Effects of Youth Savings Accounts on School Attendance and Academic Performance: Evidence from a Youth Savings Experiment

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Abstract

Asset-accumulation interventions are promising tools for promoting better educational outcomes. However, little is known about the educational effects of youth-owned assets, particularly in resource-limited countries. The Ghana YouthSave Experiment established a rigorous foundation for exploring youth responses when offered opportunities to save for their education. This study uses data from 2000 junior high YouthSave participants, who were randomly assigned to one of two treatments (in-school or local bank access) or the control group. Treatment effects on school attendance and academic performance are examined using difference-in-difference estimation with bootstrapped standard errors. Treatment effects were significant for attendance but not performance. Findings suggest longer posttreatment follow-up is needed for effects to manifest. This study demonstrates the potential of asset-accumulation programs to contribute to improved behavioral outcomes, and offers insights for the integration of financial capability programs in youth development policies.

Keywords Financial inclusion · School attendance · Academic performance · Junior high school · Difference-in-difference

Since committing to the United Nation's Millennium Development Goals in 2000, many low-resource countries have made remarkable strides in improving school enrollment at the primary and lower secondary-school levels. However, gains toward educational goals of increased school attendance and improved academic performance have remained low (United Nations 2015). An essential predictor of both school attendance and academic performance is a household's economic circumstances, and work in this area has received substantial attention among education and development researchers (Aaronson 2000; Elliott and Beverly 2011; Zhan and Sherraden 2011). Although the influence of economic circumstances on youth living in resource-limited nations has been widely explored, critical knowledge gaps remain. Research conducted in low-resource countries has well documented the educational impacts of economic security measures, such as conditional cash transfers, income, and property holdings (Akee et al. 2010; Altschul 2012; Christian 2007; Dahl and Lochner 2012; Glewwe and Kassouf 2012; Montgomery and Hewett 2005). Yet, relatively little is known about the educational effects of interventions designed to help young people prepare financially for their education (e.g., youth savings accounts).

The body of research that has examined the educational impact of financial assets has primarily focused on assets owned by either parents or the household as a whole (Ansong et al. 2015a, b; Nam and Huang 2009). However, an emerging body of research has investigated the effects of asset holding among young people, with some studies focused on low-resource countries. As increasing numbers of young people in low-resource countries gain access to appropriate financial services to build up assets, an important empirical question has arisen: Do assets owned by youth have positive impacts on youth educational outcomes

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and well-being (Christy-McMullin et al. 2009; Friedline and Schuetz 2014; Huang et al. 2010)? For policy makers, empirical clarity on the effects of youth-owned savings on young people's educational outcomes has significant implications for adjustments to current regulations related to youth savings accounts. Establishing a good estimation of the educational effects of financial assets held by youth will contribute to the evidence base supporting the design and development of not only financial inclusion policies but also programs that promote positive educational outcomes for young people.

Although a growing body of research has examined the financial assets of young people in Ghana and other low-resource countries, the effectiveness of these studies has been hindered by data limitations and reliance on non-experimental research designs. Thus, the existing research has not fully explored potential causal factors underlying educational outcomes. To fill these knowledge gaps, the YouthSave Ghana Experiment was initiated to establish a rigorous foundation upon which researchers can begin to fully explore (a) the ways in which young people respond to opportunities to create savings and (b) the ways in which savings shape the asset owners' educational outcomes, their well-being, and other developmental outcomes (Lee et al. 2017). This study extends earlier research on asset-building interventions for young people conducted primarily in resource-limited countries such as Uganda (Ssewamala et al. 2016). This article aims to help fill the existing knowledge gaps by using a large geographically heterogeneous sample from the YouthSave Ghana Experiment to examine the causal effects of youth savings accounts on two educational outcomes—school attendance and academic performance. The study examined a cohort of junior high school students exposed to a 1-year program of youth savings accounts with account access through either in-school banking and local bank branches (Treatment group 1) or local bank branches only (Treatment group 2). Youth assigned to the two treatment groups had the opportunity to open a youth savings account. Those assigned to the in-school banking treatment could make deposits in two ways: at bank branches or at their school during scheduled visits by bank staff. Youth assigned to the local bank branch group could make deposits only at a bank branch. Youth assigned to the control group were not offered a savings account, but they were not barred from opening a savings account on their own.

Theoretical and Empirical Background

When people acquire and save resources for an extended period, their behavior and outlook are affected in profound ways:

> Assets have a variety of important social, psychological, and economic effects. Simply put, people think and behave differently when they are accumulating assets, and the world responds to them differently as well. More specifically, assets improve economic stability; connect people with a viable, hopeful future; stimulate the development of human and other capital; enable people to focus and specialize; provide a foundation for risk taking; yield personal, social, and political dividends; and enhance the welfare of offspring. (Sherraden 1991, p. 148).

To better understand the influence of assets on myriad outcomes, scholars draw from asset theory to explain how assets influence behavior, attitudes, and future-oriented perspectives (Johnson and Sherraden 2007; Sherraden et al. 2004). Asset theory supports the expectation that access to a savings account early in life will enable families to not only afford education expenses (e.g., transportation, school supplies, afterschool lessons; Alhassan et al. 2017; Malkus et al. 2017; Pallegedara and Mottaleb 2018) but also view education as an investment in their children's well-being and future. In cases where financial assets have been accumulated and saved over a long period, the assets might be sufficient to generate returns that enable families to more easily increase their school-related consumption (e.g., paying for higher education). Not surprisingly, the lack of assets has been shown to adversely affect school outcomes, especially in low-resource countries where free public education may not be available. Studies have shown that many low-income families who lack resources are unable to afford basic school needs, such as writing materials and school uniforms, which in turn, hinder children's ability to stay on course in school and perform well academically (Chowa et al. 2013; Etsey 2005).

A related framework, the *asset-experience framework* (Bynner and Paxton 2001), suggests the process of accumulating assets can have positive psychological effects, such as thinking about the future in hopeful terms, which in turn, can lead to changes in behaviors, such as increased commitment to school and school attendance. Applying this framework to young students suggests that ownership of a savings account early in life can help young people build a higher education-bound identity, which can lead them to put forth more effort toward their schoolwork. Several other theoretical explanations, such as the *possible selves theory* (Nam and Ansong 2015) and the *identity based motivation framework* (Elliott and Sherraden 2013), offer theoretical insights that align with the explanation that asset holding can have a motivational effect on schooling by influencing students' expectancy beliefs about their education, which could, in turn, change their schooling behavior.

Empirical studies also lend support to the proposition that young people's economic resources can improve their school attendance and academic performance. For instance, in a study of 286 AIDS-orphaned adolescents in Uganda, Ssewamala and Curley (2006) found that as compared with students who did not have a savings account, students with savings accounts stayed in school longer and performed significantly better on national standardized tests. This Ugandan study was one of the first experimental studies to examine the educational effects of savings accounts for children in Sub-Saharan Africa. In the context of a resource-limited country, the study offers important clues about the connection between children's savings accounts and their educational well-being. However, because the study tested an integrated intervention that had other components, such as lessons on asset building, career planning, and mentoring, it is not clear to what extent the positive educational outcomes were uniquely due to the children's savings accounts. The effects of financial education are mixed (Fernandes et al. 2014; Lusardi and Mitchell 2014), so it is not clear how much of the educational effects in the Ugandan study was due to the offering of financial lessons.

Evidence from developed countries, such as the United States, provides further empirical support for the positive connections between young people's financial resources and educational outcomes, such as performance tests (Elliott 2008; Elliott et al. 2010), and completion of higher education (Loke 2013; Nam and Ansong 2015). A growing body of research has found that when resources constrain families, students from poor backgrounds are more likely to perform less well than their counterparts from secure financial backgrounds (Baum et al. 2010; Destin et al. 2012; Reardon 2011; Orr 2003).

In developing countries, when the resources are owned by the family as a whole, the effects of assets might be more nuanced, although studies overwhelmingly suggest positive associations between household assets and children's educational outcomes. For instance, in several low-resource countries, family-owned wealth has been shown to positively predict the school attendance of children in Senegal (Montgomery and Hewett 2005); to reduce the risk of school dropout among junior high school students in Ghana (Arko 2013); and, in Tanzania, household durables positively predict school completion and academic performance (Kafle et al. 2018).

It is worth noting that although the vast majority of published studies have found positive associations between economic resources and educational outcomes, others have reported contradictory and mixed findings (see Ansong et al. 2018; Chowa et al. 2013; Elliott et al. 2013; Kafle et al. 2018). For example, researchers used data from the YouthSave Ghana Experiment to examine the educational impact of household possessions on youths' academic performance (Chowa et al. 2013). Chowa and colleagues found that household possessions were positively associated with English scores, but the association with math scores was not statistically significant. Further, studies conducted in sub-Saharan Africa have suggested that the asset experience can have negative implications for some children. For example, when children engage in asset accumulation endeavors, such as child work, they trade off school hours and study time, which affects their school attendance rate (Cockburn and Dostie 2007; Rose and Al-Samarrai 2001). In Tanzania, Kefle et al. (2018) found that agricultural assets, such as livestock and large farm implements, have adverse effects on children's academic performance and grade completion. Nevertheless, the majority of the extant literature suggests a positive association between financial assets and most educational outcomes in all contexts.

The limitation of studies that focus on family wealth and education outcomes is that they do not shed light on how young people's direct ownership of assets affects the direction and magnitude of the wealth effects. In other words, how do these resources affect young people's schooling when the young person owns and accumulates the assets? In addition, when young people own their savings accounts but are not offered financial incentives to save (i.e., no matched funds), does the mere access to a savings account shape the young person's behavior and attitude toward school and education? If so, in what ways? Data-driven responses to these questions are timely, especially given that developing countries, including Uganda, Kenya, and Rwanda, are increasingly integrating financial inclusion programs into their youth development agendas (Ssewamala et al. 2018; Wang et al. 2018).

To help address the above unanswered questions, this article focuses on the relationship between youth-owned assets and school attendance and performance. Specifically, we draw on asset experience theory and examine data from Ghana to test two hypotheses that compare outcomes of students who are and are not offered a savings account: Pupils offered a tailored savings account will be more engaged in their schooling as demonstrated by attending school more often (Hypothesis 1) and by improved academic performance in math and English courses (Hypothesis 2).

Methods

Sampling, Design, and Data Collection Procedures

The data for this study were obtained from the YouthSave Ghana Experiment, which was a pre and posttest nested randomized experiment with two cohorts of *primary 6 to JHS 2* (i.e., primary school Grade 6 to junior high school-second year) pupils in Ghana. Cohort 1 youth ($n = 6252$)

were interviewed at baseline in 2011, and Cohort 2 youth ($n = 2000$) were interviewed at baseline in 2013. The study area included all but two administrative regions in Ghana; the Upper East and Upper West regions were excluded because the YouthSave project's financial institution partner, HFC Bank, does not operate in those regions. The study sample was obtained using a multistage sampling procedure. First, a sampling frame of 581 public schools in the study area was identified. Second, a simple random sampling approach was used to select 100 schools, of which 50 were randomly assigned to treatment and 50 to control. Next, the 50 treatment schools were randomly assigned to two groups, yielding a sample of 25 schools in the in-school banking group and 25 schools in the local bank branch-only group. Last, study participants were randomly selected from the treatment and control schools. The present study focused on Cohort 2 youth ($n = 2000$) youth because it was the only cohort that had not transitioned to senior high school by the end of data collection in 2014. All survey and administrative data collection activities were supervised by researchers at the Institute of Statistical, Social, and Economic Research (ISSER) at the University of Ghana in collaboration with researchers at the University of North Carolina-Chapel Hill and Washington University's Center for Social Development. The institutional review boards of all three institutions approved the procedures for the study.

Intervention

HFC Bank offered a youth tailored savings account called *Enidaso* (which means "hope" in a Ghanaian dialect) to youth between the ages of 12 and 18 years. Although youth did not have to be enrolled in school to participate in an *Enidaso* account, our study focused on the school based intervention. Participants in the in-school banking treatment group could make deposits at school during regularly scheduled visits (approximate 1 month intervals) from bank staff. In addition, as part of schoolwide assemblies during the bank staff's school visits, the bank staff delivered a brief educational session on the importance of savings. Participants in the local bank branch-only group could open a savings account at school but had to make deposits at an HFC bank branch. Participants who opened an *Enidaso* account received a free photo ATM card that allowed them to check their account balance but not to make withdrawals. Account withdrawals were prohibited in the first 3 months. *Enidaso* accounts were designed as custodial accounts so parents, guardians, or trusted adults could serve as co-signatories on the account.

Measures

The two outcome variables of interest were *school attendance* and *academic performance*. Both outcome variables were obtained from participants' school records and measured at the ratio level. *School attendance* is a measure of the number of days students attended school in the last academic term before baseline and posttest data collection. *Academic performance* represents students' achievement in their math and English coursework. Studies in Ghana and other contexts have used reading (English language) and math proficiency as a proxy for student academic performance (Ansong et al. 2015a, b; Chowa et al. 2013; Loke and Sacco 2011; Zhan 2006). An overall academic performance score was created by aggregating students' performance on their English language and math coursework during the academic term (30 points maximum per subject) and their final exam (70 points maximum per subject). The possible range for the overall score was zero to 200.

Six control variables known to be associated with savings and educational outcomes in the Ghanaian context (Ansong et al. 2016a, b; Chowa and Masa 2015; Chowa et al. 2015; Koomson et al. 2016) and did not violate the multicollinearity assumption were used to improve the precision of the estimates. *Gender* was a binary variable, with males coded as 1 and females coded as 0. Students were asked, "Who has the most influence on your academic life?" The response options included *biological father, biological mother, siblings, relatives, family friend*, and *others*. The variable was converted into a binary measure of whether a student's biological father was identified by the student as the most influential person in their academic life (*yes* = 1, *no* = 0). *Commitment to school* was a nine-item measure of a student's sense of belonging to their school, acceptance of school values, and engagement in schoolwork. Using an 11-point response scale ranging from 0 (*strongly disagree*) to 10 (*strongly agree*), respondents indicated their level of agreement with statements such as "school is boring," "I try hard at school," and "I do extra work to improve my grades" (see Ansong et al. 2016a for a full review). *Orientation toward the future* was a six-item measure. Youth were asked to indicate their level of agreement with statements, such as "I try to make good choices to increase my chances for a good future" and "When I think about my future, I feel very positive" (see Chowa et al. 2015 for the full list). The response set was based on an 11-point Likert-type scale ranging from 0 (*strongly disagree*) to 10 (*strongly agree*). *Uncertainty about the future* was a five-item measure of the extent to which a student doubted his or her ability to have a successful future. Using an 11-point Likert-type response scale ranging from 0 (*strongly disagree*) to 10 (*strongly agree*), students indicated their level of agreement with statements such as "I am unprepared to work hard to have a good life," and "I see

a no connection between success in school and success in life" (see Chowa et al. 2015 for a full review). *Academic self-efficacy* was an eight-item measure of a student's beliefs about his or her ability to complete schoolwork. Using an 11-point response scale ranging from 0 (*cannot do at all*) to 10 (*highly certain can do*), students indicated their level of confidence regarding questions such as "How well can you pay attention during every class?" and "How well can you study a chapter for a test?" (See Ansong et al. 2016b for the full list of scale items). Based on guidelines from the final report of the YouthSave Ghana Experiment (Chowa et al. 2015), the summation method was used to aggregate the items that make up the above constructs. A seventh variable, *age measured in years*, is included in the summary characteristics but not in the difference-in-difference (DiD) estimation because of collinearity concerns.

Data Analysis

To estimate the treatment effect on school attendance and academic performance, we used the multiple regression approach to DiD modeling with bootstrapped standard errors. The bootstrapping method has a more accurate Type I error rate and statistical power than other methods and does not make assumptions about the shape of the sampling distribution. In the DiD analyses, the control group was compared separately with each treatment group. We also conducted per-protocol analyses by comparing the two treatment groups. To increase the precision of the estimates, the DiD analyses made adjustments for the following six potential confounders: *gender, commitment to school, father's influence, orientation towards the future, uncertainty about the future*, and *academic self-efficacy*.

In a multivariate regression framework, Stata 14 was used to fit all DiD models with bootstrapped standard errors based on the following equation:

$$Y_i = \beta_0 + \beta_1 G_i + \beta_2 T_i + \beta_3 (G_i * T_i) + \sum_k \beta_k X_{ki} + \varepsilon_i$$

where Y_i is the outcome variable representing school attendance or academic performance for the ith student, β_0 represents the intercept, G_i indicates the research group, where 0 = control group and 1 = treatment; T_i indicates the data collection time, where 0 = baseline and 1 = posttest; the interaction term (G_i*T_i) represents the DiD term, and β_3 is the coefficient for the treatment effect; X_{ki} represents a vector of six independent covariates, and ε_i represents the error term in the model. The variance inflation factors (VIFs) for the six covariates ranged from 1.00 to 1.28, which fall below the acceptable upper limit of 10. Therefore, we are confident that the assumption of no multicollinearity was met. In the descriptive analyses, the *F*-tests and Chi square tests were used to highlight statistically significant group differences. In the DiD analyses, the Wald Chi square statistic, adjusted model R^2, and a significance level of .05 were used to assess model fit. Statistical significance of all parameter estimates were also assessed based on a .05 significance level.

Results

Descriptive Characteristics

Table 1 provides side-by-side comparisons of the baseline descriptive characteristics of the three groups: (a) in-school banking group, (b) local bank branch-only group, and (c)

Table 1 Descriptive characteristics of the treatment and control groups at baseline

Categorical variables	In-school banking (%)	Local bank branch banking (%)	Control (%)	*F;* χ^2 statistic
Gender				0.99
Girls	53.0	50.2	52.6	
Boys	47.0	49.8	47.4	
Father is the most influential				7.38*
Yes	31.6	39.2	33.3	
No	68.4	60.8	66.7	
Continuous variables	*M (SD)*	*M (SD)*	*M (SD)*	
Age	15.29 (1.96)	15.29 (1.91)	15.37 (2.08)	1.17
Commitment	57.70 (6.37)	57.53 (6.88)	57.74 (6.47)	0.52
Future success	43.14 (5.99)	42.70 (6.25)	43.09 (6.24)	2.52
Future uncertainty	9.35 (7.74)	10.71 (9.19)	9.74 (9.01)	10.08***
Academic self-efficacy	61.63 (9.73)	60.09 (10.59)	60.59 (9.99)	9.71***

F F-statistic, χ^2 Chi square statistic, *M* mean, *SD* standard deviation

*$p < .05$; **$p < .01$; ***$p < .001$

the control group. Both the in-school banking group and the control group had a slightly higher proportion of girls than the local bank branch-only group, which had a relatively even distribution of girls (50.2%) and boys (49.8%). Overall, the observed differences in the gender distribution among the three groups were not statistically significant ($\chi^2 = 0.99$, $p = .61$). We found significant between-group differences when participants identified their fathers as having the greatest influence on their academic life. The participant's biological father was identified as the most influential person by 40% of youth in the local bank branch-only group as compared with about a third of the youth in both the in-school banking group (31.6%) and control group (33.3%). These differences were statistically significant ($\chi^2 = 7.38$, $p < .05$). Differences in the age distributions across the three groups were not statistically significant ($F = 1.17$, $p = .31$): in-school banking group ($M = 15.29$, $SD = 1.96$); local bank branch-only group ($M = 15.29$, $SD = 1.91$); and the control group ($M = 15.37$, $SD = 2.08$).

During the baseline interviews, participants were asked about their level of commitment to school. Responses indicated similar levels of commitment to their schoolwork ($F = 0.52$, $p = .60$) across the three groups: the in-school banking youth ($M = 57.7$, $SD = 6.37$), local bank branch-only youth ($M = 57.53$, $SD = 6.88$), and control youth ($M = 57.74$, $SD = 6.47$). The three groups were also compared on all psychosocial measures administered at baseline. The extent of participants' orientation toward future success was similar across the in-school banking ($M = 43.14$, $SD = 5.99$), local bank branch-only ($M = 42.07$, $SD = 6.25$), and control groups ($M = 43.09$, $SD = 6.24$), and therefore not statistically significant ($F = 2.52$, $p = .08$). In contrast, participants' extent of uncertainty about the future varied significantly across the three groups ($F = 10.08$, $p < .001$). At baseline, the in-school banking youth indicated feeling considerably less certain about the future ($M = 9.35$, $SD = 7.74$) than the local bank branch-only youth ($M = 10.71$, $SD = 9.19$; critical difference [CD] $= -1.36$, $p < .001$), but not the control youth ($M = 9.74$, $SD = 9.01$; $CD = -.38$, $p = .48$). Participants' sense of academic self-efficacy varied significantly by group ($F = 9.71$, $p < .001$). Similar levels of academic self-efficacy were reported by those in the control group ($M = 60.59$, $SD = 9.99$) and the local bank branch-only group ($M = 60.09$, $SD = 10.59$; $CD = .50$, $p = .33$), but both groups were slightly lower than the in-school banking group ($M = 61.63$, $SD = 9.73$; $CD = 1.05$, $p < .01$). Overall, with the exception of three measures (father is the most influential, future uncertainty, and academic self-efficacy), the three groups were statistically comparable on all baseline measures.

Results of Treatment Effects

School Attendance

Table 2 presents results of the DiD estimation. Results show the in-school banking intervention increased the average rate of school attendance by 2 days. This finding means the predicted treatment effect of 2 days was greater than changes that would be expected by chance. As the results show, students in the in-school banking treatment group performed better than the control group regarding school attendance ($b = 2.02$, $p < .01$). The overall model that compared the in-school banking and control groups was statistically significant: Wald $\chi^2(9) = 2168.61$, $p < .001$, $Adj\ R^2 = 0.41$. After adjusting for potential confounders, the mean school attendance *at baseline* was statistically similar between the control group ($M = 45.31$) and the in-school banking treatment group ($M = 43.79$; $t = -0.19$, $p = .85$). By the posttest, the mean attendance scores for the control group increased by 13.57, whereas the mean score for the treatment group increased by 15.59.

Results also show that the treatment effect of local bank branch-only treatment on school attendance was identical to the treatment effect of in-school banking. This finding means the local bank branch-only group had better school attendance than the control group ($b = 2.09$, $p < .01$). The overall model had a good fit with the data: Wald $\chi^2(9) = 1137.01$, $p < .001$, $Adj\ R^2 = 0.39$. After adjusting for potential confounders, the baseline school attendance rate was significantly higher for the control group ($M = 45.34$) than the local bank branch-only group ($M = 43.79$, $t = -3.89$, $p < .001$). One year later, the mean attendance scores for the control group had increased by 13.43, whereas the mean score for the treatment group had increased by a wider margin to 15.53. Thus, the data support the hypothesis that young people who are offered a tailored savings account will engage more with their schooling by attending school more often, compared with those who are not offered a savings account (i.e., Hypothesis 1). The high adjusted R^2 values (i.e., > 0.38) is an indication of the predictive power of the two treatments on school attendance.

A per-protocol analysis was performed to assess whether one treatment group performed better than the other. Although the overall model was statistically significant (Wald $\chi^2(9) = 2432.31$, $p < .001$, $Adj\ R^2 = 0.49$), the coefficient for the DiD term was not statistically significant ($b = .05$, $p = .95$), suggesting that neither of the treatment groups performed significantly better than the other. Even in the reduced models that excluded the covariates, the adjusted R^2 values remained above 35%.

Table 2 Adjusted difference-in-difference estimates of the effects of in-school banking and local bank branch banking on school attendance and academic performance

	Treatment effect on school attendance				Treatment effect on academic performance			
	In-school banking model		Local bank branch banking model		In-school banking model		Local bank branch banking model	
	b(Bootstrap SE)	[95% CI]	*b*(Bootstrap SE)	[95% CI]	*b*(Bootstrap SE)	[95% CI]	*b*(Bootstrap SE)	[95% CI]
Intercept	42.99 (1.51)***	40.03, 45.95	45.33 (1.79)***	41.84, 48.83	97.66 (8.19)***	81.59, 113.71	101.58 (6.23)***	89.36, 113.79
Time	13.56 (0.48)***	12.62, 14.50	13.43 (0.63)***	12.20, 14.66	− 1.69 (1.67)	− 4.98, 1.59	− 1.84 (1.65)	− 5.07, 1.39
In-school banking[a]	− 0.07 (0.35)	− 0.76, 0.62			0.62 (1.28)	− 1.88, 3.13		
Local bank branch banking[a]			− 1.54 (0.40)***	− 2.33, − 0.76			1.71 (1.93)	− 2.08, 5.49
Treatment effect (In-school banking × time)	2.02 (0.73)**	0.58, 3.46			− 0.60 (2.88)	− 6.25, 5.04		
Treatment effect (Branch-based banking × time)			2.09 (0.84)*	0.45, 3.74			− 3.74 (2.82)	− 9.26, 1.78
Male	− 0.72 (0.35)*	− 1.40, − 0.04	− 1.07 (0.39)*	− 1.83, − 0.31	3.05 (1.17)**	0.77, 5.34	0.21 (1.22)	− 2.18, 2.60
Father is influential	0.69 (0.40)	− 0.09, 1.49	0.83 (0.38)*	0.09, 1.58	0.01 (1.39)	− 2.72, 2.75	− 0.04 (1.21)	− 2.41, 2.33
Commitment	0.03 (0.03)	− 0.02, 0.08	0.02 (0.03)	− 0.04, 0.08	− 0.04 (0.09)	− 0.23, 0.15	0 (0.09)	− 0.18, 0.19
Future success	− 0.04 (0.03)	− 0.11, 0.02	− 0.02 (0.04)	− 0.09, 0.05	0.17 (0.14)	− 0.11, 0.44	0.04 (0.12)	− 0.21, 0.28
Future uncertainty	0.003 (0.02)	− 0.04, 0.04	− 0.03 (0.02)	− 0.08, 0.02	− 0.29 (0.07)***	− 0.43, − 0.15	− 0.36 (0.07)***	− 0.51, − 0.22
Academic self-efficacy	0.06 (0.02)***	0.03, 0.09	0.04 (0.02)	− 0.002, 0.08	0.17 (0.07)*	0.04, 0.31	0.2 (0.06)**	0.07, 0.33
Model fit								
Wald $\chi^2(9)$	2168.61***		1137.01***		63.92***		65.58***	
Adjusted R^2	0.4098		0.3915		0.0197		0.0246	

b coefficient, *Bootstrap SE* Bootstrap standard error, *95% CI* 95% confidence interval

*$p < .05$; **$p < .01$; ***$p < .001$

[a]Control group is reference group

Academic Performance

The second educational outcome we examined was academic performance, which was a measure of students' aggregate scores on their math and English courses. The DiD estimation with a .05 significance level indicated that the 1-year exposure to in-school banking did not have a significant treatment effect on students' grades. Although the overall model was statistically significant (Wald $\chi^2(9) = 63.92$, $p < .001$, $Adj\ R^2 = 0.02$), the DiD coefficient for in-school banking was not statistically significant at the .05 significance level ($b = -0.6$, $p = .83$). At baseline, the mean academic performance scores were statistically similar between the control group ($M = 97.66$) and the in-school banking treatment group ($M = 98.26$): $t = 0.38$, $p = .70$. By the end of data collection a year later, the performance scores had dropped for both the control group ($M = 95.96$) and in-school banking treatment group ($M = 95.98$), with the treatment group exhibiting a slightly steeper decline in performance ($\Delta M = 2.3$) than the control group ($\Delta M = 1.69$).

Similar to the lack of treatment effect of in-school banking on academic performance, after a 1-year treatment exposure, we found the local bank branch-only intervention had no treatment effect on students' academic performance. The overall model comparing academic performance of the local bank branch-only group with that of the control group had a good fit with the data: Wald $\chi^2(9) = 65.58$, $p < .001$, $Adj\ R^2 = 0.02$. However, the DiD coefficient for the local bank branch-only treatment was not statistically significant ($b = -3.74$, $p = .18$). Both the local bank branch-only group and the control group showed decreases in average academic performance, although the local bank branch-only group experienced a greater decline ($\Delta M = 5.58$) than the control group ($\Delta M = 1.84$).

A per-protocol analysis (i.e., a direct comparison between the two treatments) showed no significant difference in academic performance between the two treatment groups. The overall model was statistically significant (Wald $\chi^2(9) = 91.06$, $p < .001$, $Adj\ R^2 = 0.04$), although, the coefficient for the DiD term was not ($b = 3.24$, $p = .38$). This finding means neither of the treatment groups performed significantly better than the other on measures of academic performance. Further, the negligible *adjusted* R^2 values across all three assessments of treatment effect on academic performance confirm that a 1-year offer of a savings account did not improve young people's academic performance, regardless of the treatment option. Thus, the data do not support Hypothesis 2.

Discussion

With the increased focus on policies centered on improving students' educational outcomes, understanding the motivating role of financial capabilities, such as youth's ability to save money, has become even more critical. Therefore, the objective of this study was to test the effects of a savings opportunity on the school attendance and academic performance of junior high school students. Drawing on the extant literature and asset theory (Bynner and Paxton 2001; Lerman and McKernan 2008; Sherraden 1991), we postulated that, as compared with students who were not offered a savings account, the young people who were offered a savings account would have increased school attendance and improved academic performance. Our study found that during the 1 year that students were offered the savings accounts, the students improved their school attendance but not their academic performance, regardless of which treatment option they received (i.e., in-school banking or local bank branch-only).

Our finding of a treatment effect on school attendance provides support for the asset-experience framework, which suggests that the process of accumulating assets can lead students to think about the future in hopeful terms, which in turn, can shape their commitment to school and school attendance. The finding of a treatment effect on school attendance is also consistent with findings of a similar study conducted in Uganda by Ssewamala and Curley (2006). Findings reported by this team of researchers suggest behavioral shifts occur in young people who become financially empowered. Among the young people who opened a savings account and were active savers, even though their balances might have been minimal, the ability to own a savings account and begin a saving culture in their early adolescence might have led to an elevated sense of responsibility. In turn, their sense of responsibility might have fostered excitement about future possibilities relevant to their schooling. Although the DiD estimation in our study did not show the processes by which the treatment affected school attendance, the treatment effect can be inferred from asset theory and related theoretical models, such as identity-based motivation, that ownership of an account provides young people with a glance into their future identity if they continue with school (Oyserman 2015).

As part of the YouthSave intervention, the HFC bank officials visited the in-school banking treatment schools approximately once a month, interacted with the participants, and delivered a brief (10–15 min) educational session on the importance of savings during school assemblies. Anecdotal evidence from the bank staff suggests that participants were fully engaged during the brief financial education sessions (Chowa et al. 2015). Even though the youth in the in-school

banking treatment group were offered brief financial education and the opportunity to engage with the bank staff during their school visits, a direct comparison between the two treatment options returned a statistically nonsignificant result. This finding indicates that the additional features of the in-school banking intervention did not boost the treatment effect on school attendance, at least in the short-term. In the long-term, there is a possibility that interaction with bank staff might have a motivational effect on young people's schooling. However, studies with longer periods of posttreatment follow-up are needed to explore this potential effect. Providing students with an opportunity to access saving products and information might be a way of increasing their autonomy, which could translate into motivation for school. Although not tested in the current study, we postulate that, if students continue saving, then they will be motivated to remain in school because they have resources for future education.

In forerunner studies, we found that interaction with bank staff enhanced other outcomes that were not measured in this study, such as saving performance (Johnson et al. 2018; Lee et al. 2017). Although the opportunity to engage with bank staff might not have necessarily motivated youth in the treatment groups to change their behavior within a year (i.e., attend school more often and improve their academic performance), interaction with bank staff might still be necessary to boost savings performance and possibly enhance the effects of savings on educational outcomes. For example, the interaction with bank staff might fill critical knowledge gaps, such as those reported by Lyons et al. (2006), who found young people were in dire need of financial information. The Organization for Economic Co-operation and Development (2012) argues that providing financial education for students at an early age is an essential step toward increasing the value of education. It is plausible that some students attended school because of the opportunity to receive financial education. To better understand the value of in-school banking over local bank branch-only intervention, future studies should focus on the treatment effects on savings outcomes, such as student propensity to open an account, total savings, or frequency and amount of deposits and withdrawals.

Contrary to our hypothesis, we did not find evidence to support a positive treatment effect on academic performance. Regardless of whether the treatment was delivered through in-school banking or local bank branch only, students continued to perform poorly over the academic term. Several possible explanations exist for this finding. Performance is influenced by multiple factors in a student's home and school environments (Ansong et al. 2015a, b). Economic security is a significant factor in school-related behaviors (i.e., attending school, paying attention in class; Glick and Sahn 2010), but the effects of increasing economic security might take longer than 1 year to affect outcomes, or a more holistic program might be needed to improve students' academic performance.

Perhaps a 1-year exposure to owning a savings account is not a long enough period to have an observed effect on the academic performance of students whose performance might have been historically low. Given that the treatment interventions aimed to affect behavioral outcomes such as school attendance, the expectation was that over time, improvements in school attendance would translate into improvements in academic performance. Ample research supports the view that school attendance would have a direct positive effect on academic performance (Gottfried 2010; Hancock et al. 2017; Morrissey et al. 2014; Stanca 2006). Therefore, our finding of no treatment effect on academic performance after a 1-year exposure to a savings account points to an exciting direction for future research. A longitudinal study that tracks participants for an extended period might offer greater insight into how long it might take for an economic security intervention to affect academic performance or if any effect is observed over time. The idea of an extended period of exposure to a savings account and savings culture is consistent with the policy push for universal access to Child Development Accounts starting at birth (e.g. Grinstein-Weiss et al. 2016; Loke and Sherraden 2009).

Limitations of this study are worth mentioning. For policy relevance, this study used an intent-to-treat approach and focused on the average treatment effects. Therefore, the statistical modeling did not account for the non-delivery of treatment to certain treatment youth. External validity constraints must also be considered. The study sample excluded two administrative regions in Ghana, thus limiting the extent to which results might reflect the connection between economic security and educational outcomes in those regions. Despite these caveats, this study is one of the most extensive experimental studies on the educational benefits of young people's savings in the developing world and offers valuable insights into the role of early access to savings accounts in shaping school-related behavior in Ghana and low-resource settings.

Implications and Conclusion

As policy makers and financial institutions make strides in addressing barriers that hinder greater access to financial services among school-age youth, it is essential to understand the impact on the full range of youth outcomes, not just the effects on savings performance. Research, such as the current study and others in the field, is important for unearthing the real impacts of increased access to youth-tailored financial services and products. For instance,

as more studies focus on the educational well-being of youth savers, policy makers and the financial sector would become aware of potential risks to young people's educational well-being and the necessary steps needed to counterbalance or mitigate any unintended adverse effect of youth financial inclusion.

Besides the utility of this line of research, the findings from the current study speak to the potential of financial inclusion interventions for youth to enhance their well-being in other domains. The treatment effect estimates in this study indicate that early access to opportunities to save is a significant positive predictor of school attendance at the junior high school level in Ghana. This finding points to the potential benefits of interventions designed to increase the economic security of young people, especially given the potential of youth-owned savings accounts to excite and motivate youth to stay on course in their schooling. For youth development practitioners, such findings may point to the potential of the asset-based approach to youth development. Although the initial impetus for financial institutions to develop youth-tailored financial products may be the financial benefits of their products, findings of the nonfinancial benefits may be compelling enough to draw in youth development practitioners outside the financial sector to work with financial institutions to cocreate youth development programs. Youth development programs around HIV/AIDS prevention, employment, and college preparatory programs could be designed to operate within the framework of asset building as a youth development tool.

This finding, in particular, can offer policy makers evidence-informed guidance for the integration of financial capability policies into youth development and education policies in Ghana and other sub-Saharan African countries. If further efficacy trials find similar results regarding the effect of early savings on school attendance, efforts to promote financial inclusion among school-age youth would have a substantial evidence base to boost policy actions.

Even though no treatment effect on academic performance was found, this study offers a valuable policy lesson. Although the emerging research suggests that early access to savings accounts holds promise for many young people's educational well-being, policies that push for financial capability interventions for young people need to have a long-term outlook. This long-term perspective is needed because the complexity of educational outcomes is such that some expected impacts might take longer to emerge than other impacts. As this study reveals, the impact of early access to savings accounts on academic performance might not be realized in the short-term, although potential exists for long-term impacts if the interventions and policies are sustained over an extended period. For policy makers, more evidence on the timing of the asset effects for young people would provide empirical clarity on the effects of youth-owned savings on young people's educational outcomes and thus inform the necessary adjustments to current regulations related to youth savings accounts.

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Compliance with Ethical Standards

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

Ethical Approval All procedures involving human participants were conducted in accordance with the ethical standards of the institution and/or national research committees, the 1964 Helsinki declaration, and its later amendments, or with comparable ethical standards.

Informed Consent Informed consent was obtained from the youth and guardian (if the youth was a minor) for collection of identifiable data. Informed consent was obtained from all individual participants included in the study.

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