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Household Economic Strengthening through Financial and Psychosocial Programming: Evidence from a Field Experiment in South Africa

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Abstract

Using data from a randomized field experiment with 552 households in South Africa, we examine the impact of a brief financial literacy training that was integrated into a broader psychosocial parenting intervention. Based on self-reported measures, we document significant improvements in financial behaviors, including higher saving and lower borrowing rates. We also see wider implications for household economic welfare, demonstrated by reduced self-reported financial distress, better resilience to economic shocks, and a greater capacity to securing basic needs. We argue that program impact may run through three effect channels, namely improved self-efficacy, higher family and community social support, and greater optimism. Overall, our findings suggest that "hybrid" program curricula that offer combinations of financial and psychosocial components can add value to stand-alone financial literacy training.

Keywords:Financial Literacy, Saving, Parenting, RCT, South Africa
JEL: D14, D91, I31, O12, O16)

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Introduction

Living in poverty is characterized by not only a shortfall of money but also day-to-day struggle for food and basic needs, strains on future-oriented investments in education or business, and mental distress. Therefore, saving and careful financial planning become important means for smoothing consumption, increasing resilience to income shocks, and increasing long-term household economic welfare (Hulme, Moore & Barrientos, 2015; Dupas& Robinson, 2013; Rutherford & Arora, 2009; Collins et al., 2009).

Consequently, saving promotion and financial literacy programs have become increasingly popular in international development and a growing body of literature has been dedicated to evaluating their effectiveness. A range of randomized controlled trials (RCTs) have documented promising findings, particularly on realized savings rates but also on broader economic welfare (Steinert et al., 2018). This success, however, has mainly been observed for product-based interventions that give participants access to formal bank accounts or provide sophisticated commitment devices (e.g. Dupas et al., 2016; Brune et al., 2015; Dupas & Robinson, 2013; Prina, 2013; Pande et al., 2012; Ashraf, Karlan & Yin, 2006). In contrast, pure financial literacy programs have generally proven far less beneficial, with small or null effects across several meta-analyses and particularly in low-income populations (Steinert et al., 2018; Kaiser & Menkhoff, 2017; Fernandes et al., 2014; O'Prey & Shephard, 2014). Yet, these programs might be the most feasible to implement in resource-limited environments with poor financial infrastructure.

We therefore set out to examine how innovations in program design may increase the effectiveness of financial literacy programs. Research to date has largely focused on external barriers to program effectiveness, including alienation from formal banking through prohibitive fees and regulations, lack of safe storage, and unreliability of (semi-) formal financial institutions. By contrast, we shift the focus to an integrative psychosocial perspective, echoing more recent research. We contend that changes in financial behavior and decision-making may be partly driven by psychological factors such as future aspirations, self-esteem, and self-efficacy as well as social factors such

as family support and inter-personal trust (see Heller et al., 2017; Blattman, Jamison & Sheridan, 2017; Bernard, Dercon, Orkin & Taffesse, 2014; Kautz et al., 2014; Doi, McKenzie & Zia, 2014; Alan, Boneva & Ertac, 2016; Mani et al., 2013). Based on these considerations, we hypothesized that programs may benefit from embedding financial literacy training in broader intervention curricula that features psychological and family-based components.

To test the above hypothesis, we conduct a field experiment of a financial literacy program that was incorporated into a wider parenting program. The cluster randomized control trial enrolled 40 villages with 552 families in rural South Africa. Twenty villages were randomly selected to participate in a 14-week-long financial literacy and parenting program. Families in the remaining twenty villages received a one-day hygiene intervention and served as the control group. Our analysis utilizes data from post-test surveys with 539 adults and 526 adolescents, conducted 5-9 months after completion of the intervention.

There are three main findings. First, we observe substantial changes in financial behaviors among participants in the treatment group, including significant increases in self-reported past-month saving and reductions in self-reported borrowing. We also find substantially higher levels of financial self-efficacy, but pro-savings attitudes, which were already high at the study's outset, are not notably altered post-intervention.

Second, we find evidence that the positive changes in financial planning and management have important implications for wider aspects of household economic welfare. In particular, we observe significant decreases in levels of financial and emotional distress among program recipients. We additionally record significant improvements in self-reported resilience to emergencies and income shocks, adoption of less detrimental coping strategies, and substantial increases in access to a range of designated basic necessities, including education, medical care, and clothing.

Lastly, we find some support for our hypothesis that the program's impact on financial outcomes may be driven by psychological and social channels: First, we contend that behavior change is partly driven by improvements in financial self-efficacy, thus helping participants to bridge an "intention-action gap" (Fishbein & Yzer, 2003). Second, changes in financial behavior seem to be facilitated and reinforced by higher levels of social and emotional support, within both households and the wider community. Lastly, decreases in depression levels could prompt a more optimistic and positive outlook on the future and thus help alleviate temporal biases and reduce impulsive spending and overborrowing.

Our study contributes to a growing body of behavioral literature that explores linkages between psychological factors and poverty alleviation strategies (Ghosal et al., 2015; Glewwe, Ross & Wydick, 2014; Bertrand et al., 2010; Bénabou & Tirole, 2003). The design of our intervention has parallels to some previous programs with integrative curricula. Among these are (1) the *New Generation project* in Burundi, which augments a parenting program with the establishment of village-based savings groups (see Annan et al., 2013), (2) the *Suubi-Maka* ("Family Hope") program in Uganda, which combines therapeutic counselling with asset-based economic empowerment (Ssewamala, Han & Neilands, 2009); (3) the *Sustainable Transformation of Youth in Liberia (STYL)* program, which offers a combination of cognitive behavioral therapy (CBT) and unconditional cash grants (Blattman et al., 2017); and programs in high-income countries such as (4) the *Becoming a Man (BAM)* program for economically disadvantaged youth in Chicago that features standard CBT elements, skills building for anger control and cognitive thought replacement, and financial literacy training (Heller et al., 2017). Similar to our intervention, these four programs have adopted a holistic approach by delivering 'packages' of psychosocial and economic training components. Echoing evidence presented in our paper, they also document significant improvements across a range of economically relevant outcomes, including increases in income (Blattman et al., 2017), household savings and school attendance rates (Ssewamala et al., 2009), and high school graduation rates (Heller et al., 2017).

The remainder of this paper proceeds as follows: Section I describes the sample,

experimental design, and data. The main results are presented and discussed in Section II. Section III elucidates possible mechanisms of change by drawing on insights from additional quantitative as well as qualitative data, before the conclusions set out in Section IV.

I Experimental Design and Data Collection

A Study Setting

The study took place in rural and peri-urban settlements within a two-hour driving radius of King William's Town in the Eastern Cape of South Africa, the province with the lowest GDP of the country. According to the latest census (2011), the average annual household income in the province is $362[1] – the lowest in the country – and unemployment rates are second highest at 37% (Statistics South Africa, 2011). The prevalence rate of HIV/AIDS is above 20%, and the cost of medical care for sick household members can further impoverish HIV-affected families (Statistics South Africa, 2016; Masanjala, 2007; Russell, 2004). Deprivation in the province still reflects the spatial policies of the Apartheid era: deficient infrastructural and economic development as well as poor service delivery persist in the former "homeland" areas of the Transkei and Ciskei (Noble & Wrights, 2013; Klasen, 1997). Given this persisting social inequality, the South African government issued the Social Assistance Act in 2004, mandating the South African Social Security Agency (SASSA) to administer seven different welfare grants[2] for families most in need. The coverage of social assistance has increased considerably over the past decade and now reaches almost a third of South Africa's population (SASSA, 2016). Previous studies have highlighted beneficial impacts of South Africa's cash transfers, including reductions in HIV risk (Cluver et al., 2013), increases in school enrolment (Case, Hosegood & Lund, 2005), and improved nutritional intake (Duflo, 2000). However, poverty remains high, with

[1] Equal to 4300.00 ZAR.

[2] These include the child support grant (3500.00 ZAR/month), the foster care grant (890.00 ZAR/month), the care dependency grant (1500.00 ZAR/month), the disability grant (1510.00 ZAR/month), the old age pension (1510.00 ZAR/month).

almost 50% of South Africans falling below the national inflation-adjusted poverty line and 13% reporting acute risk of hunger (Statistics South Africa, 2017).

Despite the country's sophisticated and privatized banking system, the low-income population of the country is still largely dependent on informal financial instruments such as savings groups (Collins & Morduch, 2011; Porteous & Hazelhurst, 2004; Ardington et al., 2003). Although mobile banking technology has the potential to overcome cost and access barriers, as demonstrated in Kenya (Suri & Jack, 2016), uptake has been very low in South Africa, mainly due to high levels of mistrust and limited mobile phone reception in rural areas (Brown et al., 2003). Further, access to formal credit markets is largely constrained for poor segments of the population who, instead, commonly resort to informal moneylenders ("loansharks"). These moneylenders normally operate under high levels of secrecy and rarely keep official record of their transactions (Siyongwana, 2004). There are further accounts of illegal practices for collecting loan defaults such as confiscation of household goods, proof of identity, and grant or bank cards (Kirsten, 2006; Mashigo, 2006). Consequently, borrowers are often forced to take another loan to settle outstanding debts, thus creating a debt spiral (James, 2014).

B Sampling

The sample of this study consists of adolescents (aged between 10-18 years) and the adult household member identified as their primary caregiver[3], with a final sample size of 552 households.[4] Recruitment was done through purposive sampling, aiming to enroll designated at-risk families who had experienced intra-household conflict

[3]Adults and teens had to spend a minimum of four nights per week in the same dwelling to be eligible for this study. Primary caregivers were defined as the person primarily responsible for the day-to-day care and support of the children in the house and could include one of the biological parents of the child, another family member such as an aunt/grandparent, or a non-relative.

[4]The sample size was based on power calculations implemented in Optimal Design Software (Raudenbush et al., 2011), indicating that 40 equal clusters with an average of 12 families per cluster were needed for a minimum detectable effect size of a standardized mean difference of 0.36 and desired power of 0.80 with two-tailed $p < 0.05$. An intra-cluster correlation coefficient (ICC) of 0.08 was assumed for the power calculation, informed by ICC values ranging from < 0.00 to 0.15 in the pilot study. To account for the potential attrition rate, the trial oversampled by 10% of required participants. This resulted in a final sample of 552 households.

and economic hardship. Families were mainly identified through door-to-door risk screenings conducted by a trained local research team. Some families were recruited through referrals from local Departments of Social Development and Education, local community-based social workers, schools, and village chieftains. Informed consent to participate in the study was sought during home visits when both the primary caregiver and the adolescent were enrolled into the study. If potential participants had severe learning disabilities and therefore were unable to give informed consent, they were not included in the study for ethical reasons. The study did not provide any monetary incentives for participation but provided small food parcels.

C The Intervention: The Sinovuyo Teen Program

The program, named Sinovuyo Teen (translated as 'we have happiness' in vernacular isiXhosa), was developed and implemented in collaboration with *UNICEF South Africa* and the *World Health Organization*. The program design was iteratively tested and adapted over three years to ensure cultural and contextual adequacy (Cluver et al. 2016a, 2016b, 2016c). The program curriculum was delivered over 14 consecutive weeks and has been designed to include a range of components to address psychological and social factors (delivered in 12 sessions), in addition to conventional budgeting and saving training (delivered in two sessions) (see Table 1). Hence, session content was more holistic than in a standard financial literacy program. Additionally, content was geared towards encouraging the formation of supportive and nurturing relationships between family members and community members, as well as promoting optimism through praise and exposure to fictional role models and success stories. The program manuals are freely accessible via the World Health Organization under the Creative Commons License.[5]

Psychosocial program component

Key components of the 12 psychosocial sessions were focused on improving parent-

[5] http://www.who.int/violence_injury_prevention/violence/child/PLH-manuals/en/

Table 1. Program Curriculum

Session	Content	Delivery
1	Introducing the programme & defining participant goals	Joint
2	Building a positive relationship through spending time together	Joint
3	Praising each other	Joint
4	Talking about emotions	Separate
5	Managing anger and solving problems	Separate
6	Problem solving techniques	Joint
7	Motivation to save and making a budget for the month	Joint
8	Coping with problems I	Separate
9	Coping with problems II	Separate
10	Establishing rules and routines in the household	Joint
11	Ways to save money & making a family saving plan	Joint
12	Avoiding risk in the community	Joint
13	Responding to crisis – Anger reduction and problem solving	Joint
14	Identify support structures for lasting change	Joint

child relationships, family cohesion and harmony, including the promotion of non-violent discipline, spending time together, socioemotional learning, and practicing specifically labelled praise. Thus, these components built on research that depicts praise as a compelling predictor of self-esteem, effort, and optimism (Genicot & Ray, 2017; Darolia & Wydick, 2011). Further session components comprised anger and aggression management, coping with stress, practicing joint problem solving, and integrating rules and routines in the household and day-to-day family life. Given the high-crime context of the program setting, content also addressed the issue of safety and discussed strategies to avoid and cope with community violence. It further introduced family communication strategies for sensitive topics such as HIV/AIDS and poverty as well as mindfulness practices for stress reduction.

Apart from leveraging family reinforcement, the program was delivered in a group setting, with the intention of capitalizing on the role of peers and their influence on a person's financial and other behaviors (Duflo & Saez, 2000). At the program's outset, participants were paired up with a program partner from the same village (a "buddy")

and motivated to meet regularly during the week and discuss challenges at home with their assigned partner. In line with the logic underlying pertinent self-help groups such as Alcoholics Anonymous and saving clubs (e.g. ROSCAS), group settings can help build and reinforce social norms by "sanctioning" deviation from an endorsed behavior with reputation costs (Kast, Meier & Pomeranz, 2018). Consequently, peer pressure and social learning cascades could potentially increase saving discipline and prioritization of essential expenditures (Fiorill, Potok & Wright, 2014; World Development Report, 2015).

Economic Component

Economic content was comprised of the following three core components:

1. Motivating participants to save through a short play revolving around common challenges such as ''making it through the month" with grant money, coping with unforeseen emergencies, and preparing for major life cycle events (e.g. circumcision school[6] or high school graduation). Characters in the plays were intentionally placed into settings and conditions similar to those of participants in order to ensure that participants could relate easily with the presented narratives of economic success. Previous empirical research has found that exposure to role models can change people's perceptions and expectations of their own lives via "vicarious learning" (Bernard et al., 2014; Chong, Duryea & La Ferrara, 2012; Jensen & Oster, 2009; Bandura, 1977).

2. Teaching skills on budgeting and saving through a visual budgeting exercise designed to prompt participants on how to most effectively use available resources and to carefully consider possible income shocks.[7] Further, the program fea-

[6] Circumcision or initiation school refers to an initiation rite that is practiced in Xhosa culture, with the intention to prepare boys for the responsibilities of manhood. Initiation schools often last for several weeks during which a group of male initiates go to a forest or a camp for the circumcision ceremony, followed by a phase of seclusion.

[7] For the purpose of this exercise, participants were given a fictional monthly budget with which they had to allocate key areas of monthly expenses, decide which expense categories to prioritize over others, and practice re-arranging the budget in response to an economic shock scenario. The exercise was designed to be visual and tactile and reduce cognitive load rather than rely on higher order numeracy and literacy (Mason, Cooper & Wilks, 2015; Paas, Renkl & Sweller, 2003).

tured an interactive discussion on the benefits and limitations of different saving strategies. Rather than endorsing one specific saving strategy, individual choice was encouraged, motivated by research suggesting that financial education is most effective if it considers participants' needs and offers individualized financial counselling rather than being delivered in general terms (Carpena et al., 2017; World Development Report, 2015; Avdeenko, Bohne, Frölich & Kemper, 2015).

3. Encouraging mental commitments to saving by drawing on goal setting theory that postulates a direct link between conscious goals and action (Carpena et al., 2017; Locke & Latham, 2002; Fiorill et al., 2014; Ryan, 1970). Accordingly, participants were asked to define saving goals for their families and make saving plans based on explicit commitments. In the following weeks of the program, homework practice discussions gave participants room for sharing successes and challenges in realising their saving goals. These elements were designed to function as a soft commitment via peer pressure and anticipated feelings of guilt associated with failure to reach goals (Karlan & Linden, 2014; Shafir & Thaler, 2006; Benabou & Tirole, 2004).

Delivery format

Program content was delivered in a collaborative, activity-based, and non-didactic format. Given low literacy and numeracy rates in the population, financial training modules were kept simple and brief. This approach is in line with Drexler and colleagues (2014), who found that a simplified rule-of-thumbs training achieved the highest effectiveness in a population of low-skilled microentrepreneurs (see also Lusardi, Keller & Keller, 2009). Basic elements from cognitive behavioral therapy (CBT) were used throughout each session with the intention to override automated and fast decision making with more conscious and deliberate reflections (Blattman et al., 2017; Heller et al., 2017). These included active practicing of new behaviors through repetition, "homework", and positive reinforcement provided by facilitators or peers (Blattman et al., 2017). Sessions adhered to a similar structure each week, starting with a shared meal, followed by home practice discussions. Facilitators then introduced the week's

core lesson in the form of an illustrative story of a South African family. New skills and behaviors were introduced in relation to the story, and participants could practice new skills in role plays and interactive exercises and a non-judgemental, suppportive setting. Local cultural practices were infused into the curriculum through songs, dances, and shared prayers in order to keep participants engaged, build trust, and strengthen social ties between members of the group.

The program was held in community locations such as town halls or schools and was delivered by trained community members, auxiliary social workers, and local lay workers. Facilitators attended a week-long training before implementation of the intervention and then participated in weekly peer-led supervisions focused on specific session content. Sessions were held once a week for 12-16 caregiver-adolescent pairs per study cluster and lasted arond 3-4 hours. In four sessions, teens and caregivers were split into separate groups to allow for improved confidentiality and sensitive discussions. The remaining ten sessions were jointly attended. If participants were unable to attend sessions—for example, due to illness or social obligations like funerals or care duties—facilitators delivered a condensed version of the session in participants' homes. Therefore, program compliance was very high: Overall, caregivers received an average of 12.6 out of 14 sessions (90%) and adolescents 12.8 out of 14 (91%). A third of these sessions were delivered in home visits (see Shenderovich et al., forthcoming).

D Experimental Design and Timeline

The study randomly assigned 40 clusters (32 rural and 8 peri-urban) including 552 caregiver-adolescent pairs to either receive the Sinovuyo Teen program (treatment group) or a one-day hygiene intervention focused on skills-building for safe water conservation and handwashing (control group). Randomization was done for clusters within the two strata rural vs. peri-urban location in a 1:1 ratio. Following Cochrane Collaboration guidelines, randomization was performed by an external statistician with a random number generator in Excel. The trial and a pre-analysis plan were registered in the American Economic Association's registry for randomized controlled trials (ID AEARCTR-0002138) and in the Pan-African Clinical Trial Registry (ID

PACTR201507001119966)[8] Blinding of participants and program implementers was not feasible. Blinding of research assistants was assured during baseline data collection. However, parts of the research team were involved in the process evaluation of the actual program, and consequently it was impossible to maintain blinding throughout the entirety of data collection.

Recruitment and baseline surveys were carried out from March to August 2015. The intervention program was implemented in the 20 treatment villages between August and November 2015. Post-test surveys were administered between March and July 2016. Notably, follow-up data collection coincided with the run-up to regional elections in the study location. Linked to these, there were several riots and protests used to voice frustrations with poor service delivery, prevailing social inequality, and corrupt political leadership, which hindered access to some of the study villages or the research office and caused several interruptions in the post-test data collection. These unanticipated interruptions extended the post-test data collection to five months and resulted in the cancellation of a longer-term follow-up period.

Lastly, qualitative data was collected in collaboration with UNICEF with the intention of complementing our quantitative findings and elucidating possible mechanisms of change. For this purpose, focus group discussions were held in November 2015 in eight treatment locations, with two discussion rounds for adults and adolescents, separately. Each discussion thus included the same group that participated in the weekly program sessions, ranging from between 10-15 adults and adolescents, respectively. In addition, between January and May 2016, we conducted in-depth semi-structured follow-up interviews with 42 program recipients (50% adults and 50% adolescents) who were purposefully selected to achieve a balance of rurality, gender, age and session attendance and engagement. Interview and discussion guides included open-ended questions probing participants to reflect upon any changes (positive or negative) that they and their families had experienced as a result of the intervention

[8] A detailed trial protocol has further been published in *Trials* (see Cluver et al. 2016b: "A parenting program to prevent abuse of adolescents in South Africa: study protocol for a randomised controlled trial").

and to identify the key factors underlying these changes (e.g. new skills, more optimism, etc.). Interviews and discussions were transcribed and translated to English.

E Data

Baseline and post-test data were collected via standardized questionnaires administered on tablets. Surveys were designed as audio- and mobile-assisted self-interviews in order to maximize privacy and confidentiality of the interview and reduce possible social desirability bias. Questionnaires were available in both English and isiXhosa, and each questionnaire item was translated and back-translated. Research assistants were recruited from local communities, were fluent in isiXhosa, and extensively trained in interview techniques and research ethics. They were further trained to guide participants on the use of the tablets and to offer assistance where needed. Interviews lasted between 90-120 minutes and were conducted with adolescents and caregivers separately. Interviews were typically held at participants' homes, in their gardens, or close to schools (with adolescents). Local research assistants were specifically trained in choosing settings in which privacy and confidentiality could be guaranteed. If immediate risk was identified (such as suicidal attempts or exposure to severe sexual violence), participants were immediately referred to the appropriate social services by the research team or to receiving post-exposure prophylaxis for preventing possible HIV infection after reported incidences of rape .

The questionnaire captured basic sociodemographic information, including household composition, education, employment, food security, and asset wealth. Further, we collected information on self-reported financial behaviors, including actual *saving* and *borrowing*, both from moneylenders and family members and friends. We further measured *financial attitudes* based on an index from several statements as used previously by Karlan & Linden (2014). Statements (e.g. "It is important to save money for the future") were ranked by their importance on a scale from 1 ("not important

at all") to 10 ("very important").[9] *Financial self-efficacy* was assessed via two items drawn from Lown (2011) and adapted to the context of this study. Items asked respondents about their confidence level to smooth consumption over the month and effectively plan a monthly budget. Response options ranged from 1 ("not confident at all") to 10 ("very confident").

Additional outcomes were broader indicators of household economic wellbeing. Arguably, these outcomes can capture more distal consequences of improvements in financial behavior and management. First, we included a composite measure of self-reported financial distress to capture cash and consumption shortfalls in the previous month (see Sami, 2014). An additional item asked for worries about money and was created to assess potential psychological consequences of living in poverty (see Calvo & Dercon, 2013; Banerjee & Duflo, 2007; Case & Deaton, 2005). In addition, we measured participants' ability to cope with economic shocks, using two items derived from previous research (Kast et al., 2018; Prina, 2013; Dupas & Robinson, 2013). The first item assessed the perceived availability of financial means to respond to a hypothetical emergency scenario, and the second identified the sources of these potential means. The following coping strategies were defined as risky and therefore coded as equivalent of being unable to cope: a) borrowing at extremely high interest rates, b) reducing health expenditures, c) reducing educational expenditures, and d) reducing food expenditures. Lastly, we created an index on past-month self-reported access to the top eight most important basic necessities as endorsed by over 80% of the South African population in a nationally representative survey (see Noble & Wright, 2013; Pillay, Roberts, & Rule, 2006). These included access to education (including school fees, school uniform, and textbooks), health care, clothes and toiletries. All indices were aggregated using a data-driven approach by determining item weights based on principal component analysis.

Most outcome measures were reported by both adults and adolescents living in the

[9] Piloting of the 10-point Likert scales suggested that respondents had difficulty understanding the conceptualization of the rating scale. In response, the scale was visualized in the form of a color scheme whereby red was used to reflect negative and green to reflect positive ratings. A second piloting phase showed clear improvements in participants' understanding and use of the scale.

same household. Specific questions on past-month saving and borrowing were only included in the adult survey, under the assumption that the majority of adolescents were likely not fully informed about household financial management. Analyses were conducted at the individual level for adults and adolescents separately.

F Attrition

At follow-up, we traced participants across the country if they had moved to another city, thereby minimizing attrition. Attrition could therefore be kept to a minimum. Attrition in the adult-sample was as low as 2% and 4% in the adolescent-sample, thus comparing favorably to previous studies. In order to test whether attrition was differential, we first regressed the attrition dummy on the treatment dummy. We show that attrition was not significantly associated with treatment status for either adults (p=0.46) or adolescents (p=0.54) (see Table A1).

G Estimation Strategy

Randomization of the treatment assignment allows us to establish a credible counterfactual condition and therefore allows for a causal estimate of the program's impact. The average effect of being assigned to the treatment group, the intent-to-treat effect (ITT), on each outcome variable Y was estimated by running the following ANCOVA regression:

$$Y_i = \alpha + \beta T_i + \gamma Y_{i(t-1)} + \delta S_i + \epsilon X_i' + \omega_{ij} \quad (1)$$

where T_i was an indicator variable for treatment arm equal to 1 if individual i had been assigned to receive the program, $Y_{i(t-1)}$ was the lagged outcome (at baseline), S_i was a stratification dummy for urban/rural location, X_i' was a vector of individual-level baseline covariates (age, gender, marital status, educational status, employment, baseline poverty level measured via household asset holdings, and household grant receipt), and ω_{ij} was an error term for individual i and village cluster j. For all outcomes, we present three different estimation strategies for equation (1), namely

(i) excluding the baseline control of the outcome $Y_{i(t-1)}$, (ii) including $Y_{i(t-1)}$, and (iii) including additional individual controls. We considered the ANCOVA specifications (ii and iii) as superior given that baseline-adjusted analysis of covariance is robust to possible baseline imbalances that may occur by chance (see Vickers & Altman, 2001).[10] Furthermore, conditioning on the baseline level of outcomes can also improve statistical power (see McKenzie, 2012). For binary and ordinal outcomes, we used linear probability models in the main analyses and report probit models (or ordered probit models) in supplementary analyses (see Table A6). Standard errors were clustered by the unit of randomization, the village. Our coefficient of interest was β, the intent to treat (ITT) effect.

Given that we were testing nine different outcomes, the probability of falsely rejecting at least one null hypothesis was increased (see Anderson, 2008). Therefore, we controlled for the potential false discovery rate by correcting standard errors for multiple testing (Fink, McConnell & Vollmer, 2014; Anderson, 2008; Benjamini et al., 2006). We used the Benjamini-Hochberg method which is less conservative than the simple Bonferroni adjustments (Benjamini et al., 1995). We present sharpened q-values in addition to naïve p-values for all main results.

Lastly, heterogeneity in treatment effects was explored using the following specification:

$$Y_i = \alpha + \beta T_i + \theta TRAIT_i' \times T_i + \gamma Y_{i(t-1)} + \delta S_i + \epsilon X_i' + \omega_{ij} \quad (2)$$

where $TRAIT_i$ was a vector of baseline characteristics for which we assumed heterogeneity in the effectiveness of the treatment (note that each individual trait is also included in the vector X_i'). The average treatment effect for the subgroup of people with a respective trait was then given by the sum of the coefficients $\beta + \theta$ for that trait. As before, we clustered standard errors in this type of specification at the village level. All tests considered here were two-sided. Equation (2) was estimated

[10] If, by chance, baseline scores are significantly worse in the treatment group than in the control group, we would systematically under-estimate treatment effects by using follow-up scores only and over-estimate them by using change scores. Vickers & Altman (2001) recommend the use of baseline-adjusted analysis of covariance to alleviate this problem and to yield estimates that are robust to a possible baseline imbalance.

for all traits specified in our pre-analysis plan. Below, we focus on traits that were associated with suggestive differential treatment effects.

II Results

A Summary Statistics and Orthogonality Verification of Randomization

We document baseline characteristics of adults and adolescents in Table 2. Since our recruitment was conditioned on primary caregiving for children living in the household, our sample was heavily female, with females representing over 90% of adult study participants. Only about a third of these participants were married, and the mean age was 49 years. There was more variation in gender for adolescent participants, 42% of whom were female. At the time of program implementation, 95% of adolescents were attending school. The HIV status of participants was determined using a combination of self-report and the verbal autopsy checklist,[11] and findings suggested a high HIV prevalence of 25% among both adolescents and adults.

The study sample was characterized by high poverty levels, unemployment rates, and dependency on social assistance, thus reflecting the prevailing economic state of the Eastern Cape. Accordingly, 72% of households in our study sample had no income from formal full- or part-time employment. The median monthly per capita income from welfare grants amounted to 350.00 ZAR (equivalent to $29), and approximately 10% of households had received a government-subsidized housing assistance.[12] Most families had access to electricity, but only roughly one third had water taps inside their homes. Similarly, about one third of the sample lived in informal settlements

[11] This approach classifies an individual as HIV-positive (or AIDS-ill) if (i) they self-identify as HIV-positive, or (ii) they display three or more AIDS-related symptoms from the adapted verbal autopsy (VA) checklist, including weight loss, wasting, jaundice, shingles or rash, abscesses or sores, oral candidiasis, respiratory tract infections, persistent diarrhea, vaginal tumours, and tuberculosis in the last two years (see Lopman et al. 2006).

[12] Housing assistance is part of the Reconstruction and Development Program (RDP) that was adopted by the African National Congress in 1994 with the intention of addressing shortages in social service and infrastructure provision, including state subsidies for housing, clean water, and electrification.

such as shacks. Families were fairly food-insecure: on average, adults reported 2.9 "hungry" days per week, and adolescents reported 1.8 "hungry" days, suggesting that caregivers prioritized children's nutrition over their own (see Blackden, Canagarajah, Klasen & Lawson, 2007; Klasen, 1996).

With regards to household financial management, we observed low baseline saving rates. Only 18% of individuals reported any saving activities in the previous month. Out of these, only 29% (5% of the full sample) had access to a formal bank account. The majority saved through informal devices, namely in savings groups or by storing money at home. Study participants qualitatively noted that main reasons for not holding a bank account included mistrust based on anticipations of fraud and theft as well as inflexible account regulations like 30-day notification periods for withdrawals. However, our qualitative evidence also highlights the risks of saving through informal mechanisms, as money stored at home was considered to be insecure, given the risk of robberies, fires,[13] and theft by other household members. Similarly, savings groups were portrayed as potentially dysfunctional and unreliable because pay-outs sometimes failed to materialize. Rates of past-month borrowing were high, with 67% of individuals reporting taking loans within their closer social circles and 42% from a moneylender. While more than half of the sample paid into a form of funeral insurance, only 20% reported being able to cope with potential income shocks and emergencies most often related to illness or death in this population. On average, rates of positive financial attitudes were quite high at the outset, but perceived financial self-efficacy was substantially lower.

[13] Fiery incidents (also often referred to as 'shack fires') are caused by reliance on solid fuels and flammable hydrocarbons (e.g. paraffin) for energy. These incidents are highly prevalent in South African informal and under-resourced settlements (Kimemia & Niekerk, 2017).

Table 2. Sample Characteristics and Balance Checks

	Adult Report				Adolescent Report			
	Sample	Control	Treatment	Equality of means p-value	Sample	Control	Treatment	Equality of means p-value
Panel A: Sociodemographics								
Age	49.37	49.94	48.79	0.33	13.84	13.85	13.83	0.95
	(0.95)	(0.95)	(0.97)		(0.12)	(0.17)	(0.18)	
Female	0.95	0.93	0.97	0.06*	0.42	0.40	0.44	0.33
	(0.02)	(0.01)	(0.01)		(0.49)	(0.49)	(0.50)	
Married	0.36	0.36	0.36	0.86				
	(0.02)	(0.03)	(0.03)					
High school & higher	0.37	0.36	0.38	0.58				
	(0.02)	(0.03)	(0.03)					
Currently employed	0.06	0.07	0.05	0.48				
	(0.01)	(0.02)	(0.02)					
Attending school					0.96	0.95	0.97	0.44
					(0.01)	(0.02)	(0.01)	
HIV positive	0.27	0.28	0.26	0.66	0.26	0.28	0.23	0.16
	(0.02)	(0.03)	(0.03)		(0.02)	(0.03)	(0.02)	
Panel B: Household Characteristics								
Household Size	5.17	4.99	5.36	0.06*				
	(0.10)	(0.14)	(0.13)					
Brick/concrete House	0.72	0.74	0.71	0.67				
	(0.03)	(0.04)	(0.04)					
Water tap inside house	0.37	0.31	0.42	0.14				
	(0.04)	(0.04)	(0.06)					
Electricity access	0.93	0.92	0.94	0.22				
	(0.01)	(0.02)	(0.02)					
Hungry days/week	2.85	2.88	2.82	0.75	1.79	1.91	1.66	0.22
	(0.09)	(0.12)	(0.15)		(0.10)	(0.14)	(0.14)	
Financial distress index	-0.00	0.04	-0.04	0.59	0.00	0.21	-0.21	0.00***
	(0.08)	(0.11)	(0.11)		(0.08)	(0.10)	(0.09)	
Necessities index	0.68	0.68	0.69	0.83	0.85	0.81	0.89	0.09*
	(0.02)	(0.03)	(0.03)		(0.03)	(0.04)	(0.03)	
Asset index	0.00	-0.09	0.09	0.22				
	(0.08)	(0.12)	(0.10)					
Grant income ZAR/cap	422.49	428.81	415.92	0.67				
	(15.19)	(24.85)	(17.59)					

	Adult Report				Adolescent Report			
	Sample	Control	Treatment	Equality of means p-value	Sample	Control	Treatment	Equality of means p-value
Panel C: Household Financial Management								
Financial self-efficacy	2.71	3.45	2.74	0.81	3.27	2.68	3.63	0.18
	(0.12)	(0.14)	(0.14)		(0.21)	(0.20)	(0.17)	
Financial attitudes	6.93	5.10	6.87	0.45	5.00	7.00	5.20	0.17
	(0.09)	(0.07)	(0.11)		(0.12)	(0.14)	(0.09)	
Any savings past month	0.18	0.17	0.18	0.82				
	(0.02)	(0.03)	(0.02)					
... held in bank account	0.28	0.27	0.29	0.83				
	(0.05)	(0.08)	(0.06)					
... held in savings group	0.34	0.33	0.35	0.85				
	(0.05)	(0.07)	(0.08)					
... held at home	0.43	0.41	0.45	0.67				
	(0.05)	(0.06)	(0.08)					
Any insurance cover	0.57	0.55	0.59	0.39				
	(0.02)	(0.03)	(0.03)					
Borrowed from kin	0.61	0.56	0.67	0.01***				
	(0.02)	(0.03)	(0.03)					
Borrowed from lender	0.44	0.46	0.42	0.38				
	(0.02)	(0.03)	(0.03)					
Resilient to shock	0.20	0.17	0.23	0.15				
	(0.02)	(0.02)	(0.02)					
Observations	552	282	270		558	278	270	
Joint orthogonality F-test				**6.28*** **				**3.44*** **

Notes: Clustered standard errors in parentheses. Last column presents p-values from joint-orthogonality F-test.

We used a joint orthogonality F-test to assess baseline balance across arms and found randomization to be effective. For both adult and adolescent household members, the treatment and control group were balanced along most characteristics (see Table 2, Columns (4) and (8)). For the adult sample, there was a higher percentage of female participants in the treatment arm. Our analyses therefore controlled for participant sex. Similarly, the rate of borrowing from family members or friends was significantly higher for adult participants in the treatment arm (p=0.01). In the adolescent sample, both the teen-reported financial distress index and the basic necessities index pointed to lower levels of poverty in treatment group households. To account for potential imbalance at baseline, all analyses controlled for the baseline value of the respective outcome.

B Impacts on Financial Planning and Management

Results for the intermediate outcomes on household financial planning are reported in Table 3, columns (1)-(6). For each outcome, we first ran a model including only the randomization strata as a predictor, then added the lagged outcome in the second model, and additional controls in the third model. Accross outcomes, magnitude and significance of the program effects are robust to all three specifications. Therefore, we focus on the full ANCOVA specification in the following paragraphs. For outcomes based on indices, we additionally present disaggregated regression results for individual items in the Supplemental Tables (A2)-(A5). For outcomes measured on a binary or ordinal scale, we additionally report probit models in Table A6.

Column (1) in Table 3 shows the estimates of the program effect on self-reported saving rates. In the control group, 23% of respondents indicated having managed to save some money in the previous month, compared to 38% in the treatment group. The treatment effect corresponds to an increase in savings by 15 percentage points at a significance level of $p < 0.01$. Effects are also significant in alternative probit specifications (see Table A6). In Table A2, we provide disaggregated results for different saving methods. We found that the positive effect on overall saving rates was largely

driven by an increase in savings held in a formal bank account or in a savings group. While the coefficient for savings held at home was negative, it was not distinguishable from zero, suggesting that these effects were not simply a crowd-out from private to (quasi-) institutionalized savings.

Columns (2) and (3) in Table 3 present the program effects on self-reported frequency of past-month borrowing. We observed lower borrowing rates in the treatment group relative to the control group; breaking down into a fall in 15 percentage points for any borrowing from moneylenders (control mean: 47%) and 10 percentage points for any borrowing from within the closer social network (control mean: 70%), namely from family members or friends. The effect on borrowing from family members or friends trended non-significantly towards a decrease in rates. In some cases, this form of borrowing may have substitutes borrowing from moneylenders. Notably, borrowing rates among program recipients remained relatively high at post-test, with one third of participants reporting borrowing from moneylenders and over half reporting borrowing from friends and/or relatives. These rates suggest that borrowing stayed an important means for smoothing consumption that could only be partially substituted by higher accumulated savings.

Further, we found indication of a significant and positive program impact on participants' financial self-efficacy (see Table 3, Column (4)). On average, adult program recipients reported 49% greater self-efficacy to conduct careful and sustainable financial management than the adult control arm. Similarly, adolescents in the treatment arm reported on average 29% higher self-efficacy scores for their families. By contrast, the program showed no impact on financial attitudes, possibly because attitudes endorsing saving and careful financial management were already relatively high at baseline (see Table 3, Column (5)). All significant effects reported above are robust to the false discovery rate adjustment.

Table 3. ITT Estimates for Intermediate Outcomes: Financial Planning and Financial Management

	(1) Holds Any Savings			(2) Borrowed from Lender			(3) Borrowed from Kin			(4) Financial Attitudes			(5) Financial Self-Efficacy		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
nel A: Adults															
T: Received	0.15***	0.15***	0.15***	-0.23***	-0.22***	-0.21***	-0.08	-0.08	-0.09	-0.02	-0.01	-0.02	1.32***	1.32***	1.31***
ogram	(0.04)	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)	(0.13)	(0.13)	(0.14)	(0.27)	(0.26)	(0.27)
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.15]	[0.15]	[0.14]	[0.91]	[0.96]	[0.87]	[0.00]	[0.00]	[0.00]
gged Outcome	/	0.05	0.03	/	0.10***	0.09***	/	0.01	0.01	/	-0.06	-0.07*	/	0.10*	0.08
		(0.05)	(0.05)		(0.03)	(0.03)		(0.04)	(0.04)		(0.04)	(0.04)		(0.05)	(0.05)
rata	-0.06	-0.06	-0.08	0.04	0.05	0.08	-0.04	-0.04	-0.04	0.17	0.18	0.07	0.36	0.36	0.21
	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	(0.15)	(0.16)	(0.32)	(0.35)					
ntrols	no	no	yes	no	no	yes	no	no	yes	no	no	yes	no	no	yes
servations	540	539	534	540	539	534	540	539	534	540	539	534	540	539	534
C		0.00			0.00			0.01			0.03			0.05	
ean Control		0.23			0.47			0.70			7.34			2.10	
nel B: Adolescents															
T: Received										-0.19	-0.19	-0.18	1.03***	1.02***	0.97***
ogram										(0.16)	(0.17)	(0.17)	(0.25)	(0.25)	(0.24)
										[0.29]	[0.30]	[0.33]	[0.00]	[0.00]	[0.00]
gged Outcome										/	-0.03	-0.04	/	0.14**	0.14**
											(0.04)	(0.04)		(0.06)	(0.05)
rata										0.25	0.24	0.18	-0.50	-0.51*	-0.59**
										(0.20)	(0.20)	(0.20)	(0.29)	(0.27)	(0.27)
ntrols										no	no	yes	no	no	yes
servations										530	526	522	530	526	522
C											0.01			0.06	
ntrol Mean											5.55			2.81	

tes: *p< 0.1, **p< 0.05, ***p< 0.01, based on naïve p-values. Multiple hypothesis corrected sharpened q-values in square brackets. Robust standard errors clustered at village level in rentheses. Column (1): Binary variable coded 1 for any savings in past month. Columns (2)-(3): Binary variable coded 1 for any past-month borrowing from moneylenders or family/friend. lumns (4)-(5): Continuous Scales, individual items aggregated via principal component analysis. Control variables used for model II are age, gender, marital status, educational status, ployment, baseline poverty level measured via assets, and household grant receipt. Control mean at post-test.

C Impacts on Household Economic Welfare

In the next step, we examined whether the program had positive trickle-down effects on wider aspects of household economic welfare. First, as shown in Table 4, Column (1), we observe substantial decreases in self-reported financial distress among adult program participants, significant at p<1%. To translate this into more meaningful terms, 52% of adult respondents in the control arm reported having run out of money for meat sometimes or often during the past month, compared to only 40% in the treatment arm. The same trend holds for money for electricity (37% versus 23%), transportation (44% versus 28%), and tentatively for mobile communication (56% versus 52%). These trends were corroborated by the adolescent-report. However, results based on adolescent-report need to be considered as less robust in view of substantial imbalance at baseline in favour of the treatment arm.

Further, we found significantly lower levels of poverty-related emotional distress among program participants. Put differently, in the control group, 51% of respondents reported frequent worries about money, while the intervention group reported a 16-percentage- point decrease to 35%. The same trend was found in the adolescent sample; however, levels of financial concerns were substantially lower than for adults. This could imply that adults did not necessarily share full information on financial concerns and struggles with their children, who were consequently less worried about potential monetary shortfalls.

We also examined participants' self-rated resilience to hypothetical income shocks (see Column (3) in Table 4). At post-test, we found significant improvement in coping capacity among participants in the treatment arm: with 37% indicating that they would be able to find ways of coping with a hypothetical financial shock scenario, compared to 26% in the control arm. In these counts, we excluded respondents who reported high-risk coping strategies such as borrowing at high interest rates and cutting down expenses on food, education or health.

In Table 4, Column (4), we examines the self-reported capacity of households to secure a range of designated basic needs in the past month. Our results revealed a 29% increase on a basic necessities index according to adult report. The difference was significant at the 1% level. After disaggregating these findings, the effect was most pronounced for securing schooling costs of children (see Table A4 in Supplement). At follow-up, 63% of program recipients reported being able to cover the costs for children's schooling in the previous month, compared to only 38% of their control group counterparts. Similarly, treatment arm participants compared favorably to the control with regards to affording medical treatment (35% versus 27%), warm clothes (49% versus 34%), two pairs of shoes (47% versus 32%), and toiletries (67% versus 56%). The adolescent sample reflected similar trends, namely significant improvements in access to the top-eight endorsed basic necessities. However, these trends should be interpreted with caution, given significant differences between study arms at baseline. Similar to the outcomes on household financial management, the above effects held after applying the multiple testing correction.

The intra-cluster correlation (ICC) for the present sample was low across all outcomes, ranging from 0.00 (see Columns (1)-(2) in Table 3) to 0.09 at maximum (see Column (4) in Table 4). These low ICCs explain why standard errors remained relatively small despite the nested structure of the data (see Duflo, Glennster & Kremer, 2008). ICC values in our analyses were lower than those found in previous cluster RCTs in comparable low-income settings in Sub-Saharan Africa. A first explanation may lie in the fact that our clusters were villages or townships rather than schools (e.g. Karlan & Linden, 2014), saving groups (e.g. Ksoll et al., 2017) or youth clubs (Jamison et al., 2014). Social interactions in our clusters were presumably less institutionalized; therefore, social ties were likely less cohesive, resulting in fewer similarities among subjects within a cluster. Further to this, it might be assumed that social cohesion, neighborhood ties, and social trust in South Africa are particularly low in view of high prevalence of crime and violence, particularly in townships (Roberts & Gordon, 2016; Emmett, 2002).

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Table 4. ITT Estimates for Distal Outcomes: Economic Welfare

	(1) **Financial Distress**			(2) **Worries about Money**			(3) **Coping with Shock**			(4) **Basic Necessities**		
	I	II	III	I	II	III	I	II	III	I	II	III
Panel A: Adults												
ITT: Received Program	-0.48*** (0.13) [0.00]	-0.46*** (0.13) [0.00]	-0.43*** (0.13) [0.00]	-0.31*** (0.07) [0.00]	-0.31*** (0.07) [0.00]	-0.30*** (0.08) [0.00]	0.17*** (0.05) [0.00]	0.15*** (0.06) [0.00]	0.14*** (0.04) [0.00]	0.20*** (0.05) [0.00]	0.20*** (0.05) [0.00]	0.19*** (0.04) [0.00]
Lagged Outcome	/	0.22*** (0.04)	0.19*** (0.04)	/	0.16** (0.04)	0.16** (0.04)	/	0.19** (0.05)	0.17** (0.05)	/	0.13*** (0.03)	0.11*** (0.04)
Strata	0.08 (0.22)	0.11 (0.21)	0.26 (0.23)	-0.17 (0.10)	-0.16 (0.11)	-0.16 (0.12)	-0.19*** (0.07)	-0.18* (0.07)	-0.23*** (0.07)	0.04 (0.06)	0.05 (0.06)	0.03 (0.06)
Controls	no	no	yes	no	no	yes	no	no	yes	no	no	yes
Observations	540	539	534	540	539	534	540	539	534	540	539	534
ICC		0.01			0.02			0.01			0.06	
Mean Control		0.23			0.51			0.26			0.63	
Panel B: Adolescents												
ITT: Received Program	-0.62*** (0.13) [0.00]	-0.55*** (0.13) [0.00]	-0.55*** (0.12) [0.00]	-0.17*** (0.08) [0.05]	-0.17*** (0.08) [0.06]	-0.18*** (0.08) [0.04]				0.15*** (0.04) [0.00]	0.14*** (0.04) [0.00]	0.13*** (0.03) [0.00]
Lagged Outcome	/	0.18*** (0.04)	0.19*** (0.04)	/	0.08** (0.04)	0.05 (0.04)				/	0.09** (0.04)	0.06 (0.04)
Strata	0.36 (0.16)	0.36** (0.15)	0.39** (0.15)	0.18** (0.08)	0.19** (0.08)	0.20** (0.08)				-0.01 (0.04)	-0.01 (0.04)	-0.02 (0.04)
Controls	no	no	yes	no	no	yes				no	no	yes
Observations	530	526	522	530	526	522				530	526	522
ICC		0.303			0.03						0.09	
Mean Control		0.30			0.14						0.77	

Notes: See also Table 3. Column (1): Continuous scale aggregated via principal component analysis. Column (2): ordinal variable measuring frequency of monetary concerns over the past month (1-4 Likert scale, denoting never, rarely, sometimes, often), Column (3): ordinal variable (1-3 Likert scale) denoting the ability to cope with a financial shock, coded as high if access to a non-risky emergency buffer stock, Column (4): Continuous scale aggregated via principal component analysis. Control variables used for models II are age, gender, marital status, educational status, employment, baseline poverty level measured via assets, and household grant receipt. Control mean at post-test, for ordered variable denoting prevalence of any worries about money. All outcome variables were based on self-report. All outcome variables are based on self-report.

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Lastly, we display standardized effect sizes[14] in Figures 1-2. Among adult participants, effect sizes were most substantial for financial self-efficacy, self-reported savings, and access to basic necessities. However, confidence intervals for these effects were quite large and estimates therefore less precise compared to other outcomes (see Figure 1). Similarly, the standardized effect was largest for self-efficacy among adolescent participants, likely reflecting the specific financial skills and increased confidence levels that families had acquired through the program.

[14]Standardized effect sizes were calculated as δ_w following the approach recommended in Hedges (2007) for intervention effects in clustered trials.

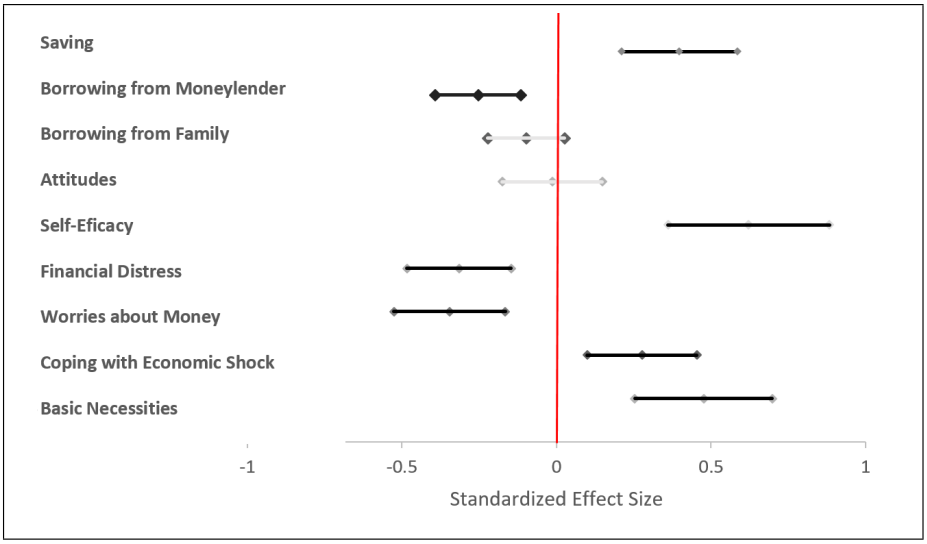

Figure 1. Adult Standardized ITT Effect Sizes at Post-Test

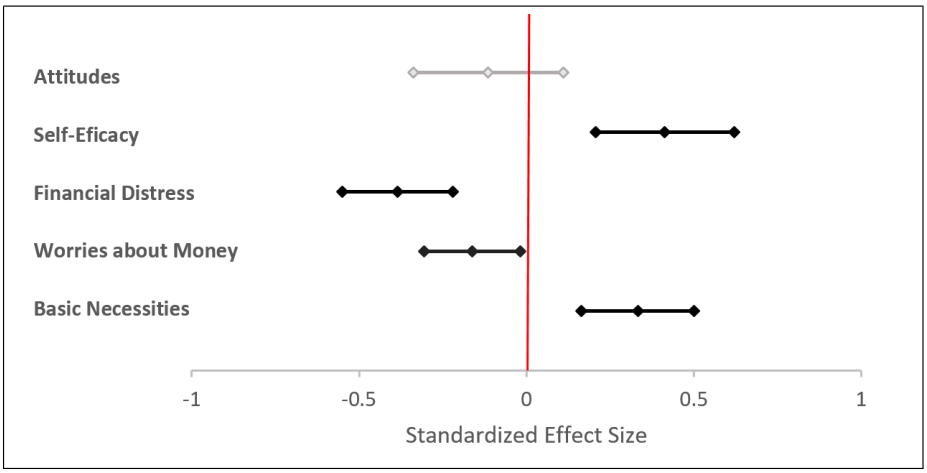

Figure 2. Adolescent Standardized ITT Effect Sizes at Post-Test

D Heterogeneity in Treatment Effects

This section examines heterogeneity in treatment effects based on pre-specified observable characteristics. We found suggestive evidence for heterogeneity for three traits in the adult sample, but none were robust to our FDR adjustment, possibly because of low statistical power. Thus, findings need to be interpreted with caution.

First, results suggested heterogeneity in impacts for married women and women cohabiting with male partners.[15] We found significant interactions between marital status and treatment assignment for the outcomes of borrowing from moneylenders (Column (2) in Table A7) and financial distress (Column (1) in Table A8), indicating that married women did benefit *less* from the program. These findings might be indicative of intra-household distributional dynamics whereby married women had less control over household financial management than male partners and therefore faced resistance when trying to implement new rules and practices in their homes (see Fiala, 2017; Doi et al., 2014; Fernald et al., 2008).

The second set of regressions examined the non-inferiority of effects for the particularly poor (also referred to as the "ultra poor", see Banerjee et al. 2015).[16] This is crucial when considering that some scholars have argued that promoting saving among the very poor may have the potential to decrease consumption to the point of harm (Sherraden et al., 2003). Reassuringly, our heterogeneity analyses revealed that treatment effects were not inferior for the ultra poor group across almost all outcomes (with the exception of financial attitudes, see Column (4) in Table A7). More importantly, we found a significant treatment-trait interaction for the outcome of access to basic necessities (see Column (4) in Table A8), pointing to *higher* program impact for the poorest program participants.

Lastly, we observed larger program impact in rural communities than in urban townships. Reductions in borrowing rates were more substantial (see Columns (2)-(3) in Table A7) and effects on financial self-efficacy were only significantly positive for participants in rural areas (see Colum (5) in Table A7). We speculate that these findings may stem from the fact that general service delivery, including financial services, was likely more available in urban (or peri-urban) locations. Therefore,

[15] The variable was coded to also include women who were not married but cohabiting with male partners. Throughout this paragraph, we refer to this sub-sample as 'married' for simplicity but also include women cohabiting with male partners.

[16] To be considered as ultra poor in the present sample, individuals had to report being food-insecure for more than five days per week and lack all of the following: electricity, livestock, water source inside the house, brick/concrete dwelling.

demand for alternative services and programs was possibly lower in these locations. Similarly, a study in Malawi found that program impact varied by distance, with adoption rates for formal bank accounts more than three times higher for communities that were several kilometres away from the nearest bank branch (see Flory, 2016).

E Robustness Check: Sustainability of Effects

A possible threat to the validity of our findings is that positive effects – especially those on behavioral outcomes (such as saving or borrowing) – might be strong and substantial immediately post-intervention but then diminish over time (see Steinert et al., 2018). We exploit the time span of our endline survey to explore possible heterogeneity in treatment effects between participants who were interviewed temporally closer to program delivery and those with longer follow-up periods (see Tables A9 in Supplement). We found no indication of any fading-out effect and are therefore more confident that program impact is likely sustained over time, possibly even beyond the nine months.

Our above argument would be flawed if the planning of post-test data collection was systematically dependent on some inherent characteristics of interviewees or treatment locations. However, we add further confidence to our above results by observing that baseline values for study participants interviewed in a below versus above median follow-up timeframe were balanced across all outcomes and socioeconomic characteristics. F-tests were non-significant for both the balance test in the adult sample (F=1.24, n.s.), and for the test in the adolescent sample (F= 0.24, n.s.). Hence, we can be more confident that program impact is likely sustained over time, possibly even beyond the nine months.

III Discussion of Potential Mechanisms

Overall, our results show that the combined financial literacy and parenting program was effective in improving financial behaviors as well as household economic welfare. In view of the limited success of previous financial literacy programs, our results are

particularly compelling. To inform future program designs, it is pertinent to unpack the causal mechanisms at play. We therefore first present additional findings from quantitative data and further draw on qualitative data to make conjectures about the presumed underlying causal pathways.

The unique feature of our program was the large share of psychological and social elements in the curriculum. A related program evaluation by Cluver and colleagues (2018) showed significant ITT effects of the Sinovuyo Teen intervention on psychological outcomes (depression levels) and social outcomes (family and community social support). Here, we used a mediation analysis to test the association between these factors and our financial outcomes (for a similar approach see: Heller, 2017; Imai et al., 2011, 2010). In Table 5, we first present the program's impact on three pertinent factors, namely optimism, community social support, and intra-household social support (denoted as path a). These factors were then used as mediators to predict financial outcomes (path b), for ease of interpretationhere aggregated into two indices, namely (i) financial planning and management and (ii) economic welfare (for disaggregated results see Tables A10-11).

In Table 5, we first demonstrate that participation in the program significantly increased levels of optimism and levels of social support at post-test. Notably, optimism was not increased in the adolescent sample (see also Cluver et al., 2018). For household financial management, we could confirm significant mediation effects for all three hypothesized psychosocial channels. Findings suggested that 26% of the program's effect on financial management was explained by higher levels of family cohesion and support, 22% of the effect was explained by greater optimism, and a small but significant 6% was ascribed to increased community social support. For economic welfare, we could only confirm a significant mediation effect for the optimism channel, which explained 19% of the total estimated program effect. However, as economic welfare is arguably a more distal outcome, we could assume that these effects were in fact largely driven by improvements in financial planning and behavior. Indeed, we show in Table 5 (last line of Panel I) that 34% of the program effect on economic welfare was explained by optimizations in financial management, namely higher sav-

ing and lower budgeting. Assuming that adults are mainly responsible for household financial management, we largely focus the above interpretations on this sample. For adolescents, mediation results were not fully in line with results for the adult sample. Here, the family support factor appeared as the most important channel.

The quantitative findings from the mediation analysis evidence the existence of both psychological and social channels, suggesting validity of our initial hypothesis. However, our data does not allow to establish temporal sequence between the mediator variable and the outcome. Causality for the hypothesized paths can therefore not be claimed. To shed further light on the suggestive links between psychosocial factors and financial outcomes, we drew on insights from qualitative data. For this purpose, transcripts from focus group discussions and in-depth interviews were coded using thematic analysis (Braun & Clarke, 2006). Qualitative statements that were conceptually similar and frequently mentioned across participants and locations were summarized into overall themes and discussed and validated with a second coder. Based on this analysis, we generated evidence on three distinct channels of program impact that were closely in line with the quantitative findings from the mediation analysis presented above.

Table 5. Mediation Analysis: Psychosocial Channels

			Financial Management Index			Economic Welfare Index		
Mediating Measure	Control Mean	Effect of Program Participation on Mediator [*path a*]	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated
Panel A: Adults								
Optimism	16.82	5.48***	0.07***	0.40	0.22	0.04***	0.22	0.19
		(1.01)	(0.01)	[0.24, 0.58]	[0.16, 0.34]	(0.01)	[0.12, 0.35]	[0.14, 0.29]
Community Social Support	27.23	3.05***	0.04***	0.10	0.06	0.01	0.02	0.02
		(0.78)	(0.01)	[0.03,0.20]	[0.04, 0.08]	(0.01)	[-0.07, 0.11]	[0.01, 0.02]
Family Social Support	16.67	4.87***	0.09***	0.44	0.26	-0.00	-0.02	0.02
		(0.56)	(0.02)	[0.22, 0.69]	[0.20, 0.37]	(0.02)	[-0.17, 0.13]	[0.01, 0.02]
Financial Management	0.86	1.78***				0.22***	0.40	0.34
		(0.30)				(0.05)	[0.22, 0.63]	[0.25, 0.55]
Control Mean Outcome			*0.86*			*-1.42*		
Panel B: Adolescents								
Optimism	18.27	-0.12				0.16***	-0.02	0.02
		(0.20)				(0.04)	[-0.09, 0.05]	[0.01, 0.04]
Community Social Support	27.23	3.05***				0.01	0.03	0.04
		(0.78)				(0.02)	[-0.05, 0.13]	[0.02, 0.07]
Family Social Support	18.55	1.30*				0.06***	0.08	0.09
		(0.70)				(0.02)	[-0.00, 0.18]	[0.06, 0.17]
Control Mean Outcome						*-0.55*		

Notes: *p< 0.1, **p< 0.05, ***p< 0.01. Clustered standard errors in parentheses, 95% CI in square brackets, based on nonparametric bootstrap with 1000 resamples. All analyses control for the baseline value of the outcome and rural/urban strata. **Financial behavior** is an aggregated index composed of past-month saving and past-month borrowing from moneylenders and/or friends/family members, and financial self-efficacy. **Financial welfare** is an aggregated index composed of financial distress, access to necessities, and resilience to income shocks (for adults). Mediator variables are composed as follows: **Optimism**: Continuous previously validated scales based on Center for Epidemiological Studies Depression (CES-D) instrument for adults and Children's Depression Inventory (CDI) for adolescents (both reversed). **Community Social Support**: Continuous previously validated scale based on Medical Outcomes Study Social Support Survey, only captured in adult-report (used also for adolescent mediation model). **Family Social Support**: Continuous previously validated scales based on Alabama Parenting Questionnaire, reported separately by adults and adolescents.

Financial Self-Efficacy and Self-Esteem: Empirical evidence generally highlights a substantial gap between behavioral intentions and realized actions. For instance, our study population reported high intentions to save more and borrow less. However, the majority were unable to translate these behavioral intentions into realized actions – with only 18% of the sample holding any form of savings at baseline (for similar findings see Banerjee & Duflo 2007). The concept of self-efficacy has a long-standing tradition in social cognitive theory and is depicted as an essential ingredient for behavioral change (Fishbein & Yzer, 2003; Bandura, 1986, 1977). Scholars argue that increases in self-efficacy can help bridge the gap between intentions and actions (World Development Report, 2015; Munro et al., 2007). Following this, our program curriculum focused on fostering self-efficacy though building skills for financial planning and management. Consequently, our quantitative analyses revealed a striking impact on participants' self-efficacy levels for both adult and adolescent program recipients. The qualitative data adds further nuance to these findings. Several participants described how skills acquired in the sessions have helped them make better financial decisions and manage limited financial resources (*"You cannot go to town without preparing your budget", "I am still using the skills acquired from Sinovuyo, such as budgeting, because I need to pay for my teen's initiation school",* see Panel (1), Table 6). Similarly, participant accounts documented improved awareness of the risks associated with certain saving strategies and improved knowledge on how to effectively save money (*"I have learned how to bank my money, because if you think you will hide your money in your home, there is something that can happen [. . .]",* see Panel (1), Table 6). Therefore, the program sessions have likely provided a supportive forum in which participants could openly discuss and weigh different and sometimes new options for saving and budgeting. The specific financial skills acquired in these sessions have likely helped materialize pre-existing saving intentions.

Furthermore, a stream of behavioral research has identified close links between low self-esteem and a lack of agency, both of which are key constraints to healthy financial behavior (Ghosal et al., 2015; World Development Report, 2015). Thus, our program curriculum sought to capitalize on promoting praise between caregivers

and adolescents (see Table 1) and thereby foster participants' self-esteem and self-worth (Bernard et al., 2014; Darolia & Wydick, 2011, Glewwe et al., 2014, Boudet et al., 2016). This may then have nurtured participants' feelings of agency and control over their (financial) lives[17] and turned into a motor for action (*"[Y]ou can learn important things and become somebody who is educated tomorrow [...]", "Now that I have learned how to save, I think I am able to build a house"*, see Panel (1), Table 6).

Peer Effects and Social Norms: The curriculum was situated in a group setting and participants had their assigned "buddy" from within the group, which has likely activated peer effects. Accordingly, a number of previous studies have demonstrated how peers mutually influence their financial behavior and decision-making through information sharing, moral support, and shaping of social norms (see Breza & Chandrasekhar, 2015; Kast et al., 2018; Hong, Kubik & Setin, 2004; Duflo & Saez, 2002). This can then cause multiplier effects for an endorsed financial behavior such as saving (World Development Report, 2015; Baird & Özler, 2010; Fernald et al., 2008).Our qualitative data reflected similar peer effects, whereby program participants repeatedly stated that they reminded each other about session content and financial plans (*"We remind one another about the sessions and advice one another on budgeting our pocket money"*, see Panel (2), Table 6). Saving and careful financial management likely became a "virtuous act" that was shared socially (Hardcastle, 2012).

In the same vein, our program appears to have benefited from involving both youth and adults from within the same households. Since participants were encouraged to revise, practice, and share program content at home, other household members were likely exposed to some of the program's lessons (*"We talked about the sessions when we got home. Everyone at home wanted us to come back and share the stories from the sessions", "We did the homework practice as a family and all participated, especially when we did the budget"*, see Panel (2), Table 6). This has the potential to reinforce

[17]Note that agency and financial control may in some cases strongly be shaped by more general aspects of household role distribution and power dynamics between women and men. Some female program participants may therefore face constraints with regards to financial decision-making and agency vis-a-vis their male partners or spouses.

program content, integrate it in the day-to-day family life, encourage mutual support between household members, and thus make program impact more sustainable. Similarly, Doi and colleagues (2014) tested a financial literacy program in Indonesia in three treatment arms, in which the training was targeted at the migrant worker in the first arm, another household member in the second, and both in the third. The program yielded largest effects both on financial planning and saving when offered to both the migrant and his family. Likewise, our qualitative data suggested that program effects had partly materialized through social support from within the household (*"I sit with my family and budget and buy things for my children in turns, all has to be agreed on by everyone",* see Panel (2), Table 6). We also recorded numerous accounts of adult caregivers engaging their adolescents in household financial planning, likely in consequence of improved parenting behaivor (see Table 5) (*"We now [. . .] advise on the things to buy and prepare a shopping list together"*, see Panel (2), Table 6). Through regular feedback and social incentives within the family and household, participants likely held each other accountable and consequently increased compliance with their financial plans (see also Kast et al., 2018).

Optimism and Future Outlook: A final possible channel through which program impact may have occurred is improvements in participants' optimism and future orientation (see Blattman et al., 2017; Bernard et al., 2014). Parallel to previous interventions, the short plays and stories in our sessions may have helped to shift participants' perceptions of their own lives in the form of a "vicarious experience" (see Bernard et al., 2014; Berg & Zia, 2013; Chong et al., 2012). Story characters that were easy to identify with (because they are situated in environments and contexts similar to those of participants) may have turned into role models and helped participants visualize their "best possible selves" (Layous, Nelson & Lyubomirsky, 2013; Sheldon & Lyubomirsky, 2006). This has the potential to challenge individuals' broader beliefs about their economic situation, instill a more positive future outlook, and help avoid procrastination and hopelessness (World Development Report, 2015; Bernard et all., 2014; Appadurai, 2001). Concurrently, participants described how participation in the sessions had made them realize that future goals could be reached despite "having little money" (*"I have learned from Sinovuyo that one does not have*

to have a lot of money to start saving.", see Panel (3), Table 6). Quotes also suggested that the role plays may have had an enabling function by making abstract future goals such as *"build[ing] a house"* or *"further[ing] [children's] education"* (see Panel (3), Table 6) more concrete and viable.

A more optimistic vision of the future can also explain possible shifts from present-biased planning and cognition to increased future-orientation and therefore higher saving (*"I am strict with my money now. I save my money."*, see Panel (3), Table 6). Similarly, participants described how the program increased their motivation to build security buffers in anticipation of possible future risks (*"Now we do not spend all of the money any more, because we know that there can be emergencies."*, see Panel (3), Table 6), as well as to prevent future indebtedness by avoiding overborrowing (*"[One should] take money at the bank and not go to a loan shark"*, see Panel (3), Table 6).

Table 6. Qualitative Survey Evidence on Program Mechanisms – Thematic Co ding

Thematic Area	Example Quotes	N related Quotes
Financial Self-Efficacy and lf-Esteem is comprises all statements in which ogram participants describe skills related to ancial planning or saving learned from the ogram and higher self-esteem and agency.	• *"I did learn about how to save because I used to eat all my money. But now that Sinovuyo taught me how to budget, I am sitting down with my teen and we budget."* (Adult, FGD, rural cluster) • *"I have learned how to bank my money, because if you think you will hide your money in your home, there is something that can happen in the house and will make you lose your money."* (Adult, FGD, urban cluster) • *"The session on budgeting has made my life easier because now I also consider economic shocks and crisis when I plan."* (Adult, FGD, rural cluster) • *"You cannot go to town without preparing your budget. Try to prepare one so that you don't spend all your money."* (Adult, FGD, rural cluster) • *"I am still using the skills acquired from Sinovuyo, such as budgeting, because I need to pay for my teen's initiation [circumcision] school. I am saving money from the child care grant and continue to avoid going to loansharks."* (Adult, QI, rural cluster) • *"Now that I have learned how to save, I think I am able to build a house. I have joined a Stokvel [savings group]."* (Adult participant, FGD, rural cluster) • *"My wish is to attend Sinovuyo every day so that you can learn important things and become somebody who is educated tomorrow when you die."* (Adolescent participant, FGD, rural cluster)	44/62
Peer Effects and Social Norms is comprises all statements in which ogram participants describe how program ntent is enabled and reinforced through cial interactions (within or outside of the nily) as well as how the program itself has aped social support and social norms.	• *"The relationship with my teen changed after Sinovuyo. We now can sit and spend time talking, and advise on the things to buy and prepare a shopping list together."* (Adult participant, QI, urban cluster) • *"I sit with my family and budget and buy things for my children in turns, all has to be agreed on by everyone. My husband sometimes does not understand the need to budget, especially when the plan is not in his favor."* (Adult participant, QI, rural cluster) • *"I particularly liked that my teen has now learned not to demand things that are beyond our reach."* (Adult participant, QI, rural cluster) • *"I am still in touch with my Sinovuyo buddy. We remind one another about the sessions and advice one another on budgeting our pocket money. We also read the story handouts together."* (Adult participant, QI, rural cluster) • *"We talked about the sessions when we got home. Everyone at home wanted us to come back and share the stories from the sessions. We did the homework practice as a family and all participated, especially when we did the budget."* (Adolescent participant, QI, rural cluster)	36/62
Optimism and Future Outlook is comprises all statements in which ogram participants communicate how they ve gained optimism and hope and how ir future outlook may influence financial cision-making. It also includes the goals t motivate their saving.	• *"I have learned from Sinovuyo that one does not have to have a lot of money to start saving."* (Adult participant, QI, rural cluster) • *"I have four children. My wish is to open an account for each of them so that they can further their education and improve their lives after I am gone."* (Adult participant, FGD, rural cluster) • *"I learned that I cannot rush things, I learned this from the woman in the role play when she had to take her child to school and initiation. I learned that I also must save money and praise my child."* (Adult participant, FGD, rural cluster) • *"Sinovuyo gave me and my family an open mind of doing budgeting and saving with my children so that if there is a problem at home we should go and take money at the bank and not go to a loan shark."* (Adult participant, QI,, rural cluster) • *"First, I used to use all my money, but now I think of 'needs' and not 'wants' before I use my money."* (Adult participant, FGD, rural cluster) • *"I am strict with my money now. I save my money."* (Adult participant, FGD, urban cluster) • *"The program helped me to know what you need when you have money and pay what is very important in the house so that you can save the rest of the money."* (Adolescent participant, FGD, rural cluster) • *"Now we do not spend all of the money any more, because we know that there can be emergencies."* (Adolescent participant, FGD, rural cluster)	20/62

Notes: FGD for focus group discussion, QI for qualitative interview. Quotes were translated from isiXhosa into English.

IV Conclusion

We set out to test the effectiveness of an integrated financial literacy and parenting program targeted at economically disadvantaged families in South Africa. Using an experimental design, we were able to elicit causal impacts on household financial management, including robust program effects on self-reported saving and borrowing from moneylenders as well as increases in financial self-efficacy. Similarly, we found substantial effects on household economic welfare, namely reductions in financial and poverty-related emotional distress, increases in self-reported access to a range of basic necessities, and improved resilience to economic shocks.

While a previous meta-analysis of 115 financial education programs found limited effectiveness for low-income clients (see Kaiser & Menkhoff, 2017), our findings hold true in a particularly deprived, largely female, and vulnerable population. We thereby contradict an almost stylized fact in the literature that contends that economic strengthening programs are less effective when targeting the "poorest of the poor" (Burlando & Canidio 2017; Banerjee et al., 2015; Barrientos & Scott, 2008; de Mel, McKenzie & Woodruff, 2008; Halder & Mosley, 2004; Hulme, 2000). Our results also provide an antidote to the prevalent misconception that poor people are "too poor to save" and to sustainably manage the resources they have. This finding is even more substantive considering the non-intrusive nature of our intervention. For instance, some previous programs have exerted strong behavioral control by introducing monetary incentivisation for saving or binding commitment arrangements that impose administrative restrictions to artificially reduce liquidity of money in a household.

Our program is different to more standard financial literacy programs in a number of aspects that could all be associated with its success. First, while a recent meta-analysis of financial literacy programs reports an average duration of seven weeks (with 3.5 hours per session) (Kaiser & Menkhoff, 2017), financial training in this program was only delivered in two weeks but accompanied by 12 weeks of more holistic, psychosocial training. In addition, we maximized exposure to program content with

home visits to participants who had missed a session, suggesting that a high 'dosage' might partly explain the program's effectiveness vis-à-vis other programs with relatively low take-up (see Dupas et al., 2016). A further difference is the targeting of our programs. Previous interventions were typically targeted at either adults or youth, with the latter often implemented in school settings (see Karlan & Linden, 2014). By contrast, our program enrolled both adults and adolescents in a community setting and further tried to impact additional family members through integration of homework practices.

Apart from this, we speculate that the positive effects for our intervention are partly explained by the integrative program curriculum that combined psychosocial and economic components. In this vein, our study feeds into an emerging body of research that depicts economic behavior and performance as a function of specific financial skills as well as non-cognitive skills such as self-efficacy, optimism, and self-worth (e.g. Alan, Boneva & Ertac, 2016; Heckman et al., 2006). At the same time, findings from this analysis motivate future research to rigorously test the effectiveness of unidimensional financial literacy training against enhanced program curricula within more sophisticated experimental designs. This is crucial in scrutinizing whether the combination of financial and psychosocial components can really yield a putative add-on effect above and beyond the specific effects from each component. Our analysis should therefore be conceived of as a first step towards making advances in both program design and targeting of financial literacy programs.

Some caveats are in order. A first is the reliance on self-report data. Zwane and colleagues (2011) document comprehensive empirical evidence on "interview effects", arguing that surveys could serve as a reminder for certain endorsed behaviors and thereby increase social desirability bias. Following this, our participants may be inclined to overstate their saving practices, for instance. In light of these concerns, a number of previous studies on saving promotion have combined self-reports of financial behavior with administrative data (see Dupas et al., 2016; Karlan & Linden, 2014). Validation exercises in public health literature have repeatedly suggested accuracy of self-report results, particularly when self-administered survey methods were

used and when recall periods were relatively short, such as the four-week window used here (Longobardi et al., 2011; Short et al., 2009; Garber et al., 2004). Dupas and colleagues (2016) directly compare administrative bank records and survey self-report data on the frequency and amount of deposits. Interestingly, the authors found respondents to under-report their saving balances both in Uganda and Malawi. If we assumed a similar tendency in our study sample, the findings presented here could even be a lower-bound estimate. Unfortunately, we do not have administrative records on any financial transactions to supplement information from self-report, largely because participants in our study typically rely on informal and undocumented ways of saving and borrowing money. However, we contend that audio- and mobile-assisted interviewing techniques used in our data collection likely helped reduce social desirability bias (see Gorbach et al., 2013; Moskowitz, 2004). Furthermore, we gain confidence from observing similar patterns of results in the adult and adolescent sample for financial behaviors and financial welfare, while they diverge for other outcomes such as those on child abuse (see Cluver et al., 2018).

Apart from this, program impact should not be conceived in isolation of its context. The households sampled for this study were heavily reliant on state-provided welfare grants. Hence, the financial literacy program described here was disseminated in conjunction with one of Africa's most elaborate social security systems. The program is therefore likely to have strengthened beneficiaries' capacity to make most effective use of cash grants, prioritize essential and future-oriented spending, and smoothen consumption between monthly pay-outs. Thus, from a policy perspective, budgeting and saving training can be conceptualized as a complement to more structural and far-reaching poverty alleviation strategies such as cash transfers or microloans. Yet, the latter strategies may remain crucial for lifting individuals out of poverty.

Overall, our results show a range of positive program effects on financial behaviors as well as wider household economic wellbeing. We therefore add new evidence to a rather pessimistic body of literature that has repeatedly questioned the viability of financial literacy programs for poor populations. While our focused financial

training curriculum is brief compared to more common financial education programs, we provide new evidence on the possible value of embedding these within a wider psychosocial intervention. Beyond some first attempts presented in this paper, future work may usefully explore how psychological, behavioral, and financial program components interact with each other and are mutually reinforcing in more complex trial designs.

Declaration of Interests: JIS, LDC, JD were involved in developing the Sinovuyo Caring Families Programme for Parents and Teens, which is licensed under a Creative Commons 4.0 Non-commercial No Derivatives license. There is no other conflict of interest to disclose.

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APPENDICES

Table A1. Sample Attrition

	Adults not completed post-test	**Adolescents not completed post-test**
ITT: program	0.64	-0.22
	(0.46)	(0.54)
Age	-0.00	0.12
	(0.02)	(0.08)
Female	omitted	0.07
		(0.44)
Married	0.58	NA
	(0.55)	
High school & higher	-0.12	NA
	(0.65)	
Currently employed	**1.50****	NA
	(0.71)	
Attending school	NA	-0/91
		(0.76)
HIV status	**1.51*****	-0.10
	(0.56)	(0.46)
Household Size	-0.05	-0.02
	(0.12)	(0.09)
Brick/concrete house	0.32	-0.34
	(0.67)	(0.44)
Water tap inside	-0.97	-0.24
	(0.72)	(0.44)
Electricity Access	-0.17	-0.18
	(0.92)	(0.83)
Asset Index	-0.09	0.09
	(0.29)	(0.16)
Grant Income	-0.00	-0.00
	(0.00)	(0.00)
Strata: Rural	-0.58	-0.52
	(0.70)	(0.57)
Constant	3.98**	-2.75
	(2.02)	(2.20)
Observations	546	543
R2	0.09	0.03

Note: *p< 0.1, **p< 0.05, ***p< 0.01. Robust standard errors clustered at the village level in parentheses. There was little variation in gender in the adult sample and none of the male participant attrited – the variable was therefore omitted in the regression.

Table A2. ITT Estimates for Disaggregated Savings

	(1) **Savings held at home**		(2) **Savings held in group**		(3) **Savings held in bank**	
	I	II	I	II	I	II
ITT: Program	-0.01	-0.02	0.08***	0.09***	0.11***	0.11***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)
Lagged Outcome	0.04	0.03	0.00	-0.03	0.05	0.04
	(0.06)	(0.06)	(0.07)	(0.07)	(0.06)	(0.06)
Strata	0.02	0.01	-0.02	-0.03	-0.03	-0.03
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Controls	no	yes	no	yes	no	yes
Constant	0.10***	0.06	0.09***	-0.07	0.07	0.16
	(0.04)	(0.08)	(0.03)	(0.10)	(0.05)	(0.10)
Observations	539	534	539	534	539	534
R-squared	0.00	0.02	0.02	0.04	0.04	0.05
Mean Control	**0.12**		**0.08**		**0.04**	

Notes: *p< 0.1, **p< 0.05, ***p< 0.01. Robust standard errors clustered at the village level in parentheses.

Table A3. ITT Estimates for Individual Financial Self-Efficacy and Attitudes Items

	Self-Efficacy				**Attitudes**					
	Confident not to run out of money before months' end		Confident to plan carefully on how to spend money		"It is not possible to save enough money to buy those things that I really want"		"It is important to only spend money on things you really need"		"Saving is for adults only"	
	I	II	I	II	I	II	I	II	I	II
Panel A: Adults										
ITT: Program	0.95***	0.96***	1.69***	1.68***	-0.20	-0.23	0.16	0.15		
	(0.26)	(0.26)	(0.34)	(0.35)	(0.24)	(0.25)	(0.13)	(0.12)		
Lagged Outcome	0.06	0.05	0.07	0.08	-0.08*	-0.09*	0.04	0.03		
	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.04)		
Strata	0.24	0.14	0.48	0.29	0.39	0.26	-0.07	-0.14		
	(0.30)	(0.32)	(0.40)	(0.43)	(0.24)	(0.26)	(0.11)	(0.13)		
Controls	no	yes	no	yes	no	yes	no	yes		
Control Mean	**1.64**		**2.57**		**6.30**		**8.39**			
Observations	539	534	539	534	539	534	539	534		
R-squared	0.03	0.05	0.08	0.10	0.01	0.02	0.01	0.03		
Panel B: Adolescents										
ITT: Program	0.63**	0.60***	1.44***	1.38***	-0.13	-0.14	-0.07	-0.08	-0.43	-0.38
	(0.27)	(0.27)	(0.27)	(0.26)	(0.29)	(0.29)	(0.19)	(0.18)	(0.37)	(0.36)
Lagged Outcome	0.08	0.08	0.13**	0.13**	-0.02	-0.02	-0.01	-0.02	0.11**	0.09*
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)
Strata	-0.65**	-0.71**	-0.37	-0.48	0.59*	0.53*	-0.01	-0.09	0.22	0.15
	(0.27)	(0.30)	(0.31)	(0.31)	(0.30)	(0.31)	(0.17)	(0.21)	(0.41)	(0.40)
Controls	no	yes	no	yes	no	yes	no	yes	no	yes
Control Mean	**2.50**		**3.12**		**5.74**		**8.12**		**2.79**	
Observations	526	522	526	522	526	522	526	522	526	522
R-squared	0.02	0.03	0.06	0.06	0.01	0.01	0.00	0.01	0.01	0.04

Note: *p< 0.1, **p< 0.05, ***p< 0.01. Robust standard errors clustered at the village level in parentheses. Individual items reported on a 1-10 point Likert scale.

Table A4. ITT Estimates for Disaggregated Financial Distress Index

	(1) Run out of money for meat		(2) Run out of money for transport		(3) Run out of money for electricity		(4) Run out of money for airtime	
	I	II	I	II	I	II	I	II
Panel A: Adults								
ITT: Program	-0.28***	-0.27***	-0.04	-0.00	-0.38***	-0.37***	-0.21***	-0.19**
	(0.06)	(0.06)	(0.09)	(0.10)	(0.09)	(0.09)	(0.08)	(0.08)
Lagged Outcome	0.20***	0.17***	0.14***	0.11***	0.15***	0.14***	0.10*	0.09
	(0.04)	(0.04)	(0.03)	(0.03)	(0.05)	(0.05)	(0.05)	(0.06)
Strata	0.09	0.15	0.03	0.16	0.03	0.09	0.02	0.09
	(0.08)	(0.10)	(0.14)	(0.14)	(0.14)	(0.14)	(0.11)	(0.12)
Controls	no	yes	no	yes	no	yes	no	yes
Control Mean	**2.12**		**1.63**		**1.92**		**2.52**	
Observations	539	534	539	534	539	534	539	534
R-squared	0.07	0.10	0.02	0.06	0.06	0.08	0.02	0.04
Panel B: Adolescents								
ITT: Program	-0.21**	-0.21**	-0.35***	-0.36***	-0.39***	-0.39***	-0.24**	-0.24**
	(0.10)	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.10)	(0.09)
Lagged Outcome	0.15***	0.15***	0.10*	0.10**	0.09**	0.09**	0.05	0.07*
	(0.04)	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Strata	0.16	0.18	0.33***	0.34***	-0.05	-0.04	0.31**	0.36***
	(0.14)	(0.14)	(0.07)	(0.08)	(0.11)	(0.11)	(0.12)	(0.13)
Controls	no	yes	no	yes	no	yes	no	yes
Control Mean	**1.57**		**1.34**		**1.36**		**2.06**	
Observations	526	522	526	522	526	522	526	522
R-squared	0.04	0.05	0.06	0.06	0.05	0.05	0.02	0.06

Note: *p< 0.1, **p< 0.05, ***p< 0.01. Robust standard errors clustered at the village level in parentheses. Individual items are reported on an ordinal scale from 'never', 'rarely', 'sometimes', 'often'. All regressions coefficients are linear probability estimates.

Table A5. ITT Estimates for Disaggregated Basic Necessities Index

	(1) Three meals a day		(2) Going to school		(3) Medical care when sick		(4) School uniform	
	I	II	I	II	I	II	I	II
Panel A: Adults								
ITT: Program	0.05	0.03	0.25***	0.24***	0.09*	0.09*	0.11***	0.10**
	(0.04)	(0.04)	(0.06)	(0.06)	(0.05)	(0.05)	(0.04)	(0.04)
Lagged Outcome	0.14***	0.14***	0.05	0.06	0.14***	0.12***	-0.01	-0.03
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
Strata	-0.02	-0.03	0.09	0.09	0.02	-0.02	0.01	-0.01
	(0.07)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	(0.05)	(0.06)
Controls	no	yes	no	yes	no	yes	no	yes
Control Mean	**0.68**		**0.38**		**0.27**		**0.57**	
Observations	539	534	539	534	539	534	539	534
R-squared	0.03	0.06	0.07	0.11	0.03	0.06	0.01	0.04
Panel B: Adolescents								
ITT: Program	0.04	0.03	0.20***	0.19***	0.19***	0.18***	0.09**	0.08**
	(0.03)	(0.03)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.03)
Lagged Outcome	0.12**	0.12**	0.07	0.06	0.07	0.06	0.06	0.03
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)
Strata	-0.01	-0.03	0.08	0.08	-0.00	-0.03	0.05*	0.04
	(0.04)	(0.04)	(0.03)	(0.05)	(0.06)	(0.07)	(0.07)	(0.03)
Controls	no	yes	no	yes	no	yes	no	yes
Control Mean	**0.80**		**0.42**		**0.32**		**0.68**	
Observations	526	522	526	522	526	522	526	522
R-squared	0.02	0.03	0.05	0.06	0.04	0.06	0.02	0.06

Note: *p< 0.1, **p< 0.05, ***p< 0.01. Robust standard errors clustered at the village level in parentheses. Individual items are coded as 1/0. All regression coefficients are linear probability estimates.

	(5) Toiletries		(6) School equippment		(7) One pair of shoes		(8) Enough warm clothes	
	I	II	I	II	I	II	I	II
Panel A: Adults								
ITT: Program	0.11***	0.11***	0.20***	0.18***	0.15***	0.13***	0.15***	0.15***
	(0.03)	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)
Lagged Outcome	0.03	0.03	0.05	0.06	0.09***	0.07**	0.07	0.05
	(0.05)	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Strata	0.07	0.04	0.00	0.02	0.06	0.04	0.02	0.01
	(0.04)	(0.05)	(0.06)	(0.05)	(0.07)	(0.07)	(0.08)	(0.08)
Controls	no	yes	no	yes	no	yes	no	yes
Control Meanl	**0.56**		**0.54**		**0.32**		**0.34**	
Observations	539	534	539	534	539	534	539	534
R-squared	0.02	0.03	0.05	0.09	0.04	0.05	0.03	0.06
Panel B: Adolescents								
ITT: Program	0.08**	0.08*	0.10**	0.08**	0.04	0.04	0.09**	0.09**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)
Lagged Outcome	0.09*	0.08	0.04	0.00	0.05	0.04	-0.00	-0.02
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)
Strata	-0.04	-0.04	-0.01	-0.03	-0.07	-0.07	-0.03	-0.04
	(0.04)	(0.04)	(0.06)	(0.05)	(0.06)	(0.06)	(0.04)	(0.04)
Controls	no	yes	no	yes	no	yes	no	yes
Control Mean	**0.65**		**0.66**		**0.54**		**0.52**	
Observations	526	522	526	522	526	522	526	522
R-squared	0.02	0.02	0.01	0.01	0.01	0.06	0.01	0.04

Table A6. ITT Program Effects - Probit Models

	(1) Holds Any Savings		(2) Borrowed Lender		(3) Borrowed Kin		(4) Worries re Money		(5) Resilience to Shock	
	I	II	I	II	I	II	I	II	I	II
Panel A: Adults										
ITT: Program	0.42***	0.45***	-0.40***	-0.39***	-0.14	-0.15*	-0.39***	-0.38***	0.21	0.21
	(0.11)	(0.11)	(0.10)	(0.10)	(0.09)	(0.09)	(0.08)	(0.09)	(0.13)	(0.14)
Lagged Outcome	0.13	0.07	0.18***	0.18***	0.01	0.02	0.19***	0.19***	0.87***	0.82***
	(0.14)	(0.14)	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)	(0.10)	(0.11)
Strata	-0.16	-0.25	0.10	0.15	-0.07	-0.05	-0.22	-0.22	-0.28	-0.34*
	(0.18)	(0.17)	(0.17)	(0.18)	(0.13)	(0.13)	(0.14)	(0.15)	(0.19)	(0.20)
Controls	no	yes	no	yes	no	yes	no	yes	no	yes
Observations	539	534	539	534	539	534	539	534	539	534
Panel B: Adolescents										
ITT: Program							-0.17*	-0.19**		
							(0.09)	(0.09)		
Lagged Outcome							0.09**	0.06		
							(0.04)	(0.04)		
Strata							0.22**	0.23**		
							(0.09)	(0.09)		
Controls							no	Yes		
Observations							526	522		

Note: *p< 0.1, **p< 0.05, ***p< 0.01. Robust standard errors clustered at the village level in parentheses.Column (1) represents a probit model in which saving is dummied out. Columns (2)-(5) represent ordered probit regressions. Columns (2)-(4): frequency of borrowing and monetary concerns is reported as “never”, “rarely”, “sometimes”, “often”. Column (5): coping is categorised into three categories, rating the difficulty of coping with a hypothetical shock scenario from easy to impossible.

Table A7. Heterogeneity in Treatment Effects for Intermediate Outcomes

	(1) Holds Any Savings		(2) Borrowed from Lender		(3) Borrowed from Kin		(4) Financial Attitudes		(5) Financial Self-Efficacy	
	I Main &Interaction Effect	II Total Effect	I Main &Interaction Effect	II Total Effect	I Main &Interaction Effect	II Total Effect	I Main &Interaction Effect	II Total Effect	I Main &Interaction Effect	II Total Effect
nel A: Adults										
T: Program	0.17***		-0.29***		-0.11		0.06		1.27***	
	(0.04)		(0.06)		(0.07)		(0.18)		(0.29)	
TRAIT	-0.02	0.15*	0.25*	-0.05	0.04	-0.04	-0.42	-0.48	0.22	1.50***
arried	(0.09)	(0.08)	(0.12)	(0.10)	(0.14)	(0.12)	(0.24)	(0.30)	(0.50)	(0.47)
	[0.83]		[0.62]		[0.74]		[0.37]		[0.74]	
T: Program	0.15***		-0.24***		-0.10		0.09		1.31***	
	(0.04)		(0.06)		(0.06)		(0.16)		(0.29)	
TRAIT	0.01	0.16*	0.12	-0.12	0.07	-0.02	-0.65*	-0.56*	0.09	1.39**
tra poor	(0.10)	(0.08)	(0.16)	(0.15)	(0.20)	(0.18)	(0.38)	(0.32)	(0.73)	(0.66)
	[0.98]		[0.98]		[0.98]		[0.68]		[0.98]	
T: Program	0.13		-0.06		0.18		-0.27		-0.07	
	(0.11)		(0.16)		(0.12)		(0.23)		(0.33)	
TRAIT	0.02	0.15***	-0.19	-0.25***	-0.33**	-0.15**	0.33	0.06	1.72***	1.65***
ral	(0.11)	(0.04)	(0.17)	(0.05)	(0.13)	(0.06)	(0.27)	(0.15)	(0.44)	(0.29)
	[0.90]		[0.74]		[0.12]		[0.74]		[0.00]	
nel B: Adolescents										
T: Program							-0.19		1.08***	
							(0.17)		(0.29)	
TRAIT							-0.00	-0.19	-0.39	0.68
tra poor							(0.44)	(0.43)	(0.92)	(0.82)
							[1.00]		[0.98]	
T: Program							-0.07		1.30***	
							(0.31)		(0.47)	
TRAIT							-0.15	-0.22	-0.35	0.95**
ral							(0.37)	(0.20)	(0.55)	(0.29)
							[0.90]		[0.90]	

es: *p< 0.1, **p< 0.05, ***p< 0.01, based on naïve p-values. Multiple hypothesis corrected sharpened q-values in square brackets. Robust standard errors clustered at the village level parentheses. Each interaction term was tested in a separate regression due to low statistical power. Specification II shows the total effect for those exhibiting a given TRAIT, taken from sum of the main effect and the interaction effect as estimated in the previous column, including corresponding significance levels. The first set of regressions is run on a restricted sample emale respondents (n=511), that is, 95% of the sample. In our definition of married, we exclude women who are not cohabiting with their husbands but include women cohabiting with e partners who are not their spouses. A person is classified as ultra poor if he/she indicates more than five hungry days per week and is not holding any of the following assets: livestock, tricity, water tap inside the home, and brick/concrete dwelling. The same regression was run with different cutoffs, but result patterns remained the same.

Table A8. Heterogeneity in Treatment Effects for Distal Outcomes

	(1) **Financial Distress**		(2) **Worries about Money**		(3) **Resilience to Shock**		(4) **Basic Necessities**	
	I Main &Interaction Effect	II Total Effect	I Main &Interaction Effect	II Total Effect	I Main &Interaction Effect	II Total Effect	I Main &Interaction Effect	II Total Effect
Panel A: Adults								
ITT: Program	-0.61***		-0.33***		0.09		0.21***	
	(0.14)		(0.07)		(0.06)		(0.05)	
x TRAIT	0.54**	-0.07	0.09	-0.23*	0.06	0.15*	-0.04	0.17***
Married	(0.25)	(0.23)	(0.16)	(0.13)	(0.08)	(0.08)	(0.07)	(0.06)
	[0.26]		[0.74]		[0.74]		[0.74]	
ITT: Program	-0.43**		-0.33**		0.12*		0.18***	
	(0.13)		(0.07)		(0.06)		(0.05)	
x TRAIT	-0.19	-0.63**	0.10	-0.23	-0.12	-0.00	0.15*	0.32***
Ultra poor	(0.24)	(0.26)	(0.20)	(0.19)	(0.16)	(0.14)	(0.08)	(0.07)
	[0.98]		[0.98]		[0.98]		[0.68]	
ITT: Program	-0.80*		-0.28		0.18		0.19*	
	(0.39)		(0.23)		(0.09)		(0.11)	
x TRAIT	0.42	-0.38***	-0.05	-0.32***	-0.10	0.08	0.02	0.20***
Rural	(0.41)	(0.13)	(0.24)	(0.07)	(0.11)	(0.06)	(0.12)	(0.05)
	[0.74]		[0.90]		[0.90]		[0.90]	
Panel B: Adolescents								
ITT: Program	-0.56***		-0.19**				0.15*	
	(0.14)		(0.08)				(0.04)	
x TRAIT	0.08	-0.48	0.14	-0.06			-0.05	0.10
Ultra poor	(0.34)	(0.31)	(0.26)	(0.25)			(0.10)	(0.10)
	[0.98]		[0.98]				[0.98]	
ITT: Program	-0.49*		-0.04				0.15*	
	(0.25)		(0.11)				(0.08)	
x TRAIT	-0.08	-0.56***	-0.16	-0.20**			0.02	0.13***
Rural	(0.29)	(0.15)	(0.15)	(0.10)			(0.09)	(0.04)
	[0.90]		[0.74]				[0.90]	

Notes: *p< 0.1, **p< 0.05, ***p< 0.01 , based on naïve p-values. Multiple hypothesis corrected sharpened q-values in square brackets. See also Table 4.

Table A9. Heterogeneity in Treatment Effects by Time to Follow-Up

	(1) **Any Saving**	(2) **Borrowed from lender**	(3) **Borrowed from kin**	(4) **Financial Attitudes**	(5) **Financial Self Efficacy**	(6) **Financial Distress**	(7) **Worries about Money**	(8) **Resilience to Shock**	(9) **Basic Necessities**
Panel A: Adults									
ITT: Program	0.19**	-0.37***	-0.17*	-0.49*	1.33***	-0.48**	-0.41***	0.08	0.12
	(0.08)	(0.08)	(0.10)	(0.24)	(0.43)	(0.21)	(0.14)	(0.07)	(0.08)
x TRAIT	-0.02	0.09	0.05	0.29**	0.00	-0.04	0.05	0.04	0.05
Follow-Up Time	(0.04)	(0.07)	(0.05)	(0.12)	(0.23)	(0.11)	(0.07)	(0.04)	(0.03)
Panel B: Adolescents									
ITT: Program	/	/	/	-0.12	1.34***	-0.86**	-0.35*	/	0.27***
				(0.34)	(0.48)	(0.28)	(0.20)		(0.09)
x TRAIT				-0.01	-0.14	0.13	0.08		0.05*
Follow-up Time				(0.14)	(0.19)	(0.09)	(0.07)		(0.03)

Notes: *p< 0.1, **p< 0.05, ***p< 0.01 , based on naïve p-values. Robust standard errors clustered at the village level in parentheses. Follow-up time captures the month of the post-test interview, resulting in a range of five to nine months post-implementation.

Table A10. Mediation Analysis: Psychosocial Channels on Disaggregated Outcomes

	Holds any Savings			**Borrowed from Lender**			**Borrowed from Family/Friend**		
Mediating Measure	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated
Panel A: Adults									
Optimism	0.06***	0.07	0.43	-0.01***	-0.08	0.35	-0.01***	-0.07	0.73
	(0.01)	[0.04, 0.11]	[0.29, 0.92]	(0.00)	[-0.11, -0.04]	[0.23, 0.69]	(0.00)	[-0.11, -0.03]	[-5.48, 5.99]
Community Social Support	0.02*	0.01	0.09	0.00	0.01	0.02	-0.01*	-0.02	0.20
	(0.01)	[-0.00, 0.03]	[0.06, 0.20]	(0.00)	[-0.01, 0.02]	[0.01, 0.05]	(0.00)	[-0.04, 0.00]	[-1.39, 1.69]
Family Social Support	0.01	0.02	0.09	-0.00	-0.02	0.09	-0.01	-0.03	0.35
	(0.01)	[-0.01, 0.05]	[0.07, 0.17]	(0.00)	[-0.07, 0.03]	[0.06, 0.16]	(0.01)	[-0.10, 0.02]	[-2.04, 2.87]
Control Mean Outcome	*0.23*			*0.60*			*0.88*		
Panel B: Adolescents									
Optimism									
Community Social Support									
Family Social Support									
Control Mean Outcome									

Notes: *p< 0.1, **p< 0.05, ***p< 0.01. Clustered standard errors in parentheses, 95% CI in square brackets, based on nonparametric bootstrap with 1000 resamples. All analyses control for the baseline value of the outcome and rural/urban strata. Mediator variables are composed as follows: **Optimism**: Continuous previously validated scales based on Center for Epidemiological Studies Depression (CES-D) instrument for adults and Children's Depression Inventory (CDI) for adolescents (both reversed). **Community Social Support**: Continuous previously validated scale based on Medical Outcomes Study Social Support Survey, only captured in adult-report (used also for adolescent mediation model). **Family Social Support**: Continuous previously validated scales based on Alabama Parenting Questionnaire, reported separately by adults and adolescents.

Mediating Measure	Financial Attitudes			Financial Self-Efficacy			Financial Distress		
	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated	Association of Mediator with Outcome [*path b*]	Average Mediation Effect	Proportion of Total Effect Mediated
Panel A: Adults									
Optimism	0.02*	0.08	-0.26	0.04***	0.20	0.15	-0.02***	0.12	0.23
	(0.01)	[-0.01, 0.19]	[-13.42, 10.72]	(0.01)	[0.10, 0.33]	[0.11, 0.25]	(0.00)	[-0.20, -0.06]	[0.15, 0.45]
Community Social Support	-0.01	-0.04	0.08	0.03**	0.08	0.06	0.00	0.01	0.01
	(0.00)	[-0.11, 0.11]	[-4.99, 4.10]	(0.01)	[0.01, 0.16]	[0.04, 0.00]	(0.01)	[-0.04, 0.06]	[0.01, 0.03]
Family Social Support	-0.00	-0.00	0.02	0.08***	0.37	0.30	0.01	0.06	0.11
	(0.00)	[-0.14, 0.14]	[-0.36, 0.31]	(0.02)	[0.18, 0.60]	[0.32, 0.48]	(0.01)	[-0.05, 0.18]	[0.08, 0.21]
Control Mean Outcome	*7.34*			*2.10*			*0.28*		
Panel B: Adolescents									
Optimism	0.01	-0.00	0.00	-0.00	-0.00	0.00	-0.08***	0.01	0.02
	(0.04)	[-0.02, 0.02]	[-0.04, 0.05]	(0.06)	[-0.03, 0.03]	[-0.00, 0.00]	(0.03)	[-0.02, 0.04]	[0.01., 0.03]
Community Social Support	-0.01	-0.02	0.08	0.00	0.01	0.01	-0.01	-0.03	0.05
	(0.01)	[-0.09, 0.04]	[-0.63, 1.19]	(0.01)	[-0.06, 0.08]	[0.00, 0.01]	(0.01)	[-0.10, 0.03]	[0.03, 0.10]
Family Social Support	0.01	0.01	-0.02	0.08***	0.11	8 0.10	-0.02*	-0.03	0.05
	(0.02)	[-0.04, 0.06]	[-0.31, 0.23]	(0.02)	[0.00, 0.25]	[0.07, 0.20]	(0.01)	[-0.08, 0.00]	[0.03, 0.10]
Control Mean Outcome	*5.55*			*2.81*			*0.30*		

Notes: *p< 0.1, **p< 0.05, ***p< 0.01. Clustered standard errors in parentheses, 95% CI in square brackets, based on nonparametric bootstrap with 1000 resamples. All analyses control for the baseline value of the outcome and rural/urban strata. Mediator variables are composed as follows: **Optimism**: Continuous previously validated scales based on Center for Epidemiological Studies Depression (CES-D) instrument for adults and Children's Depression Inventory (CDI) for adolescents (both reversed). **Community Social Support**: Continuous previously validated scale based on Medical Outcomes Study Social Support Survey, only captured in adult-report (used also for adolescent mediation model). **Family Social Support**: Continuous previously validated scales based on Alabama Parenting Questionnaire, reported separately by adults and adolescents.

Mediating Measure	Worries About Money: Association of Mediator with Outcome [*path b*]	Worries About Money: Average Mediation Effect	Worries About Money: Proportion of Total Effect Mediated	Coping with Shock: Association of Mediator with Outcome [*path b*]	Coping with Shock: Average Mediation Effect	Coping with Shock: Proportion of Total Effect Mediated	Basic Necessities: Association of Mediator with Outcome [*path b*]	Basic Necessities: Average Mediation Effect	Basic Necessities: Proportion of Total Effect Mediated
Panel A: Adults									
Optimism	-0.01*	-0.04	0.12	0.01***	0.06	0.57	0.00	0.01	0.04
	(0.00)	[-0.08, 0.01]	[0.08, 0.23]	(0.00)	[0.03, 0.10]	[-1.14, 3.55]	(0.00)	[-0.01, 0.03]	[0.03, 0.08]
Community Social Support	-0.00	-0.01	0.02	0.00	0.01	0.08	0.01***	0.02	0.08
	(0.01)	[-0.04, 0.03]	[0.01, 0.03]	(0.00)	[-0.01, 0.03]	[-0.37, 0.59]	(0.00)	[0.01, 0.03]	[0.05, 0.15]
Family Social Support	-0.00	-0.01	0.05	0.00	0.01	0.14	0.00	0.02	0.10
	(0.01)	[-0.07, 0.05]	[0.03, 0.08]	(0.01)	[-0.04, 0.07]	[-1.59, 1.80]	(0.00)	[-0.01, 0.05]	[0.07, 0.19]
Control Mean Outcome	*2.24*			*0.47*			*0.42*		
Panel B: Adolescents									
Optimism	-0.06***	0.01	0.04				0.02***	0.00	0.02
	(0.02)	[-0.02, 0.03]	[-0.30, 0.21]				(0.01)	[-0.01, 0.01]	[0.01, 0.04]
Community Social Support	-0.00	-0.00	000				0.00	0.01	0.05
	(0.01)	[-0.04, 0.04]	[-0.00, 0.02]				(0.00)	[-0.01, 0.02]	[0.03, 0.09]
Family ocial Support	-0.02**	-0.03	0.16				0.02***	0.02	0.17
	(0.01)	[-0.07, 0.00]	[-0.77, 1.28]				(0.00)	[0.00, 0.05]	[0.11, 0.31]
Control Mean Outcome	*1.02*						*0.77*		

Notes: *p< 0.1, **p< 0.05, ***p< 0.01. Clustered standard errors in parentheses, 95% CI in square brackets, based on nonparametric bootstrap with 1000 resamples. All analyses control for the baseline value of the outcome and rural/urban strata. Mediator variables are composed as follows: **Optimism**: Continuous previously validated scales based on Center for Epidemiological Studies Depression (CES-D) instrument for adults and Children's Depression Inventory (CDI) for adolescents (both reversed). **Community Social Support**: Continuous previously validated scale based on Medical Outcomes Study Social Support Survey, only captured in adult-report (used also for adolescent mediation model). **Family Social Support**: Continuous previously validated scales based on Alabama Parenting Questionnaire, reported separately by adults and adolescents.

Highlights

- An RCT of a financial literacy and parenting program was conducted in South Africa
- Self-reported saving and financial self-efficacy increased and borrowing reduced
- Financial distress and concerns were decreased and access to basic needs improved
- Program impact was facilitated by increased self-efficacy, social support, and optimism
- Psychosocial program components can add value to financial training curricula