
Lower than 4-year college	110 (14)	52 (7)	
Parent education			
Bachelor's degree or above	334 (48)	96 (14)	0.65
Less than bachelor's degree	204 (29)	66 (9)	
Child health			
Good or better health	556 (72)	188 (24)	0.70
Fair or worse health	21 (3)	5 (1)	
Child gender			
Female	343 (45)	109 (14)	− 0.72
Male	234 (30)	84 (11)	
Child GPA			
Above average	441 (57)	135 (18)	− 1.80*
Average or worse	136 (18)	58 (8)	
Alfond grant			
Have an Alfond Grant	421 (57)	120 (16)	− 2.78**
Do not have an Alfond Grant	138 (19)	65 (9)	
Receiving welfare income			
Yes	269 (35)	101 (13)	1.37
No	308 (40)	92 (12)	

Number of missing not included in the calculation of number or percent. Percentages are rounded off to the nearest integer

[1] $H_a : E\left[\text{Save for college}|X_i = 0\right] - E\left[\text{Save for college}|X_i = 1\right] < 0$

*p < .05, **p < .01, ***p < .001

receive any type of welfare benefit in the past twelve months. About 35% of the sample received at least one type of welfare benefit and were saving for college, while 13% received welfare benefits and were not saving for college. In contrast, 40% of the sample did not receive welfare benefits and were saving for college. Also, more HACC account owners saved for college than those who did not have a HACC account. More than half (57%) of the sample had a HACC account and were saving for college, while less than 20% did not have a HACC account and were saving for college.

Probit Results

Table 3 presents results from the probit regression regarding family savings behavior for children's college education.[1] As hypothesized, results showed that receiving welfare benefits in the past twelve months was negatively associated ($\beta_1 = -0.40$, $p < 0.05$) with families saving for their children's college education. The predicted probability of welfare recipients saving for college was 0.76, while it was 0.78 for those who did not receive any type of welfare benefits. The difference in probabilities of saving for college between those who received welfare benefits and those who did not was statistically significant ($\chi^2 = 3.98$, $p < 0.05$). Therefore, families who received at least one type of welfare benefit in the past twelve months were predicted to be less likely to save for college than those who did not receive any welfare benefits.

Although no significant association was detected between the HACC account and families saving for college, the interaction term of receiving welfare benefits and having a HACC account was positively associated with saving for college ($\beta_3 = 0.48$, $p < 0.05$). Log-likelihood Ratio (LR) test was conducted to validate the significance of the interaction term. The results of LR test indicated that the interaction term was statistically significant (LR $\chi^2 = 4.02$, $p < 0.05$). Specifically, among welfare recipients, the predicted probability of saving for children's future education for those who had a HACC account was 0.80, while it was 0.63 for welfare recipients who did not have a HACC account. The difference in probabilities of saving for college between those who had a HACC account and those who did not was statistically significant ($\chi^2 = 4.08$, $p < 0.05$). Thus, given that people received welfare benefits, those who had a HACC account were predicted to be more likely to save for college than those who did not.

The goodness of fit test for the probit model suggested that the current model was better than the null model (Pearson $\chi^2 = 116.63$, $p > 0.05$). Since the goodness of fit test indicated that the 676 complete observations had 124

[1] A robustness check was performed including assets (coded as a dummy variable according to the probability distribution, 0 = Less than $55,000, 1 = > = $55,000). The sample size for the robustness check was reduced to 343, compared to it was 744 for the original model. Covariates were retained to best replicate the specification of the original model except for children's health because of the skewed probability distribution. Associations between saving for college and welfare receipt, CSA, and the interaction term was not significant. Nonetheless, the model of the robustness check was **not statistically significant than a null model**, which kept us from drawing much useful information from this check. Because of the decreased sample size, different specification of the model, and the insignificant overall model fit, the robustness check provides limited information, which are less likely to be reliable.

Table 3 Probit regression results (N = 744)

	Probit coefficients	S. E	95% confidence interval		Predicted probabilities
			Lower	Upper	
Welfare beneficiary					
Did not receive any welfare benefit	–	–	–	–	0.78
Received at least one type of welfare benefits	− 0.40*	0.20	− 0.79	− 0.01	0.76
Alfond Grant					
Do not have an Alfond Grant	–	–	–	–	0.70
Have an Alfond Grant	0.06	0.16	− 0.26	0.37	0.79
Welfare beneficiary × Alfond Grant					
Did not receive any welfare benefit × no Alfond Grant	–	–	–	–	0.76
Did not receive any welfare benefit × have an Alfond Grant	–	–	–	–	0.78
At least one type of welfare benefits × no Alfond Grant	–	–	–	–	0.63
At least one type of welfare benefits × have an Alfond Grant	0.48*	0.24	0.01	0.94	0.80
Child gender					
Male	–	–	–	–	0.77
Female	− 0.02	0.11	− 0.23	0.20	0.77
Child GPA					
Average or worse	–	–	–	–	0.73
Above average	0.15	0.12	− 0.09	0.39	0.78
Child health					
Fair or worse health	–	–	–	–	0.80
Good or better health	− 0.14	0.12	− 0.89	0.39	0.77
Parent education					
Less than bachelor's degree	–	–	–	–	0.77
Bachelor's degree or above	− 0.01	0.30	− 0.23	0.20	0.77
Parental expectation					
Lower than 4-year college	–	–	–	–	0.75
4-Year college or above	0.07	0.11	− 0.19	0.33	0.77
Marital status					
Not married	–	–	–	–	0.72
Married	0.19	0.13	− 0.06	0.45	0.78

*p < .05, **p < .01, ***p < .001

Table 4 Moderation test results

	Welfare Beneficiary Alone	Welfare Beneficiary and Alfond Grant owner	Welfare Beneficiary and non-Alfond-Grant-owner
Welfare beneficiary alone			
Welfare beneficiary and Alfond Grant owner	3.98*		
Welfare beneficiary and non-Alfond-Grant-owner	4.39*	4.08*	

*p < .05, **p < .01, ***p < .001

different covariate patterns, we conducted the Hosmer–Lemeshow test to further examine the model fit (Hosmer Jr et al., 2013). The results also suggested that there was no evidence of lack of fit (Hosmer–Lemeshow $\chi^2_{(8)} = 10.9$, $p > 0.05$).

Moderation by the HACC Account

As shown in Table 4, Wald tests were performed to compare probabilities of saving for children's future education for the following groups: (A) received only welfare benefits, (B)

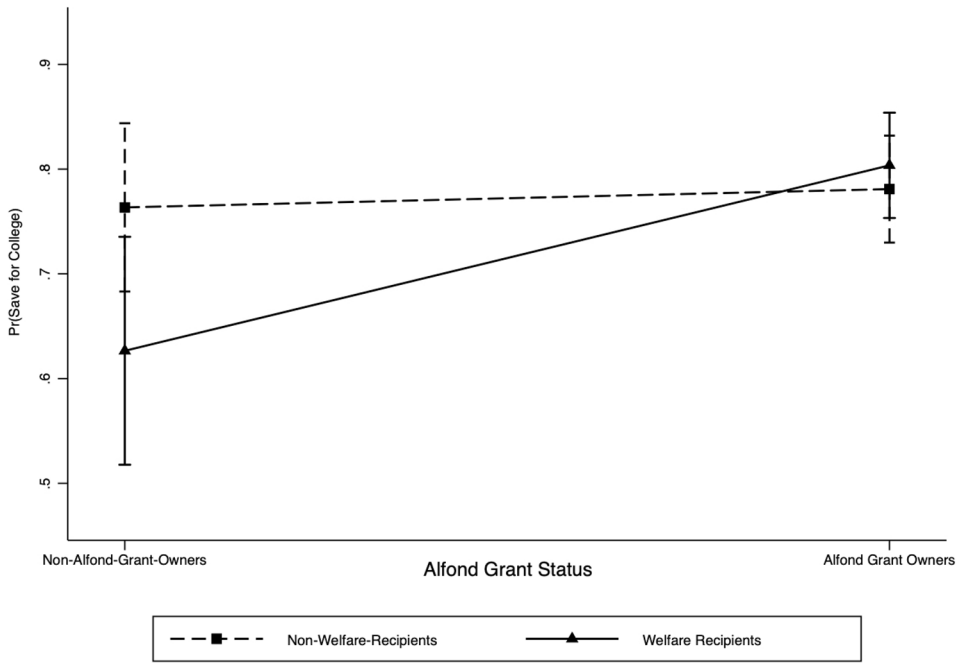

Fig. 1 Save for college by welfare beneficiary × the Alfond Grant

received welfare benefits but did not have a HACC account, and (C) received welfare benefits and had a HACC account. Groups A and B were different in terms of predicted probabilities in the model because the predicted probabilities for Group A were estimated when holding covariates constant, while Group B probabilities were estimated by taking the HACC account into account. In other words, probabilities of Group A and Group B were estimated based on different conditions.

Results of the Wald test revealed that the HACC account had a moderation effect on the association between welfare receipt and saving for college (solid black line in Fig. 1). Group C had a statistically significantly higher predicted probability of saving for college than Group B, which suggested that welfare beneficiaries who had a HACC account were predicted to be more likely to save for college than those who did not have a HACC account ($\chi^2 = 3.98$, $p < 0.05$). That is, having a HACC account mitigated the negative association between receiving welfare benefits and saving for college roughly by 27% ((0.80–0.63)/0.63 = 0.2698).

Discussion

Research shows that families who receive state or federal welfare benefits are less likely to save, which can be partially explained by asset limits associated with welfare programs (Beverly & Clancy, 2017; Hamilton, 2018; Huang et al., 2019a; O'Brien, 2008). Asset limits establish a ceiling on the amount of total assets a welfare recipient can have and still receive benefits. Another explanation for the negative relationship between receiving welfare benefits and saving is that to receive welfare you cannot exceed a certain income threshold. Research consistently shows that poor families struggle to save for college (McKernan et al., 2010; O'Brien, 2008). In response to this research, Children's Savings Accounts are developed to help low-income families save for college (M. Sherraden, 1991). Importantly, CSA programs have shown promise as a strategy for helping low-income families save for college (Schreiner & M. Sherraden, 2007). However, no study has examined whether participating in a CSA program moderates (i.e., reduces) the negative association between receiving welfare and saving for college. To better understand the relationship between receiving welfare benefits, possessing assets, and saving for college, this study examined the association between households receiving welfare benefits and saving for college, then tested whether this association was moderated by the presence of CSAs.

The findings presented in this study provide further evidence of the negative relationships between receiving welfare benefits and saving for college. Although existing literature has suggested that public assistance recipients are less likely to save for their children's future development (McKernan et al., 2010; O'Brien, 2008), few studies use program data to quantitatively investigate the association between saving for college and receiving welfare benefits. For example, qualitative data collected from a fraction of program participants is used in O'Brien (2008) to explore the relationship between receiving welfare benefits and general saving behaviors. In McKernan et al. (2010), secondary data are used from the Survey of Income and Program Participation (SIPP) to examine the

association between receiving welfare benefits and saving for college, while the current study uses data from program participants to examine this relationship. The current study builds on this research by taking other means-tested welfare programs into account and, as such, finds similar results to prior studies.

Also, in line with previous research, findings from the current study suggest that having a HACC account moderates the negative association between receiving welfare benefits and saving for college (by about 27%). For example, Huang et al. (2019a) use program data from a randomized-control experiment and find that the average total assets held by TANF recipients for their children in the treatment group exceed the average total assets held by families for children in the control group. However, they did not explicitly test the moderating role of CSAs on saving for college among welfare beneficiaries. In addition to testing for moderation, the current study contributes to this literature by using seven mainstream means-tested welfare programs instead of using participation in just one welfare program as the indicator of welfare recipients.

Limitations

One potential limitation of this study is the use of self-reported savings behavior for college. The purpose of the HACC account program is to help people to save for college, but this study does not obtain the actual savings data from the program. Therefore, it is possible that the measurement of self-reported savings behaviors incorporates social desirability bias. Future studies would benefit from savings data, ideally measured continuously, collected from financial institutions or the account management authority that partners with the CSA program.

Another limitation of the present study is that the study does not distinguish the association between enrolling in the HACC account and saving behaviors by the phases of enrollment. The HACC program shifted from opt-in enrollment to opt-out enrollment (i.e. universal approach) in 2014. The current study does not examine whether the association between the HACC account and saving behavior differs by the type of enrollment. Instead, this study emphasizes the importance of having access to an asset-building program and its potential impact on saving behaviors.

Finally, the current study is limited to adding covariates in one step to provide an analysis of direct effects, while indirect effects are not examined. This suggests that though the direct effects of some variables are non-significant, the indirect effects of these variables could have a statistically significant impact on savings behaviors. Future research should focus on more complex relationships between variables.

Policy Implications

This study provides additional evidence that CSA are effective programs for improving low-income families financial outcomes. Past research has shown that CSAs/CDA positively affect parental savings for children's education (Nam et al., 2013) and the positive effect persists among welfare recipients (Zheng et al., 2021). This study specifically examined whether participating in a CSA program is associated with families receiving welfare benefits (a proxy for being low-income) being more likely to save for college. Findings indicate that CSAs are associated with families receiving welfare benefits being more likely to save for their child's college education. Therefore, the main policy implication from this study is that CSAs may provide low-income families the institutional structure they need to save for their child's education. This is important because research shows that low-income families have much lower savings rates than their higher-income counterparts (Huang et al., 2019a; Ziliak, 2003).

However, an important policy consideration when thinking about CSAs as a tool for increasing college savings among low-income families is the financial aid penalty they pose (Leonard & Di, 2014). According to Free Application for Federal Student Aid (FAFSA), families must report assets owned by the parent and child on the application. Further, colleges require that up to 20% of a child's own assets must be used to help pay for college and 12% of parents' assets, including money held in a state 529 account (Edmit, 2021). Thereby, reducing the total amount of aid these families can receive. So, they save in a CSA and then they are penalized for saving by reducing the amount of financial aid they are eligible to receive. Though, this does not seem to have to be the case. For example, eight states have opted to eliminate asset limits for receipt of welfare benefits (Gehr, 2018). Why not do the same for financial aid? As CSA grow across the country and become an even more important tool for low-income families to save and pay for college, pressure for such policy change will likely grow. Even if these asset limits continue to exist on financial aid eligibility, families still benefit from having saved over the course of the child's life for college.

Future Directions

Though the present study tests the moderation role of the HACC account on savings behaviors among welfare recipients, additional analysis could be done by future researchers. First, longitudinal analysis should be conducted to test the effect of the HACC account over a long period. In addition, because of enrollment policy changes in the HACC account, researchers suggest comparing the effect of the HACC account among opt-in participants and automatically

enrolled participants to understand the impact of enrollment policy on savings behaviors. Lastly, future research should also investigate if mediators help explain the association between CSAs and savings behaviors.

Conclusion

In this study, we focus on the relationship among CSA account ownership, welfare receipt, and parental behaviors related to saving for college. This is the first study attempting to identify the role of CSAs on welfare recipient's behavior related to saving. Findings provide some evidence that CSAs have the potential to mitigate the negative association between receiving welfare benefits and saving for college. However, this study is not definitive. Instead, it should serve as the starting point for additional research in this area.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Michigan Institutional Review Boards and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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