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Household Economic Strengthening through Saving and Budgeting: 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 financial literacy and savings training that was integrated into a broader psychosocial parenting intervention. We document significant improvements in financial behaviors, including higher savings and lower borrowing rates. We also see wider implications for household economic welfare, expressed in reduced financial distress, better resilience to economic shocks, and a greater capacity to securing basic needs. We further find that program effects are non-differential for ultra poor participants and tend to be higher for those who reside in rural locations and live without a male partner or spouse. Overall, our findings suggest that “hybrid” program curricula that offer combinations of financial and psychosocial components might be more successful than 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 not only a shortfall of money but also a day-to-day struggle for food and basic needs, strains on future-oriented investments in education or business, and mental distress. Saving and careful financial planning therefore become important means for smoothing consumption, increasing resilience to income shocks, and – in the long run – reducing household poverty (Hulme, Moore & Barrientos, 2015; Dupas & Robinson, 2013; Rutherford & Arora, 2009; Collins et al., 2009).

Acknowledging this potential, saving promotion and financial literacy programs have become increasingly popular in international development. Consequently, 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 (see Steinert et al., 2017 for a recent systematic review). This success, however, has mainly been recorded 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 et al., 2006). In contrast, pure financial literacy programs have generally proven far less beneficial, with null effects across several meta-analyses (Kaiser & Menkhoff, 2016; Fernandes et al., 2014; O’Prey & Shephard, 2014). And yet, these programs might be the most feasible to implement in resource-limited environments with poor financial infrastructure.

We therefore set out to scrutinize how the effectiveness of financial literacy programs can be increased. Previous research has largely focused on the 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. Instead, we shift the focus to an integrative psychosocial perspective and contend that program effectiveness may partly be driven by psychological factors such as aspirations, self-control, and self-efficacy as well as by social factors such as family support and inter-personal trust. Based on these considerations, we

venture that program impact can be enhanced by embedding financial literacy training in a broader intervention curriculum 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. 20 villages were randomly selected to participate in the 14-week program. Families in the remaining 20 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 savings and reductions in borrowing. The results from our study thus compare favorably to evaluations of more common type financial literacy programs without a psychosocial component. Our results further suggest that the intervention might have helped to bridge an intention-action gap (Fishbein & Yzer, 2003). While levels of financial awareness and pro-savings attitudes were already high at the outset and not notably altered post-intervention, we contend that the behavioral changes we observe are partly driven by improvements in financial self-efficacy and optimizations in self-control.

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

Our third main result is that the program impact varies with characteristics of the target population and setting. The intervention shows substantially lower impacts for married women, most likely reflecting constrained control over household financial resources vis-à-vis male spouses. Further, our results suggest that the program works equally well (and even better with regards to more distal outcomes) for participants with the highest poverty levels. This supports an antidote to the prevalent misconception that poor people are ‘too poor to save’ and to sustainably manage the resources they have. Lastly, the program shows greater benefits when implemented in rural communities as compared to urban townships.

Insights from qualitative interviews with program recipients elucidate possible channels for program impact. These include both proximate and indirect links between program content and outcomes. Proximate links are suggested via increases in financial skills, self-efficacy, and social learning through peer enforcement. Indirect links via psychological factors are also hypothesized, namely increases in future aspirations, higher self-esteem, and increased self-control through mental commitments. Our study thereby feeds into an emerging corpus of behavioral literature that explores linkages between psychological factors and poverty alleviation strategies (Glewwe, Ross & Wydick, 2014; Ghosal et al., 2013; 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, that augments a parenting program with the establishment of village-based savings groups (see Annan et al., 2013), (2) the Suubi-Maka program (translated as “Family Hope”) in Uganda, combining 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, Jamison & Sheridan, 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, as well as financial literacy training (Heller et al., 2017). Similar to our intervention, the four programs have adopted a holistic approach by delivering ‘packages’ of psychosocial

and economic training components. Similar to evidence presented in this paper, they also document significant improvements across a range of poverty-related outcomes, including increases in income (Blattman et al., 2017), higher household savings school attendance rates (Ssewamala et al., 2009), and increases in high school graduation rates (Heller et al., 2017).

The remainder of this paper proceeds as follows. Section I describes 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 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 from a small town in the Eastern Cape of South Africa, the province with the lowest GDP of the country. According to the last census of 2011, the average annual household income in the province is \$355¹, 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 costs for medical treatment as well as care for sick household members tend to further impoverish 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). To improve standards of living and alleviate 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 grants² and further provide immediate

¹Equal to 14600.00 ZAR.

²These 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

(temporary) assistance in the form of food parcels for families most in need. The coverage of social assistance has increased considerably over the past decade and the total number of social grants is estimated as 17 million nationally by 2016 (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).

Irrespective of an existing sophisticated privatized banking system, South Africa’s low-income population 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 and has proven phenomenally successful in Kenya (Suri & Jack, 2016), uptake has been very low in South Africa, mainly inhibited by high levels of mistrust as well as 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 normally operate under high levels of secrecy and rarely keep official record of their transactions (Siyongwana, 2004). There are 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).

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 Recruitment was done through purposive sampling to enrol designated at-risk families who had expe-

ZAR/month), the old age pension (1510.00 ZAR/month), the grant in aid (350.00 ZAR/month), and the war veterans grant (1520.00 ZAR/month).

³Adults and teens had to spending a minimum of four nights per week in the same respective 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.

rienced intra-household conflict and economic hardship. Families were referred by local Departments of Social Development and Education, local community-based social workers, schools, and village chieftains or identified through door-to-door risk screenings conducted by a trained local research team. If approached individuals had severe learning disabilities and were therefore unable to give informed consent for participation, they were not included in the study for ethical reasons. The study did not provide any monetary incentives for participation but did give out small food parcels.

C The Intervention: The Sinovuyo Teen Program

The program, named Sinovuyo Teen (translated as ‘we have happiness’ in vernacular isiXhosa), is primarily an evidence-informed parenting program, developed and implemented in collaboration with the NGO Clowns without Borders South Africa, UNICEF South Africa, and the World Health Organization.⁴ The program design was iteratively tested and adapted over the course of three years to ensure cultural and contextual adequacy (Cluver et al., 2016a, 2016b, 2016c). While the initial version of the program was exclusively focused on parenting skills, qualitative evidence from the study’s pilots had identified economic hardship as a major source of family conflict, thus motivating the inclusion of an economic strengthening component. The final curriculum thus combines psychosocial and economic training components that are organised into 14 weekly group-based sessions (see Table A1). Psychosocial components (12 sessions) drew on evidence-based parenting principles, such as promoting praise and individuals’ self-worth, anger and stress control, responding to crises, establishing rules and routines, and modelling positive behavior. The economic part of the program was brief and covered in two sessions as well as homework practice discussions and reminders in consecutive weeks. Economic content breaks down into the following three core aspects that were jointly delivered at adults and adolescents:

⁴The manuals are accessible via [http : //www.who.int/violence_injury_prevention/violence/child/PLH-manuals/en/](http://www.who.int/violence_injury_prevention/violence/child/PLH-manuals/en/)

1. *Motivating participants to save* through role plays that evolve around familiar challenges such as smoothing monthly consumption with grant money, coping with unforeseen emergencies, taking on loans from moneylenders, as well as preparing for major life cycle events. Characters in the vignettes were intentionally placed into settings and conditions similar to those of participants in order to ensure that participants could relate easily with the narratives of socio-economic success (see Coville et al., 2014; Bernard et al., 2014; Bandura, 1977).
2. *Teaching skills on budgeting and saving* through a visual budgeting exercise⁵ designed to prompt participants on how to make most effective use of available resources and to carefully consider possible income shocks. Further, the program featured an interactive discussion on the benefits and limitations of different saving strategies, including saving at home, saving through buying assets and livestock, saving in a savings group, or in a formal bank account.
3. *Encouraging mental commitments to saving* through making detailed saving plans, including specific individualized commitments (e.g. “*I will deposit 100 ZAR into a savings box every week*”; “*I will not spend more than 50 ZAR a week on airtime and tobacco*”). Saving plans were written down and presented to the whole group. In the following weeks of the program, homework practice discussions gave participants room for sharing their successes and challenges in realising their savings goals. These elements were designed to function in form of a soft commitment⁶ via peer pressure and feelings of guilt if goals are not reached.

Researcher involvement in the program’s implementation was kept to a minimum with the intention to imitate real-world conditions and thus maximize the generalizability

⁵For 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 relying on higher order numeracy and literacy.

⁶Previous research suggests that individuals consistency between individuals’ words/intentions and actions is associated with a sort of emotional utility . It is then further hypothesized that the association is reinforced if promises and goals are written down or shared in front of peers (Cialdini 1993; Greenwald et al. 1987).

and scalability of findings. All elements were designed to be low-cost for delivery in low-resource settings. For instance, video vignettes common in similar programmes from high-income countries were replaced with illustrated comic strips. The program was delivered by trained community members, auxiliary social workers, and local lay workers and held in community locations such as town halls or schools. Facilitators attended a week-long training in which they were trained in non-didactic and participatory delivery methods. They further attended weekly peer-led supervisions focused on specific session content. Sessions were held once a week for both adolescents and their primary caregivers. In four sessions, teens and caregivers were split into separate groups to allow for improved confidentiality and sensitive discussions; the remaining sessions were jointly attended. Individual sessions typically lasted between three and four hours, including lunch, traditional songs, and dances. If participants were unable to attend sessions as a consequence of illness or social obligations such as funerals or care duties, facilitators delivered a condensed version of the session in participants' homes.

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 from the Medical Research Council of South Africa, using a random number generator in Excel. The trial is 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).⁷ 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

⁷A 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").

in the process evaluation of the actual program and it was therefore not possible to maintain blinding up until post-test data collection.

The timing for the study was as follows. 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. Follow-up data collection coincided with the run-up to regional elections in the study location. Riots and protests hindered access to some of the study villages and had caused several interruptions in the post-test data collection, thus explaining its span over five months.

Lastly, qualitative data was collected in Collaboration with UNICEF with the intention to complement our quantitative findings and elicit possible mechanisms of change. For this purpose, we ran focus group discussions in eight treatment clusters as well as with program facilitators in November 2015. In addition, between January and May 2016, we conducted in-depth follow-up interviews with 46 program recipients (50% adults and 50% adolescents) from urban and rural locations.

E Data

Baseline and post-test data was collected via standardized questionnaires administered on tablets. Surveys were designed as audio- and mobile-assisted self-interviews with the intention to maximize privacy and confidentiality of the interview and reduce possible social desirability bias. Questionnaires were available both in English and isiXhosa with each questionnaire item translated and back-translated by native speakers. Research assistants were trained to guide participants in the use of the tablets and offer assistance where needed. Interviews lasted between 90-120 minutes and were conducted with adolescents and caregivers separately. If immediate risk was identified (such as suicidal attempts or exposure to severe sexual violence), participants were immediately referred to respective social services by the research team. Research assistants were recruited from local communities, were fluent in isiXhosa,

and extensively trained in interview techniques and research ethics.

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 or 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").⁸ *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").

Further outcomes were indicators of household economic wellbeing. First, we included a composite measure of *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.⁹ In addition, we measured participants' *ability to cope with economic shocks*, using two items derived from previous research (Kast et al., 2012; Prina, 2013; Dupas & Robinson, 2013). The first item assessed the availability of financial means to respond to a hypothetical emergency scenario and the second captured sources that these would be drawn from. The coping strategies a) borrowing at extremely high interest rates, b) reducing health expenditures, c) reducing educational expenditures, and d) reducing food expenditures were defined as risky and therefore coded as equivalent to not being able to cope. Lastly, we created an index on past-month access to

⁸Piloting of the 10-point Likert scales suggested that respondents had difficulty understanding the conceptualisation 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.

⁹Previous research has documented the psychological impacts of living in poverty, including anxiety, stress, insecurity, depression, and fear of future poverty (see Calvo & Dercon, 2013; Banerjee & Duflo, 2007; Case & Deaton, 2005).

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 include access to education (including school fees, school uniform, and textbooks), health care, clothes and toiletries. All above 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 same household. Specific questions on past-month saving and borrowing were only included in the adult survey, presuming that the majority of adolescents was likely not fully informed about household financial management. Analyses were conducted on 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. 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 some similar studies. In order to test whether attrition was differential, we first regressed the attrition dummy on the treatment dummy and show that attrition was not significantly associated with treatment status for both adults ($p=0.46$) and adolescents ($p=0.54$) (see Table A2).

G Estimation Strategy

Randomization of the treatment assignment allows us to establish a credible counterfactual condition and can therefore provide a causal estimate of the program impact. We estimate the average effect of being assigned to the treatment group, the intent-to-treat effect (ITT), on each outcome variable Y 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 is an indicator variable for treatment arm equal to 1 if individual i has been assigned to receive the program, $Y_{i(t-1)}$ the lagged outcome (at baseline)¹⁰, S_i a stratification dummy for urban/rural location, X'_i is 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} is an error term for individual i and village cluster j . For all outcomes, we estimate equation (1) with and without individual controls. For binary outcomes, we estimate linear probability models in the main analyses and report probit models (or ordered probit models for ordinal scales) in supplementary analyses. Standard errors are clustered by the unit of randomization, the village. Our estimate of β is the intent to treat (ITT) effect.

Considering that we are testing nine different outcomes, the probability of falsely rejecting at least one null hypothesis is increased (see Anderson, 2008). We therefore control for the potential false discovery rate by correcting standard errors for multiple testing (see Banerjee et al., 2015; Fink et al., 2014; Anderson, 2008; Benjamini et al., 2006). We use the Benjamini-Hochberg method which is less conservative than the simple Bonferroni adjustments (Benjamini et al., 1995). Sharpened q-values in addition to naïve p-values are presented for all main results.

Lastly, we explore heterogeneity in treatment effects 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 $TRAIT'_i$ is a vector of baseline characteristics for which we assume heterogeneity in the effectiveness of the treatment (note that each individual trait is also

¹⁰If, 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 and Altman (2001) recommend the use of baseline-adjusted analysis of covariance to alleviate this problem and yield estimates that are robust to a possible baseline imbalance. By conditioning on the baseline level of outcomes we further improve statistical power (see McKenzie, 2012).

included in the vector X_i'). The average treatment effect for the subgroup of people with a respective trait is then given by the sum of the coefficients $\beta + \theta$ for that trait. As before, we will cluster standard errors in this type of specification at the village level. All the tests considered here are two-sided.

We estimate equation (2) for the following three traits: First, we hypothesized *ex ante* (see our pre-analysis plan) that program effectiveness is reduced for married women or women cohabiting with male partners. Second, it is important both from a policy and ethical perspective to understand whether program impact interacts with economic hardship. We therefore examine whether treatment effectiveness varies with different levels of poverty. We are agnostic *ex-ante* about whether this factor is likely to promote or hinder program effectiveness. On the one hand, it is conceivable that wealthier households already have better access to social networks, information, and services and that the very poor can therefore gain more from the intervention (see Flory, 2016). On the other hand, we may expect that some households are simply "too poor" to save or to avoid consumption shortfalls and that the program thus remains ineffective for these (see Sherraden, Schreiner & Beverly, 2003). Third, we hypothesize that program effects might be stronger in rural areas given that access to services (such as formal banking) is more restricted than in townships and the program therefore likely meeting a higher demand.

II Results

A Summary Statistics and Orthogonality Verification of Randomization

We document baseline characteristics of adults and adolescents in Table 1. Since our recruitment was conditioned on primary caregiving for children living in the household, our sample is heavily female with over 90% women among adult study participants. Only about a third of these were married and the mean age was 49 years. 42% of adolescent participants were female. 95% of adolescents were attending school at the time of program implementation.

Table 1. Sample Characteristics and Balance Checks

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

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

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

HIV-status of participants was defined using a combination of self-report and the verbal autopsy checklist¹¹ and suggested a high HIV/AIDS prevalence of 25% among both adolescents and adults. The study sample is characterized by high poverty levels, high unemployment rates, and high dependency on social assistance, thus reflecting the prevailing economic state of the Eastern Cape province. Accordingly, 72% of households in our study sample have no income from formal full- or part-time employment. The median monthly per capita income from welfare grants amounts to 350.00 ZAR (equivalent in \$27) and about 10% of households had received a government-subsidized housing assistance.¹² Most families had access to electricity, but only about a third had water taps inside their homes. Similarly, about a third of the sample lived in informal settlements such as shacks. Families were fairly food-insecure: Adults reported on average 2.9 "hungry" days per week and adolescents reported 1.8 "hungry" days, suggesting caregivers prioritized children's nutrition over their own (see Blackden et al., 2007; Klasen, 1996).

With regards to household financial management, we observe low baseline savings 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 while the majority saved through informal devices, namely in savings groups or by storing money at home. Qualitative accounts from study participants list mistrust based on anticipations of fraud and theft as well as inflexible account regulations such as 30-day notification periods for withdrawals as the main reasons for not holding a bank account. However, our qualitative evidence also highlights the risks of saving in informal devices, where money stored at home was considered as insecure in view of robberies, fires,¹³ and theft by other household members.

¹¹This approach classifies an individual as HIV-positive/AIDS-ill if they (i) self-identify as HIV-positive, or (ii) display 3 or more AIDS-related symptoms from the adapted verbal autopsy checklist (e.g. weight loss, jaundice, shingles or rash, abscesses or sores, oral candidiasis, respiratory tract infections, persistent diarrhoea, vaginal tumours, etc.) (Lopman et al. 2006).

¹²Housing assistance is part of the Reconstruction and Development Program adopted by the African National Congress in 1994 with the intention to address shortages in social service and infrastructure provision, including state-subsidies for housing, clean water, and electrification.

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

In a similar vein, savings groups were portrayed as potentially dysfunctional and unreliable because pay-outs sometimes fail 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. More than half of the sample payed into some sort of funeral insurance, but only 20% report being able to cope with potential income shocks and emergencies. While rates of positive financial attitudes were on average quite high at the outset, perceived financial self-efficacy was substantially lower.

We used a joint orthogonality F-test to assess balance across arms. Overall, we can verify effectiveness of the randomization. For both adult and adolescent household members, the treatment and control group are balanced along most characteristics (see Table 1, Columns (4) and (8)). For the adult sample, there is a higher percentage of female participants in the treatment arm. Our analyses will therefore control for participant sex. Similarly, the rate of borrowing from family members or friends is significantly higher for adult participants in the treatment arm ($p=0.01$). In the adolescent sample, there is somewhat more concern with regards to the experimental integrity. Both the teen-reported financial distress index and the basic necessities index point to lower levels of poverty in treatment group households. To account for potential imbalance at baseline, all analyses will control 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 2. For each outcome, we first ran a model including only the lagged outcome and randomization strata and a second model with additional controls. For all outcomes, magnitude and significance of the program effects are robust to both specifications. For outcomes based on indices, we additionally present disaggregated regression results for individual items in Tables (A3)-(A6). For outcomes measured on a binary or ordinal scale, we additionally report probit models in Table A7.

Table 2. ITT Estimates for Intermediate Outcomes: Financial Planning and Financial Management

	(1)		(2)		(3)		(4)		(5)	
	Holds I	Any Savings II	Borrowed I	from Lender II	Borrowed I	from Kin II	Financial I	Attitudes II	Financial I	Self-Efficacy II
Panel A: Adults										
ITT: Received Program	0.15*** (0.04) [0.00]	0.15*** (0.04) [0.00]	-0.16*** (0.04) [0.00]	-0.15*** (0.04) [0.00]	-0.09** (0.04) [0.02]	-0.10** (0.04) [0.02]	-0.01 (0.13) [0.96]	-0.02 (0.14) [0.87]	1.32*** (0.26) [0.00]	1.32*** (0.27) [0.00]
Lagged Outcome	0.05 (0.05)	0.03 (0.05)	0.19*** (0.04)	0.19*** (0.04)	0.10** (0.04)	0.10** (0.04)	-0.06 (0.04)	-0.07* (0.04)	0.10* (0.05)	0.08 (0.05)
Strata	-0.06 (0.06)	-0.08 (0.06)	0.06 (0.06)	0.07 (0.06)	-0.01 (0.05)	-0.00 (0.05)	0.18 (0.15)	0.07 (0.16)	0.36 (0.32)	0.21 (0.35)
Controls	no	yes	no	yes	no	yes	no	yes	no	yes
Observations	539	534	539	534	539	534	539	534	539	534
R-squared	0.02	0.05	0.07	0.08	0.02	0.03	0.00	0.03	0.08	0.09
Mean Control	0.23		0.47		0.70		7.34		2.10	
Panel B: Adolescents										
ITT: Received Program							-0.19 (0.17) [0.30]	-0.18 (0.17) [0.33]	1.02*** (0.25) [0.00]	0.97*** (0.24) [0.00]
Lagged Outcome							-0.03 (0.04)	-0.04 (0.04)	0.14** (0.06)	0.14** (0.05)
Strata							0.24 (0.20)	0.18 (0.20)	-0.51* (0.26)	-0.60** (0.27)
Controls							no	yes	no	yes
Observations							526	522	526	522
R-squared							0.01	0.02	0.05	0.06
Control Mean							5.55		2.81	

Notes: *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 parentheses. 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. Columns (4)-(5): Continuous Scales, individual items aggregated via principal component analysis. Control variables used for model II are age, gender, marital status, educational status, employment, baseline poverty level measured via assets, and household grant receipt. Control mean at post-test.

Column (1) in Table 2 shows the estimates of the program effect on self-reported savings rates. 23% of respondents in the control group indicate 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 A7). In Table A3, we provide disaggregated results for different saving methods. We find that the positive effect on overall savings rates is 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 is negative, it is not distinguishable from zero, thus suggesting that the above effects are not simply a crowd-out from private to (quasi-)institutionalized savings.

Columns (2) and (3) in Table 2 present the program effects on self-reported past-month borrowing. We observe significantly lower borrowing rates in the treatment group relative to the control group; breaking down into a fall in 15 percentage points for borrowing from moneylenders (control mean: 47%) and 10 percentage points for borrowing from within the closer social network (control mean: 70%), namely from family members or friends. Yet, the effect on borrowing from family members or friends is not robust to an ordered probit specification (see Table A7, Column (3)). Also, it is important to note that borrowing rates among program recipients remain relatively high at post-test, with a third of participants reporting borrowing from moneylenders and more than a half of program participants reporting borrowing from friends and/or relatives. This suggests that borrowing might remain an important means for smoothing consumption and can only partly be substituted by higher accumulated savings.

Further, we find indication of a significant and positive program effect on participants' financial self-efficacy (see Table 2, Column (4)). Adult program recipients rate their self-efficacy with regards to careful and sustainable financial management on average 49% higher when compared to the control. Similarly, adolescents in the treatment arm report on average 29% higher self-efficacy scores. In contrast, the program showed no impact on financial attitudes, possibly because attitudes endorsing

savings and careful financial management were already relatively high at the outset (see Table 2, Columnn (5)).

All significant effects reported above are robust to the false discovery rate adjustment.

C Impacts on Household Economic Welfare

In a next step, we examine whether the program had some positive trickle-down effects on wider aspects of household welfare and poverty levels. First, as shown in Table 3, Column (1), we observe substantial decreases in 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 report 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% vs. 23%), transport (44% vs. 28%), and tentatively for mobile communication (56% vs. 52%). The trends are replicated by the adolescent-report. However, results based on adolescent-report need to be considered as less robust given substantial imbalance at baseline in favour of the treatment arm.

Further, we find significantly lower levels of poverty-related emotional distress among program participants. Accordingly, 51% of respondents in the control group reported frequent worries about money while the intervention group reported a 14 percentage point decrease to 37%. We do not observe the same significant program effects on adolescent participants, presumably because baseline levels of financial concerns were substantially lower than for adults. It is possible that adolescents are less actively involved in household financial planning and therefore less worried about potential monetary shortfalls.

We further examine participants' resilience to income shocks (see Column (3) in Table 3). At post-test, we see an 11 percentage point increase in coping capacity with 37% of participants in the treatment arm indicating that they would be able to cope

with a hypothetical financial shock scenario, compared to 26% in the control arm. In these counts, we exclude respondents who name high-risk coping strategies such as borrowing at high interest rates and cutting down expenses on food, education or health. While the intervention effect is significant in the linear probability estimation, it turns non-significant in an ordered probit specification (see Table A6, Column (5)).

In Table 3, Column (4), we examine households' capacity to securing a range of designated basic needs in the past month. Our results reveal a 29% increase on a basic necessities index according to adult report. The difference is significant at the 1% level. When disaggregating these findings, the effect was most pronounced with regards to securing schooling costs of children (see Table A5 in Appendix). At follow-up, 63% of program recipients were able to cover the costs for children's schooling in the previous month, compared to only 38% of their control group counterparts. In a similar vein, treatment arm participants compare 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%). Similar trends, namely significant improvements in access to the top-eight endorsed basic necessities were replicated in the adolescent sample, but should be interpreted with caution given significant differences between study arms at the trial outset.

Similar to the outcomes on household financial management, the above effects hold when applying the multiple testing correction.

Lastly, we display standardized effect sizes¹⁴ 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 of the noted are quite large and estimates therefore less precise compared to other outcomes (see Figure 1). In a similar vein, the effect is largest for self-efficacy in adolescent participants, likely reflecting the specific financial skills and increased confidence levels acquired through the program.

¹⁴Standardized effect sizes were calculated as $\delta_{w,w}$ following the approach recommended in Hedges (2007) for intervention effects in clustered trials.

Table 3. ITT Estimates for Distal Outcomes: Economic Welfare

	(1)		(2)		(3)		(4)	
	Financial Distress		Worries about Money		Coping with Shock		Basic Necessities	
	I	II	I	II	I	II	I	II
Panel A: Adults								
ITT: Received Program	-0.46*** (0.13) [0.00]	-0.43*** (0.13) [0.00]	-0.14*** (0.04) [0.00]	-0.13*** (0.04) [0.00]	0.11** (0.04) [0.02]	0.11** (0.04) [0.02]	0.20*** (0.05) [0.00]	0.19*** (0.04) [0.01]
Lagged Outcome	0.22*** (0.04)	0.19*** (0.04)	0.10** (0.04)	0.10** (0.04)	0.11** (0.04)	0.07** (0.04)	0.13*** (0.03)	0.11*** (0.04)
Strata	0.11 (0.21)	0.26 (0.23)	-0.13** (0.05)	-0.12* (0.06)	-0.15** (0.07)	-0.19** (0.07)	0.05 (0.06)	0.03 (0.06)
Controls	no	yes	no	yes	no	yes	no	yes
Observations	539	534	539	534	539	534	539	534
R-squared	0.08	0.12	0.05	0.07	0.04	0.07	0.08	0.13
Mean Control	0.23		0.51		0.26		0.63	
Panel B: Adolescents								
ITT: Received Program	-0.55*** (0.13) [0.00]	-0.55*** (0.12) [0.00]	-0.03 (0.03) [0.28]	-0.03 (0.03) [0.23]			0.14*** (0.04) [0.00]	0.13*** (0.03) [0.00]
Lagged Outcome	0.18*** (0.04)	0.19*** (0.04)	0.04 (0.05)	0.02 (0.04)			0.09** (0.04)	0.06 (0.04)
Strata	0.36** (0.15)	0.39** (0.15)	0.04 (0.03)	0.06 (0.03)			-0.01 (0.04)	-0.02 (0.04)
Controls	no	yes	no	yes			no	yes
Observations	526	522	526	522			526	522
R-squared	0.08	0.09	0.01	0.04			0.04	0.08
Mean Control	0.30		0.14				0.77	

Notes: See also Table 3. Columns (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), Column (3): binary variable coded 1 for 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.

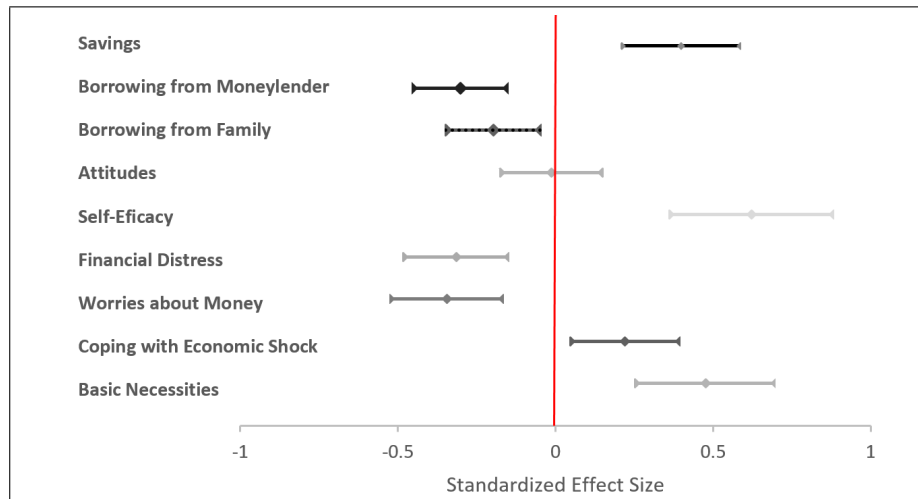


Figure 1. Adult Standardized ITT Effect Sizes at Post-Test

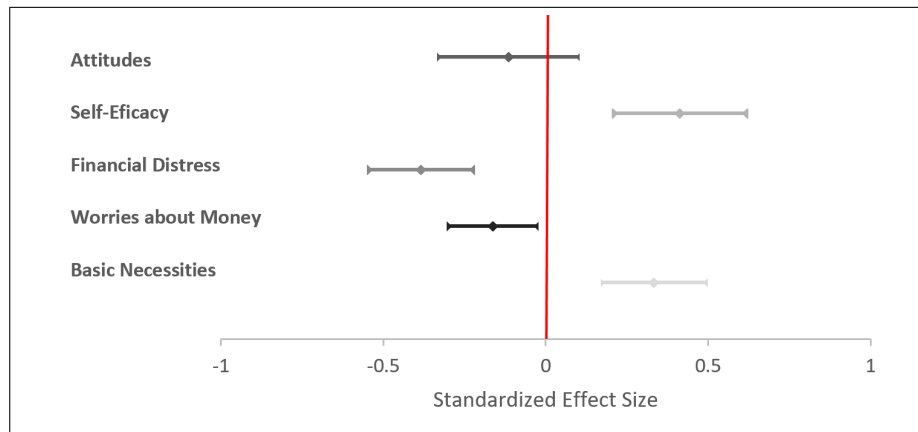


Figure 2. Adolescent Standardized ITT Effect Sizes at Post-Test

D Heterogeneity in Treatment Effects

This section examines heterogeneity in treatment effects based on some pre-specified observable characteristics. As shown in Tables 4-5, there were no significant treatment-trait interactions for the adolescent sample. The following paragraphs are therefore focused on the adult sample.

Table 4. Heterogeneity in Treatment Effects for Intermediate Outcomes

	(1)		(2)		(3)		(4)		(5)	
	Hold I	Any Savings II	Borrowed I	from Lender II	Borrowed I	from Kin II	Financial I	Attitudes II	Financial I	Self-Efficacy II
<i>Panel A: Adults</i>										
ITT: Program	0.17*** (0.04)		-0.29*** (0.06)		-0.11 (0.07)		0.06 (0.18)		1.27*** (0.29)	
x TRAIT	-0.02 (0.09)	0.15* (0.08)	0.24* (0.12)	-0.05 (0.10)	0.07 (0.14)	-0.04 (0.12)	-0.48 (0.30)	-0.42* (0.24)	0.22 (0.50)	1.50*** (0.47)
<i>Married</i>										
ITT: Program	0.15*** (0.04)		-0.24*** (0.06)		-0.10 (0.06)		-0.09 (0.16)		1.31*** (0.29)	
x TRAIT	0.01 (0.10)	0.16* (0.09)	0.12 (0.16)	-0.12 (0.15)	0.07 (0.20)	-0.02 (0.18)	-0.65* (0.38)	-0.56* (0.32)	0.09 (0.73)	1.39** (0.66)
<i>Ultra poor</i>										
ITT: Program	0.13 (0.11)		-0.06 (0.16)		0.18 (0.12)		-0.27 (0.23)		-0.07 (0.33)	
x TRAIT	0.02 (0.11)	0.15 (0.04)	-0.19 (0.17)	-0.25*** (0.05)	-0.33** (0.13)	-0.15** (0.06)	0.33 (0.27)	0.06 (0.15)	1.72*** (0.44)	1.65*** (0.29)
<i>Rural</i>										
Observations	539		539		5396		539		539	

Notes: *p< 0.1, **p< 0.05, ***p< 0.01. Robust standard errors clustered at the village level in parentheses. Each interaction term was tested in a separate regression due to low statistical power. Specification I presents results from OLS regressions with individual controls (lagged outcome, strata), Specification II shows the total effect for those exhibiting a given TRAIT, taken from the sum of the main effect and the interaction effect, i.e. as estimated in the previous column, including corresponding significance levels. The first set of regressions is run on a restricted sample of female respondents (n=511), that is, 95 percent of the sample. In our definition of married, we include women who are cohabiting with any male partner. 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, electricity, water tap inside the home, and brick/concrete dwelling. The same regression was run with different cutoffs, but result patterns remained the same.

Table 5. Heterogeneity in Treatment Effects for Distal Outcomes

	(1) Financial Distress		(2) Worries about Money		(3) Resilience to Shock		(4) Basic Necessities	
	I	II	I	II	I	II	I	II
<i>Panel A: Adults</i>								
ITT: Program	-0.69*** (0.15)		-0.33*** (0.09)		0.14*** (0.05)		0.21*** (0.05)	
x TRAIT	0.52** (0.25)	-0.17 (0.23)	0.10 (0.16)	-0.23* (0.13)	-0.09 (0.08)	0.05 (0.09)	-0.04 (0.07)	0.17*** (0.06)
<i>Married</i>								
ITT: Program	-0.84** (0.44)		-0.28 (0.23)		0.17 (0.12)		0.19* (0.11)	
x TRAIT	-0.12 (0.26)	-0.66** (0.28)	0.10 (0.20)	-0.23 (0.19)	-0.08 (0.11)	0.12* (0.06)	0.15* (0.08)	0.32*** (0.07)
<i>Ultra poor</i>								
ITT: Program	-0.84** (0.44)		-0.28 (0.23)		0.17 (0.12)		0.19* (0.11)	
x TRAIT	0.35 (0.45)	-0.49*** (0.12)	-0.05 (0.24)	-0.32*** (0.07)	-0.07 (0.13)	0.05 (0.10)	0.02 (0.12)	0.20*** (0.05)
<i>Rural</i>								
Observations	539		539		5396		539	

Notes: See Table 4. *p< 0.1, **p< 0.05, ***p< 0.01.

First, the results suggest heterogeneity in impact for married women and women cohabiting with male partners.¹⁵ We find significant interactions between marital status and treatment assignment for the outcomes of borrowing from moneylenders (Column (2) in Table 4) and financial distress (Column (1) in Table 5), indicating that married women benefit less from the program. Although non-significant, we observe the same trend for financial attitudes (where the effect coefficient turns negative for the married subsample, see Column (4) in Table 4) and for coping with income shocks (where the effect coefficient turns non-significant, see Column (3) in Table 5). Our results align with previous empirical research that has documented lower or null effects for female recipients of economic strengthening programs, including effects on income and business development (Fiala, 2017; de Mel et al., 2009). These findings likely points to important intra-household distributional dynamics, suggesting that married women have less control over household financial management vis-à-vis male partners and therefore face resistance when trying to implement new rules and practices in their homes (see Fiala, 2017; Doi et al., 2014; Fernald et al., 2008). Some empirical evidence has even pointed to potentially harmful effects. Accordingly, it is argued that the economic empowerment of women may disrupt prevailing patriarchal structures and gender norms in a household and, in consequence, increase partner-perpetrated violence (Bott et al., 2005; Jewkes, 2002). However, we do not find any iatrogenic effects on exposure to intimate partner violence among female program recipients (see Table A8).

The second set of regressions examines the non-inferiority of effects for the particularly poor (also referred to as the “ultrapoor”, see Banerjee et al., 2015).¹⁶ This is crucial 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 (Sheraden et al., 2003). However, our heterogeneity analyses reveal that treatment effects

¹⁵The variable was coded to also include women who were not married but cohabiting with male partners. Note that throughout this paragraph, we refer to this sub-sample as “married” for simplicity reasons but thereby also include women cohabiting with male partners.

¹⁶To 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.

are not inferior for the poorer group across almost all outcomes (with the exception of financial attitudes, see Column (4) in Table 4). More importantly, we find a significant treatment-trait interaction for the outcome of access to basic necessities (see Column (4) in Table 5), pointing to higher program impact for the poorest program participants. Our findings thereby contradict an almost stylized fact in the literature that contends that economic strengthening programs (including saving promotion and financial literacy) are less effective when targeting the ‘poorest of the poor’ (e.g. Burlando & Canidio 2017; Banerjee et al., 2015; Barrientos & Scott, 2008; de Mel et al., 2008; Halder & Mosley, 2004; Hulme, 2000).

Lastly, we observe larger program impact in rural communities than in urban townships. Reductions in borrowing rates are more substantial (see Columns (2)-(3) in Table 4) and effects on financial self-efficacy are only significantly positive for participants in rural areas (see Column (5) in Table 4). We speculate that the findings may stem from the fact that general service delivery, including financial services, is likely higher in urban (or peri-urban) locations, which in turn lowers the demand for alternative services and programs. Likewise, a study in Malawi found that program impact varied with distance: Adoption rates for formal bank accounts were more than three times higher for communities that were several kilometres away from the nearest bank branch (see Flory, 2016). We further speculate that levels of social cohesion and social trust might be higher in rural areas and could thus provide more fruitful grounds for a group-based program.

E Robustness Check

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 fade out over time (see Steinert et al., 2017). 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 Figures

A1-A14 in Appendix). We find 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.

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 limited success of previous financial literacy programs, our results are particularly compelling. The quantitative data analyzed in here does not allow to conclusively unpack the causal mechanisms at play. Instead, we draw on theoretical literature (largely from the field of behavioral economics) as well as on qualitative data from focus group discussions and in-depth interviews with program recipients to make some conjectures on the causal pathways that explain the program effects. Our qualitative data were coded thematically into four conceptual themes – namely 1) self-efficacy, 2) reduced impulsive spending and prioritization, 3) aspirations, and 4) social norms and peer effects. We provide exemplary quotes for each theme (see Table 6). Each of these four themes can be conceived of as one channel of program impacts that can help explain our quantitative findings.

Financial Self-Efficacy

Empirical evidence has highlighted a substantial divide between behavioral intentions and realized actions. For instance, our study population reports high intentions to save more and borrow less. However, the majority was unable to translate these behavioural intentions into realised actions – with only 18% of the sample holding any form of savings at the study’s outset (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 put focus on fostering self-efficacy through building skills for financial planning and management. In conse-

quence, our quantitative analyses reveal a striking impact on participants’ self-efficacy levels, both for adult and adolescent program recipients. The qualitative data adds further nuance to these findings. Several participants describe 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 document that program content has improved their awareness of the risks associated with certain saving strategies and improved their 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 some-thing that can happen [...]”,* see Panel (1), Table 6). It is therefore likely that the specific financial skills acquired in the sessions, for instance through the integrated visual budgeting exercise, have helped program recipients to materialize pre-existing saving intentions.

Reduced Impulsive Spending and Prioritization

Prior research has argued that non-cognitive skills such as self-control, “grit”, and conscientiousness can have important implications for a range of life outcomes, including welfare-related aspects (Heller et al., 2017; Heckman & Kautz, 2013; Heckman, Stixrud & Urzua, 2006). Accordingly, self-control has been commonly associated with economic performance and defines the extent of temptation spending, future-oriented versus present-biased decision-making, as well as realized savings rates (Banerjee & Mullainathan, 2010; Banerjee & Duflo, 2007; Strotz, 1965). While behavioral biases such as temptation spending or present-biased financial decision making are equally present among the poor and rich, constraints in self-control are likely more consequential for the poor given that they have fewer resources to absorb these. Several components of our program curriculum were therefore specifically targeted at strengthening self-control. Similar to the Sustainable Transformation of Youth in Liberia program (see Blattman et al., 2017), our curriculum included sessions on anger control, managing emotions, and building rules and routines in the household (see Table A1). These program components have likely strengthened recipients’ capacity to resist to impulses and temptation and thereby fostered more deliberate financial management. In this

vein, our qualitative data documents narratives of more conscientious and controlled decision-making through prioritizing certain expense areas over others (*"I think of 'needs' and not 'wants' before I use my money"*, *"Before I was just using money on unnecessary things"* (see Panel (2), Table 8). These changes are also reflected in the quantitative data where we observe increases in participants' capacity to securing a range of basic needs. That is, more present-oriented and impulsive expenses were likely substituted with more essential expenses such as on education or nutrition.

In addition, our program comprised a session dedicated at financial goal-setting, thus building on a large corpus of psychological literature that has established causal links between conscious goals and actions (Fiorill et al., 2014; Locke & Latham, 2006; Bénabou & Tirole, 2004). In line with this theoretical argument, participants were encouraged in the session to make verbal (and written) commitments to specific saving plans and family saving goals. Self-control may thereby be enhanced by a psychological enforcement mechanism that associates failures of implementing set goal with feelings of guilt and shame (see Soman & Cheema, 2011; Thaler, 1990). The theoretical argument resonates well with evidence from our qualitative data: Participants describe how they perceive money as less fungible in view of "mental accounts"¹⁷ for future-oriented savings or emergency buffers (*"I am strict with my money now. I save my money"*, *"Now we don't spend all of the money any more, because we know that there can be emergencies"* (see Panel (2), Table 6). The increases in accumulated savings amounts that we observe in our quantitative data analyses could be a direct consequence of significant shifts from (temptation) spending to precautionary saving.

Future Aspirations and Self Esteem

Another possible channel through which program impact may have occurred are improvements in participants' aspirations and future orientation (see Blattman et al., 2017; Bernard et al., 2014). Parallel to previous interventions, the role plays and comic strips 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

¹⁷On a discussion of "mental accounting effects", see also: Karlan & Linden (2014); Dupas & Robinson (2013); Shafir & Thaler (2006).

& Zia, 2013; Chong et al., 2012). Story characters that are easy to identify with (because they are situated in environments and contexts that are similar to those of participants) may turn into role models and help participants visualize their "best possible selves" (Layous et al., 2013; Sheldon & Lyubomirsky, 2006). This has the potential to change individuals' broader beliefs and mental models, instill a more positive future outlook, and help them overcome procrastination and hopelessness (World Development Report, 2015; Bernard et al., 2014; Appadurai, 2001). Concurrently, participants describe how the story vignettes made them realize that future goals can 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 8). Quotes also suggest that the role plays may have had an enabling function by making abstract goals such as *"build[ing] a house"* or *"further[ing] [children's] education"* (see Panel (3), Table 6) more concrete and viable. The decreases in poverty-induced emotional distress that we reveal in our quantitative analysis may also be indicative of a more optimistic future outlook.

The concept of aspirations is closely linked to the concept of self-esteem. A stream of behavioral research has identified poor self-conception, low sense of empowerment, and lack of agency as key constraints to healthy financial behavior (World Development Report, 2015). Therefore, our program curriculum sought to capitalize on promoting praise between caregivers and adolescents (see Table A1) and thus fostering participants' self-esteem (Bernard et al., 2014; Darolina & Wydick, 2011, Glewwe et al., 2014, Boudet et al., 2016). This, consequently, may have nurtured participants' feelings of agency and control over their (financial) lives (*"[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 (3), Table 6).

Peer Effects and Social Norms

Lastly, by situating the curriculum in a group setting, the program has likely activated a peer effect. A number of previous studies have demonstrated how peers can impact an individual's financial behavior and decision-making through information sharing, moral support, and shaping of social norms (see Breza & Chandrasekhar, 2015; Kast

et al., 2012; Hong et al., 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). For instance, Duflo and Saez (2002) show in an experiment with university employees in the United States how individual retirement savings decisions are highly dependent on colleagues’ choices. Likewise, Kast (2012) finds in a field experiment with micro-entrepreneurs in Chile that participation in self-help groups doubles savings balances compared to a control group. Our qualitative data reflects similar peer effects, whereby program participants repeatedly state that they remind 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 (4), Table 6). Saving and careful financial management are likely to become a ‘virtuous act’ that is shared socially (Hardcastle, 2012).

In the same vein, our program has likely 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, spill-over to other household members has likely occurred (“*We talked about the sessions when we got home*”, see Panel (4), Table 6). This has the potential to reinforce program content and thus make program impact more sustainable. In this vein, a related paper by Doi and colleagues (2014) tested a financial literacy program in Indonesia in three treatment arms, whereby the training was targeted at the migrant worker in the first arm, at another household member in the second, and at 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 suggests that program effects have 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 (4), Table 6). We also record numerous accounts of adult caregivers engaging their adolescents in household financial planning (“*We now [...] advise on the things to buy and prepare a shopping list together*”, see Panel (4), Table 6). Through regular feedback and social incentives, participants likely hold each other accountable and in consequence increase compliance with their financial plans (see Kast et al., 2012).

Table 6. Qualitative Survey Evidence on Program Mechanisms – Thematic Coding

Thematic Area	Example Quotes	N related Quotes
1. Financial Self-Efficacy This comprises all statements in which a program participant describes skills related to financial planning or saving that he/she has learned from the program.	<i>“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.”</i> (Adult, FGD, rural cluster) <i>“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.”</i> (Adult, FGD, urban cluster) <i>“The session on budgeting has made my life easier because now I also consider economic shocks and crisis when I plan.”</i> (Adult, FGD, rural cluster) <i>“You cannot go to town without preparing your budget. Try to prepare one so that you don’t spend all your money.”</i> (Adult, FGD, rural cluster) <i>“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.”</i> (Adult, QI, rural cluster)	36
2. Reduced Impulsive Spending and Prioritization This comprises all statements in which a program participant describes skills related to financial planning or saving that he/she has learned from the program.	<i>“Before I was just using money on unnecessary things, buying stuff that was already there. Now my behavior has changed and I learned something from budgeting.”</i> (Adult, QI, rural cluster) <i>“First, I used to use all my money, but now I think of ‘needs’ and not ‘wants’ before I use my money.”</i> (Adult, FGD, rural cluster) <i>“I’m strict with my money now. I save my money.”</i> (Adult, FGD, urban cluster) <i>“Now we don’t spend all of the money any more, because we know that there can be emergencies.”</i> (Adolescent, FGD, rural cluster) <i>“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.”</i> (Adolescent, FGD, rural cluster)	19

Thematic Area	Example Quotes	N related Quotes
3. Future Aspirations and Self-Esteem This comprises all statements in which a program participant communicates how their aspirations and future outlook may influence financial decision-making. It also includes the goals that motivate their saving.	<i>“I have learned from Sinovuyo that one does not have to have a lot of money to start saving.”</i> (Adult, QI, rural cluster) <i>“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’m gone.”</i> (Adult, FGD, rural cluster) <i>“I learned that I cannot rush things, I learned this from the story character 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.”</i> (Adult, FGD, rural cluster) <i>“Now that I have learned how to save, I think I am able to build a house. I have joined a Stokvel [savings group].”</i> (Adult, FGD, rural cluster) <i>“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.”</i> (Adolescent, FGD, rural cluster)	13
4. Peer Effects and Social Norms This comprises all statements in which a program participant describes how program content is enabled and reinforced through social interactions (within or outside of the family) as well as how the program itself has shaped social support and social norms.	<i>“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.”</i> (Adult, QI, urban cluster) <i>“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 favour.”</i> (Adult, QI, rural cluster) <i>“I particularly liked that my teen has now learned not to demand things that are beyond our reach.”</i> (Adult participant, QI, rural cluster) <i>“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.”</i> (Adult, QI, rural cluster) <i>“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.”</i> (Adolescent, QI, rural cluster)	29

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

IV Conclusion

In this study, 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 are 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. In a similar vein, we find substantial effects on household economic welfare, namely reductions in financial and poverty-related emotional distress, increases in access to a range of basic necessities, and suggestively improved resilience to economic shocks.

Compared to prior financial literacy or saving promotion programs, effect sizes from this study are substantially larger (see Steinert et al., 2017). Also, while a previous meta-analysis of 115 financial education programs found limited effectiveness for low-income clients (see Kaiser & Menkhoff, 2016), our findings hold true in a particularly deprived and vulnerable population. This is even more substantive considering the non-intrusive nature of our intervention. For instance, some previous programs have exerted strong behavioural control. For instance, they have used monetary incentivization for savings or binding commitment arrangements that impose administrative restrictions in order to artificially reduce liquidity of money in a household.

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-control and aspirations (e.g. Alan et al., 2016; Heckman et al., 2006). While our qualitative evidence corroborates this argument, further quantitative research is essential. For instance, multi-arm trials to test integrated against unidimensional program curricula are 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.

While our program appears well suited for those living in extreme poverty and in remote rural areas, we observe reduced program impact for women who are cohabiting with male partners or spouses. This suggests that some program participants were not the factual household heads and conceivably not the household members with most financial (and other) decision making power. Although our program curriculum partly sought to involve the whole family (or the whole household) by featuring homework practices and home visits, it is possible that program impact as well as sustainability of change could be increased by specifically involving male household heads. In this regard, our study motivates future avenues of research to disentangle the impact of intra-household dynamics, and in particular gender imbalances, on financial management and economic strengthening.

Some caveats are in order. A first is the reliance on self-report data. In this vein, Zwane and colleagues (2011) have highlighted the intrusive nature of face-to-face interviews, arguing that the process of surveying could have an effect on outcomes of interest. The authors find comprehensive empirical evidence for “interview effects”, suggesting that the interview as such could serve as a reminder for certain endorsed behaviors (e.g. saving). In line with this, the authors reveal that frequent surveying increased, for instance, reports of sign-up for medical insurance and usage of water treatment utensils. In light of these concerns, a number of previous studies on saving promotion have combined self-reports of financial behavior with administrative data such as frequency and amount of deposit (see for instance Dupas et al., 2016; Karlan & Linden, 2014). Since the program described in here did not exclusively target formal savings, this option did not seem viable. However, we contend that audio- and mobile-assisted interviewing techniques used in our data collection reduced social desirability bias. Indeed, prior studies have found that mobile-assisted interview techniques are effective in increasing disclosure of stigmatized behaviors (Gorbach et al., 2013; Moskowitz, 2004). Lastly, a potential bias from self-report would affect both study arms and is therefore not likely to skew the results substantially in favor of the intervention arm.

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 in 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. From a policy perspective, budgeting and saving training can therefore 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-type financial education programs, we show how impact can be increased by embedding these in a wider psychosocial intervention. Beyond some first attempts presented in this paper, future work may usefully explore in more complex trial designs how psychological, behavioral, and financial program components interact with each other and are mutually reinforcing.

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. 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

Table A2. Sample Attrition

	Adults not completed post-test	Adolescents not completed post-test
ITT: program	0.64 (0.46)	-0.22 (0.54)
Age	-0.00 (0.02)	0.12 (0.08)
Female	omitted	0.07 (0.44)
Married	0.58 (0.55)	NA
High school & higher	-0.12 (0.65)	NA
Currently employed	1.50** (0.71)	NA
Attending school	NA	-0/91 (0.76)
HIV status	1.51*** (0.56)	-0.10 (0.46)
Household Size	-0.05 (0.12)	-0.02 (0.09)
Brick/concrete house	0.32 (0.67)	-0.34 (0.44)
Water tap inside	-0.97 (0.72)	-0.24 (0.44)
Electricity Access	-0.17 (0.92)	-0.18 (0.83)
Asset Index	-0.09 (0.29)	0.09 (0.16)
Grant Income	-0.00 (0.00)	-0.00 (0.00)
Strata: Rural	-0.58 (0.70)	-0.52 (0.57)
Constant	3.98** (2.02)	-2.75 (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 A3. 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 (0.03)	-0.02 (0.03)	0.08*** (0.02)	0.09*** (0.03)	0.11*** (0.02)	0.11*** (0.02)
Lagged Outcome	0.04 (0.06)	0.03 (0.06)	0.00 (0.07)	-0.03 (0.07)	0.05 (0.06)	0.04 (0.06)
Strata	0.02 (0.04)	0.01 (0.04)	-0.02 (0.03)	-0.03 (0.03)	-0.03 (0.04)	-0.03 (0.04)
Controls	no	yes	no	yes	no	yes
Constant	0.10*** (0.04)	0.06 (0.08)	0.09*** (0.03)	-0.07 (0.10)	0.07 (0.05)	0.16 (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 A4. 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
<i>Panel A: Adults</i>										
ITT: Program	0.95*** (0.26)	0.96*** (0.26)	1.69*** (0.34)	1.68*** (0.35)	-0.20 (0.24)	-0.23 (0.25)	0.16 (0.13)	0.15 (0.12)		
Lagged Outcome	0.06 (0.05)	0.05 (0.05)	0.07 (0.05)	0.08 (0.05)	-0.08* (0.04)	-0.09* (0.04)	0.04 (0.05)	0.03 (0.04)		
Strata	0.24 (0.30)	0.14 (0.32)	0.48 (0.40)	0.29 (0.43)	0.39 (0.24)	0.26 (0.26)	-0.07 (0.11)	-0.14 (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		
<i>Panel B: Adolescents</i>										
ITT: Program	0.63** (0.27)	0.60*** (0.27)	1.44*** (0.27)	1.38*** (0.26)	-0.13 (0.29)	-0.14 (0.29)	-0.07 (0.19)	-0.08 (0.18)	-0.43 (0.37)	-0.38 (0.36)
Lagged Outcome	0.08 (0.06)	0.08 (0.05)	0.13** (0.05)	0.13** (0.05)	-0.02 (0.05)	-0.02 (0.05)	-0.01 (0.04)	-0.02 (0.04)	0.11** (0.05)	0.09* (0.05)
Strata	-0.65** (0.27)	-0.71** (0.30)	-0.37 (0.31)	-0.48 (0.31)	0.59* (0.30)	0.53* (0.31)	-0.01 (0.17)	-0.09 (0.21)	0.22 (0.41)	0.15 (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 A5. 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
<i>Panel A: Adults</i>								
ITT: Program	-0.28*** (0.06)	-0.27*** (0.06)	-0.04 (0.09)	-0.00 (0.10)	-0.38*** (0.09)	-0.37*** (0.09)	-0.21*** (0.08)	-0.19** (0.08)
Lagged Outcome	0.20*** (0.04)	0.17*** (0.04)	0.14*** (0.03)	0.11*** (0.03)	0.15*** (0.05)	0.14*** (0.05)	0.10* (0.05)	0.09 (0.06)
Strata	0.09 (0.08)	0.15 (0.10)	0.03 (0.14)	0.16 (0.14)	0.03 (0.14)	0.09 (0.14)	0.02 (0.11)	0.09 (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
<i>Panel B: Adolescents</i>								
ITT: Program	-0.21** (0.10)	-0.21** (0.09)	-0.35*** (0.08)	-0.36*** (0.08)	-0.39*** (0.09)	-0.39*** (0.09)	-0.24** (0.10)	-0.24** (0.09)
Lagged Outcome	0.15*** (0.04)	0.15*** (0.04)	0.10* (0.05)	0.10** (0.05)	0.09** (0.04)	0.09** (0.04)	0.05 (0.04)	0.07* (0.04)
Strata	0.16 (0.14)	0.18 (0.14)	0.33*** (0.07)	0.34*** (0.08)	-0.05 (0.11)	-0.04 (0.11)	0.31** (0.12)	0.36*** (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 A6. 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
<i>Panel A: Adults</i>								
ITT: Program	0.05 (0.04)	0.03 (0.04)	0.25*** (0.06)	0.24*** (0.06)	0.09* (0.05)	0.09* (0.05)	0.11*** (0.04)	0.10** (0.04)
Lagged Outcome	0.14*** (0.04)	0.14*** (0.04)	0.05 (0.03)	0.06 (0.03)	0.14*** (0.03)	0.12*** (0.03)	-0.01 (0.04)	-0.03 (0.04)
Strata	-0.02 (0.07)	-0.03 (0.06)	0.09 (0.06)	0.09 (0.06)	0.02 (0.05)	-0.02 (0.05)	0.01 (0.05)	-0.01 (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
<i>Panel B: Adolescents</i>								
ITT: Program	0.04 (0.03)	0.03 (0.03)	0.20*** (0.05)	0.19*** (0.05)	0.19*** (0.05)	0.18*** (0.05)	0.09** (0.04)	0.08** (0.03)
Lagged Outcome	0.12** (0.05)	0.12** (0.05)	0.07 (0.04)	0.06 (0.04)	0.07 (0.04)	0.06 (0.05)	0.06 (0.04)	0.03 (0.05)
Strata	-0.01 (0.04)	-0.03 (0.04)	0.08 (0.03)	0.08 (0.05)	-0.00 (0.06)	-0.03 (0.07)	0.05* (0.07)	0.04 (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 equipment		(7) One pair of shoes		(8) Enough warm clothes	
	I	II	I	II	I	II	I	II
<i>Panel A: Adults</i>								
ITT: Program	0.11*** (0.03)	0.11*** (0.04)	0.20*** (0.05)	0.18*** (0.05)	0.15*** (0.04)	0.13*** (0.04)	0.15*** (0.05)	0.15*** (0.05)
Lagged Outcome	0.03 (0.05)	0.03 (0.05)	0.05 (0.04)	0.06 (0.04)	0.09*** (0.03)	0.07** (0.03)	0.07 (0.04)	0.05 (0.04)
Strata	0.07 (0.04)	0.04 (0.05)	0.00 (0.06)	0.02 (0.05)	0.06 (0.07)	0.04 (0.07)	0.02 (0.08)	0.01 (0.08)
Controls	no	yes	no	yes	no	yes	no	yes
Control Mean	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
<i>Panel B: Adolescents</i>								
ITT: Program	0.08** (0.04)	0.08* (0.04)	0.10** (0.04)	0.08** (0.04)	0.04 (0.04)	0.04 (0.04)	0.09** (0.04)	0.09** (0.03)
Lagged Outcome	0.09* (0.05)	0.08 (0.05)	0.04 (0.04)	0.00 (0.04)	0.05 (0.04)	0.04 (0.05)	-0.00 (0.04)	-0.02 (0.04)
Strata	-0.04 (0.04)	-0.04 (0.04)	-0.01 (0.06)	-0.03 (0.05)	-0.07 (0.06)	-0.07 (0.06)	-0.03 (0.04)	-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 A7. ITT Program Effects - Probit Models

	(1)		(2)		(3)		(4)		(5)	
	Holds I	Any Savings II	Borrowed I	Lender II	Borrowed I	Kin II	Worries I	re Money II	Resilience I	to Shock II
Panel A: Adults										
ITT: Program	0.42*** (0.11)	0.45*** (0.11)	-0.40*** (0.10)	-0.39*** (0.10)	-0.14 (0.09)	-0.15* (0.09)	-0.39*** (0.08)	-0.38*** (0.09)	0.21 (0.13)	0.21 (0.14)
Lagged Outcome	0.13 (0.14)	0.07 (0.14)	0.18*** (0.05)	0.18*** (0.05)	0.01 (0.06)	0.02 (0.06)	0.19*** (0.05)	0.19*** (0.05)	0.87*** (0.10)	0.82*** (0.11)
Strata	-0.16 (0.18)	-0.25 (0.17)	0.10 (0.17)	0.15 (0.18)	-0.07 (0.13)	-0.05 (0.13)	-0.22 (0.14)	-0.22 (0.15)	-0.28 (0.19)	-0.34* (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* (0.09)	-0.19** (0.09)		
Lagged Outcome							0.09** (0.04)	0.06 (0.04)		
Strata							0.22** (0.09)	0.23** (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 A8. ITT Effects for Intimate Partner Violence

	Intimate Partner Violence	
	I	II
ITT: program	-0.28	
	(0.19)	(0.19)
Lagged Outcome	0.20	0.20
	(0.16)	(0.16)
Strata	0.01	0.08
	(0.17)	(0.21)
Controls	no	yes
R2	0.05	0.07
Control Mean	-0.09	
Observations	504	499

Note: *p< 0.1, **p< 0.05, ***p< 0.01. Notes : Intimate Partner violence is an aggregated index of six individual items (e.g. “I felt physical pain that still hurt the next day because of a fight with my partner”, “ I had a sprain, bruise, or small cut because of a fight with my partner”) , weights assigned via principal component analysis. Items only responded by subset of the sample who currently are or have been in the past month in a romantic relationship with someone.

FIGURES

Adult Outcomes

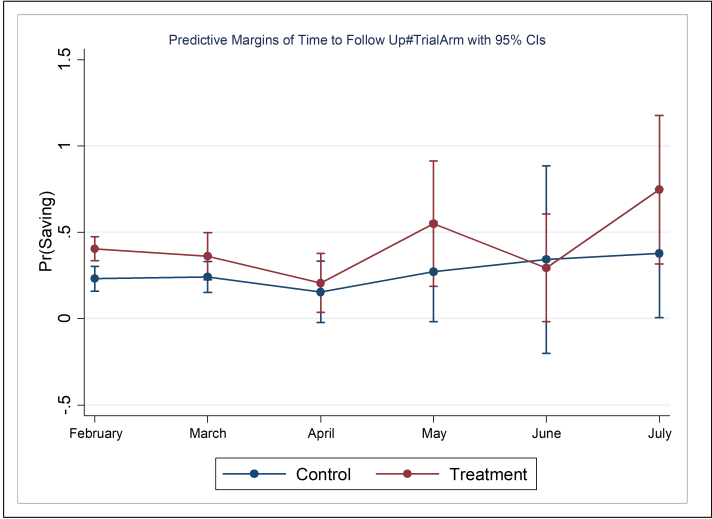


Figure A1. Post-Test Any Savings by Month

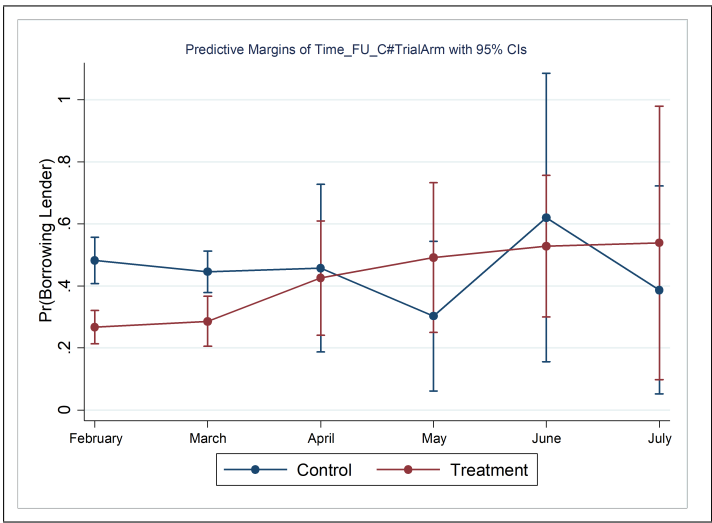


Figure A2. Post-Test Borrowed from Lender by Month

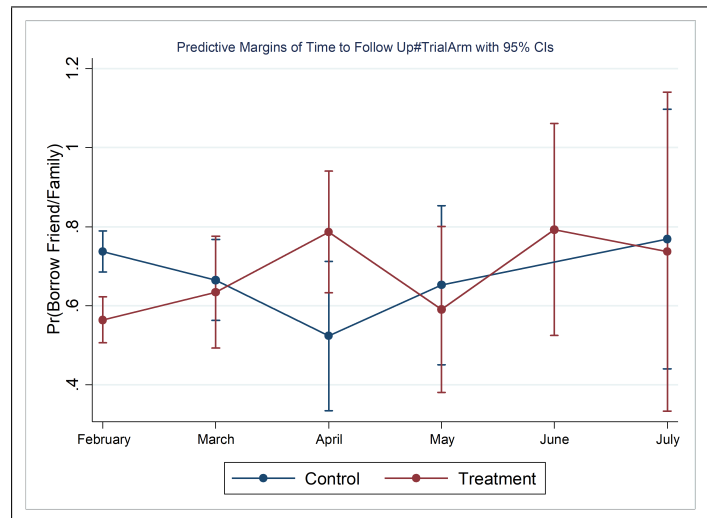


Figure A3. Post-Test Borrowed from Family/Friend by Month

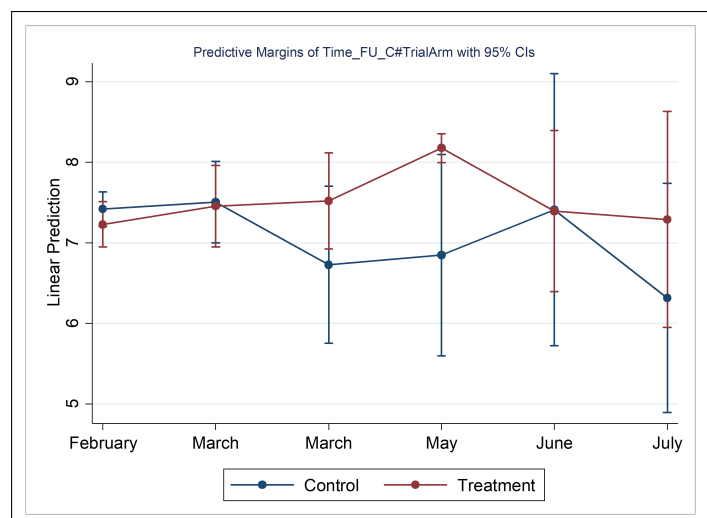


Figure A4. Post-Test Attitudes by Month

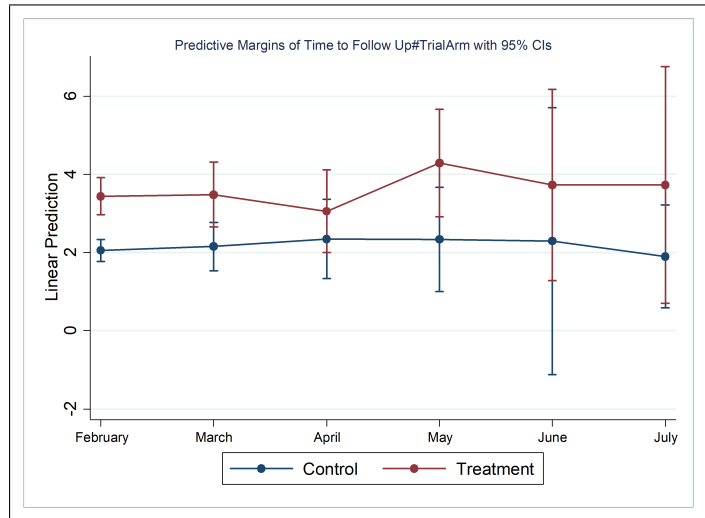


Figure A5. Post-Test Self Efficacy by Month

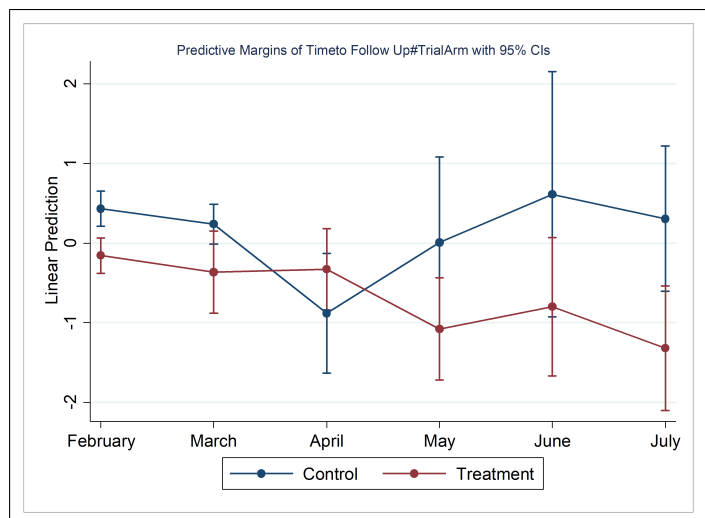


Figure A6. Post-Test Financial Distress by Month

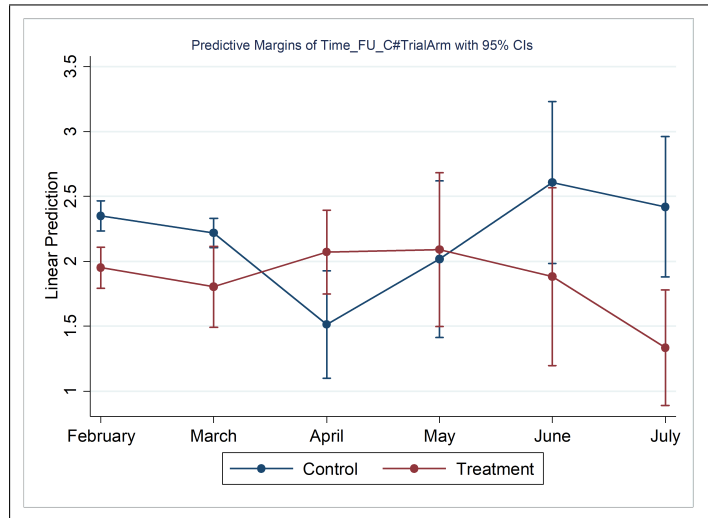


Figure A7. Post-Test Emotional Distress by Month

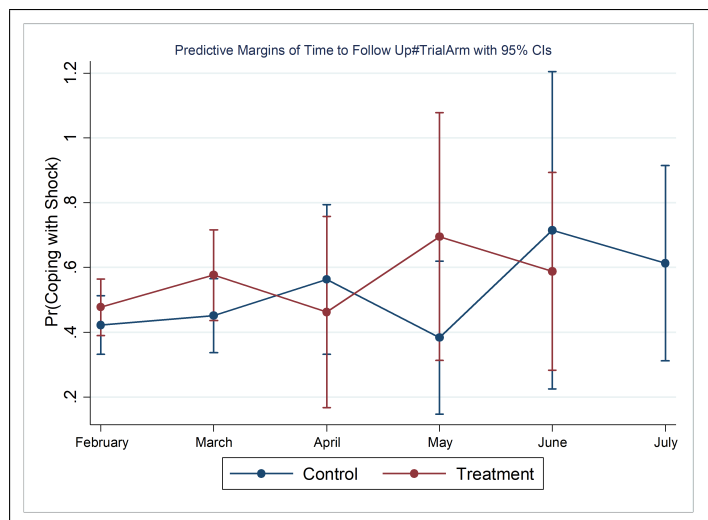


Figure A8. Post-Test Resilience to Shock by Month

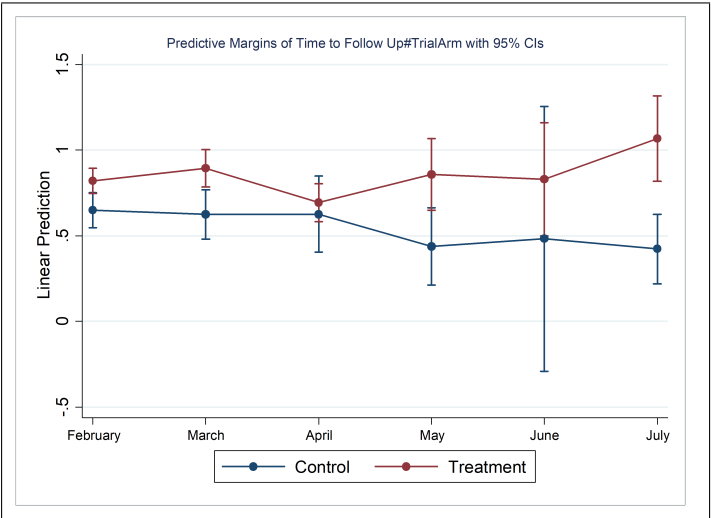


Figure A9. Post-Test Basic Necessities by Month

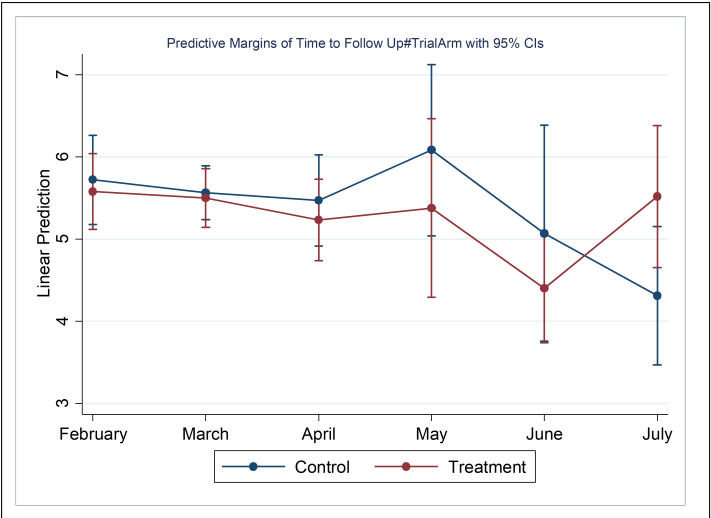


Figure A10. Post-Test Attitudes by Month

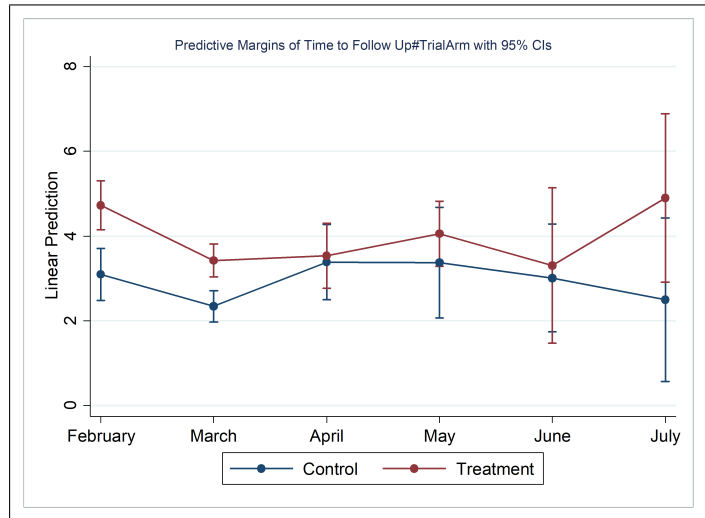


Figure A11. Post-Test Self-Efficacy by Month

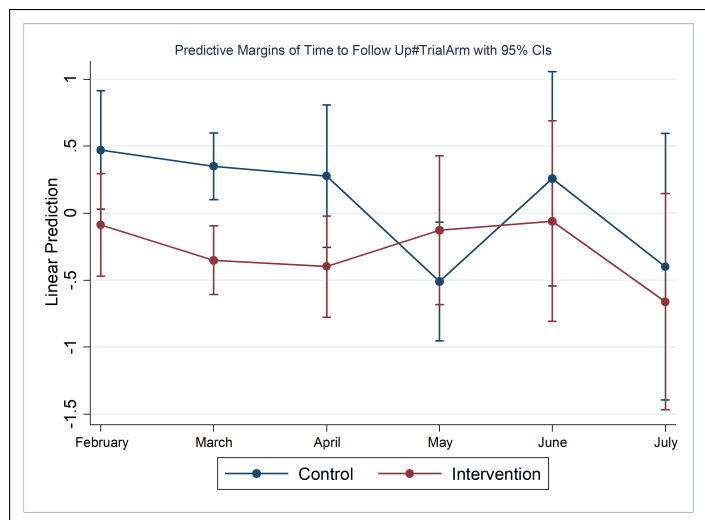


Figure A12. Post-Test Financial Distress by Month

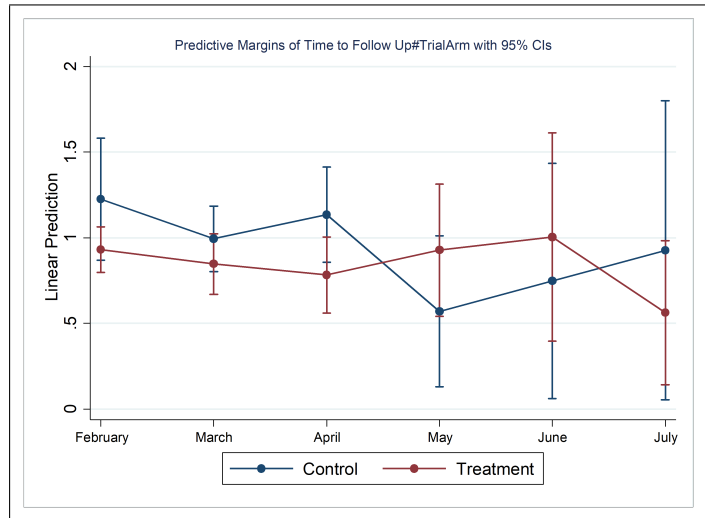


Figure A13. Post-Test Emotional Distress by Month

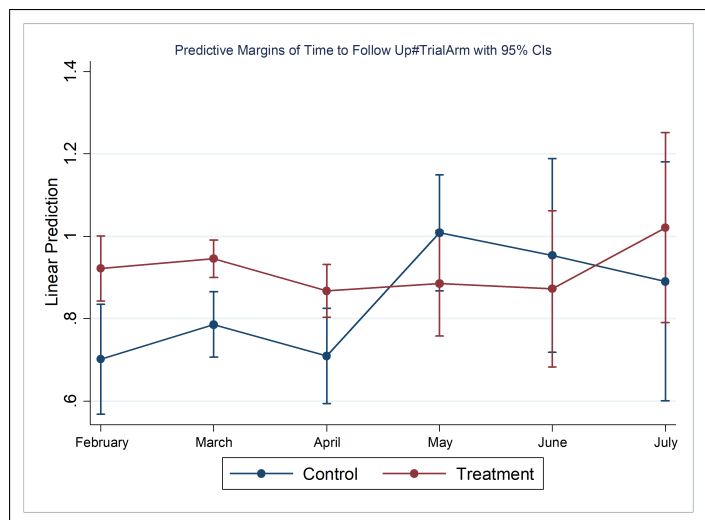


Figure A14. Post-Test Basic Necessities by Month