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**Building Financial Resilience in the Context of Deprivation:
Experimental Evidence from a Family Financial Literacy and
Parenting Programme in South Africa**

*DPhil Thesis submitted in partial fulfilment of the Doctorate in
Philosophy in Social Intervention by stand-alone papers at the
University of Oxford.*

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To those without the privilege to write about poverty.

Thesis Abstract

Background:

Living in poverty exposes individuals to multiple risks. These include food insecurity, restricted access to educational, financial, and medical institutions, vulnerability to income shocks, indebtedness, and poor mental health. In response, many development programmes seek to build financial resilience among the poor by helping them build security buffers against emergencies and secure their basic needs with volatile incomes. Popular intervention strategies have capitalised on promoting budgeting and saving skills. However, effectiveness of these programmes has often been limited, particularly when targeted at low-income participants. Therefore, it is essential both for policy and research to determine which programme designs can most effectively foster financial resilience whilst improving financial management and decision making.

This thesis begins by depicting the financial lives of the poor and illustrating the poverty-linked adversities they face. The concept of financial resilience is introduced to define the outcomes analysed in the thesis and motivate a theory of change. *DPhil Paper 1* summarises experimental research of existing resilience-building programmes in Sub-Saharan Africa. Based on this comprehensive review, gaps in previous programmes and evidence are highlighted and potential new intervention strategies drawing on psychological and social aspects are discussed. The empirical part of the thesis reports on a cluster randomised controlled trial to evaluate the economic impact of a family-based financial literacy and parenting programme targeting poor households in the Eastern Cape province of South Africa (*DPhil Paper 2*). Mechanisms underlying changes in financial behaviour are elucidated in *DPhil Paper 3*.

Methodology & Results:

Paper 1 – The first paper synthesises and critically appraises existing randomised controlled trials on the effectiveness of saving and budgeting promotion programmes in Sub-Saharan Africa. An extensive search of 28 academic and policy-focused databases was conducted and 27 relevant programme evaluations were identified. Data extraction and quality ratings were carried out independently by the

candidate and another review author. Standardised effect sizes were pooled across studies for each outcome category using robust variance estimation. Heterogeneity in effect sizes was examined in a series of meta-regressions, considering the impact of programme curriculum, target population, and study design characteristics. The meta-analysis provides evidence for a small (standardised mean differences between 0.01 and 0.07) but significant impact of saving and budgeting promotion programmes on poverty reduction, including increases in household expenditures and incomes, higher returns from family businesses, and improved food security. Results also show positive and significant effects (standardised mean differences between 0.04 and 0.12) on intermediate outcomes, including total savings, pro-saving attitudes, financial literacy, and investments in small-scale family businesses. Findings from meta-regressions suggest that providing access to formal banking schemes is more effective than delivering programmes with educational and/or motivational focus. Further to this, findings point to reduced programme effectiveness for female participants. *This paper is published in World Development (5-year IF: 3.35).*

Paper 2 – The second paper draws on primary data from a randomised field experiment with 552 families in the Eastern Cape, South Africa. 40 villages and townships were randomly assigned to either participate in a combined parenting and financial literacy programme (treatment arm, 270 families) or receive a one-day hygiene workshop (control arm, 282 families). Different specifications of regression analyses (adjusting for baseline variables or not) with clustered standard errors are used to estimate the intent-to-treat effect of the parenting and financial literacy intervention five to nine months after programme delivery. Experimental evidence points to significant improvements in financial behaviours, with higher saving and lower borrowing rates among treatment group participants at post-test. There is further evidence for substantial effects on household economic welfare, expressed in significantly reduced financial distress, better resilience to economic shocks, and a greater capacity to secure a range of basic needs (standardised mean differences ranging from 0.10 to 0.62). There is tentative evidence that programme effects are higher (with regards to some outcomes) for rural dwellers but diminished for women who are not the household heads. *This paper is published in the Journal of Development Economics (5-year IF: 3.43).*

Paper 3 – The final paper builds on findings from *DPhil Paper 2* by applying a mixed-methods framework to elucidate the pathways underlying changes in financial behaviour. Thematic analysis was applied to data collected in focus group discussions and in-depth interviews with programme participants, aiming to identify distinct narratives on the mechanisms of change. Qualitative evidence elicits three driving factors for changes in financial behaviour, namely (a) a higher confidence in financial management skills, (b) a more optimistic future outlook, and (c) increased socio-emotional support provided by peers and family members. These mechanisms were then cross-validated using mediation analysis and a structural equation model. Quantitative results point to higher levels of financial self-efficacy and optimism as well as improved parent-child relationships and community social support in the intervention group. Together, these factors can be seen to translate into optimisations in financial behaviour.

Conclusion:

This thesis argues that financial behaviour and financial decision making in poor families is shaped by a complex interplay of psychological and social factors. It follows that programme curricula that leverage these influences – in addition to standard financial literacy training – have the potential to achieve greater impact. To test this argument, the thesis presents evidence on the beneficial economic impacts of a multi-faceted parenting and financial literacy programme for poor families in the Eastern Cape, South Africa. Despite the evidence presented, this thesis acknowledges that future, more complex research designs are needed to confirm the causal impact of psychological and social programme components. In addition, findings from this thesis, and particularly from the systematic review, highlight reduced effectiveness for female programme participants. Therefore, gender-sensitive programming that tackles prevailing gender norms and power dynamics within household bargaining processes is necessary and should be integrated into financial curricula. This thesis paves the way for more holistic programmatic innovations to alleviate financial hardship in highly vulnerable and deprived populations.

Acknowledgements

The purpose of data is to not only count people but to value their lives. Hundreds of families have welcomed us into their homes and lives to share their stories. Without their participation, this thesis would not have been written and would not have a purpose.

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Most importantly, this research study has taught me the immense importance of family and has made painfully clear how growing up without parents or in a context of abuse can create wounds that will never be healed and destroy a life that has just begun. The unwavering support of my loving and caring family was – and continues to be – one of the greatest privileges of my life. Many thanks to my brother Christoph, for proofreading parts of my thesis, hosting me in his college room for many times, teaching me new Stata tricks, putting unreserved faith in my abilities, and sharing my enthusiasm for research. Thank you to my grandparents: Oma und Opa, vielen Dank für das unermüdliche Daumendrücken in all den Jahren und dafür, dass ihr mich in Gedanken immer begleitet habt. Last but by no means least, I wish to thank my parents, Sabine and Tilman Steinert, for giving their all to my education, showing undying interest in what I am doing, supporting me with whatever small or large request I have, and for raising me in a way that could bring out the best in me.

1. Publications and Presentations arising from this Thesis

The following manuscripts arise directly (first-authored papers) or indirectly (co-authored papers) from this thesis:

1. **Steinert JI**, Cluver LD, Meinck F, Doubt J & Vollmer S (2018). Household Economic Strengthening through Saving and Budgeting: Evidence from a Field Experiment in South Africa. Journal of Development Economics, 134, 443-466.
2. **Steinert JI**, Zenker J, Filipiak U, Movsisyan A, Shenderovich Y & Cluver LD (2018). Do Saving Promotion Interventions Increase Household Savings, Consumption, and Investments in Sub-Saharan Africa? A Systematic Review and Meta-Analysis. World Development, 104(C), 238-256.
3. **Steinert JI**, Zenker J, Filipiak U, Movsisyan A, Shenderovich Y & Cluver LD (2016). Savings promotion interventions for improving savings behaviour and reducing poverty in low- and middle-income countries. Systematic Review Protocol. Campbell Collaboration Library.
4. Cluver LD, Meinck F, **Steinert JI**, et al. (2018). Parenting for Lifelong Health: A pragmatic cluster randomised controlled trial of a non-commercialised parenting programme for adolescents and their families in South Africa. BMJ Global Health, 3(1), e000539.
5. Doubt J, Bray R, Loening-Voysey H, Cluver L, Byrne J, Nzima D, King B, Shenderovich Y, **Steinert JI** & Medley S (2017). Understanding Change in a Parenting Programme in South Africa. Annals of Global Health, 83(5-6), 767–776.
6. Cluver LD, Meinck F, Shenderovich Y, Ward CL, Herrero Romero R, Redfern A, Lombard C, Doubt J, **Steinert JI**, et al. (2016). A parenting programme to prevent abuse of adolescents in South Africa: study protocol for a randomised controlled trial. Trials, 17(1), 328.

Policy-oriented outlets include:

1. **Steinert JI**, Cluver LD, Meinck F, Doubt J & Vollmer S (2018). How Psychosocial Interventions can Help with Money Management. VoxDev Policy Column. Forthcoming.

2. Zenker J & **Steinert JI** (2017). Does savings help women in Sub-Saharan Africa to save, invest, and increase consumption? GrOW G2E Policy Brief, No. 6.
3. **Steinert JI** (2017). Financial Literacy and Parenting in South Africa. CSAE Blog Post.

The results, analyses, and methodologies used for this thesis were presented and received feedback at the following academic seminars, roundtables, and conferences (most recent first):

1. *"Household Economic Strengthening through Financial and Psychosocial Programming: Evidence from a Field Experiment in South Africa"*. German Development Economics Conference (AEL), ETH, Zurich, 27-28 June 2018 (Poster Presentation).
2. *"Household Economic Strengthening through Financial and Psychosocial Programming: Evidence from a Field Experiment in South Africa"*. Congress of the French Economic Association 2018, Paris School of Economics, Paris, 14-16 May 2018.
3. *"Household Economic Strengthening through Saving and Budgeting: Evidence from a Field Experiment in South Africa"*. Pacific Development (PacDev) Conference 2018, UC Davis, California, US, 10 March 2018.
4. *"Household Economic Strengthening through Saving and Budgeting: Evidence from a Field Experiment in South Africa"*. 11th RGS Doctoral Conference in Economics, University Duisburg-Essen, Essen, 20-22 February 2018.
5. *"Household Economic Strengthening through Saving and Budgeting: Evidence from a Field Experiment in South Africa"*. Development Economics Network Berlin PhD Workshop, Berlin, 17 November 2017.
6. *"Evidence from a Field Experiment in South Africa: Results and Next Analysis Steps"*. CEBI Research Group, Department of Social Policy and Intervention, Oxford, 9 November 2017.
7. *"Household Economic Strengthening through Saving and Budgeting: Evidence from a Field Experiment in South Africa"*. CSAE Research Workshop, Department of Economics, Oxford, 7 November 2017.

8. *"Do Saving Promotion Interventions Help Alleviate Poverty in Sub-Saharan Africa?"*. Poverty Reduction, Equity and Growth Network (PEGNet) Conference, Zurich, 11-12 September 2017.
9. *"Do Saving Promotion Interventions Help Alleviate Poverty in Sub-Saharan Africa?"*. EADI-NORDIC Conference, Bergen, 20-23 August 2017.
10. *"Do Saving Promotion Interventions Help Alleviate Poverty in Sub-Saharan Africa?"*. Swiss Society of Economics and Statistics (SSES) Annual Conference, Lausanne, 8-9 June 2017.
11. *"Do Saving Promotion Interventions Help Alleviate Poverty in Sub-Saharan Africa?"*. German Development Economics Conference (AEL), Goettingen, 1-2 June 2017 (Poster Presentation).
12. *"Poverty, Saving, and Financial Management: Evidence from a Randomised Controlled Trial with Poor Families in South Africa"*. Green Templeton College, Oxford, 24 May 2017.
13. *"Women in Field Discussion Session"*. Social Sciences Division, Oxford, 19 May 2017.
14. *"A Systematic Review and Meta-Analysis of Saving Promotion Interventions: Refinements of the Analysis"*. Development Economics Staff Seminar, University of Goettingen, Goettingen, 6 December 2016.
15. *"Saving for a Sunny Day? A Systematic Review and Meta-Analysis of Saving Promotion Interventions in Sub-Saharan Africa: Results and Policy Implications"*. CEBI Research Group, Department of Social Policy and Intervention, Oxford, 17 November 2016.
16. *"Promoting Saving and Financial Literacy for Reducing Financial Stress in Poor Families in South Africa"*. Poverty Research Group, Department of Social Policy and Intervention, Oxford, 23 May 2016.

2. Note on Candidate's Role and Contribution to the Research Project

Candidate's Role

This thesis contributes to a critical gap in development programming. It builds and expands on empirical research that has repeatedly documented limited effectiveness of financial literacy programmes (Kaiser & Menkhoff, 2017; Fernandes, Lynch & Netemeyer, 2014) and aims to examine how the impact of these programmes can be increased, particularly when targeted at very poor participants. The thesis thus provides new evidence on effective ways of building financial resilience in high-poverty settings.

For this purpose, I **developed** (see *Chapter V*), **piloted**, and then **experimentally tested** (see *DPhil Paper 2, Chapter VII*) a brief financial literacy programme that was integrated into a wider parenting intervention (the *Sinovuyo Teen* project), targeting low-income families in the Eastern Cape province of South Africa. Based on an extensive review of existing low-cost economic strengthening programmes implemented in Sub-Saharan Africa, I conceptualised detailed outlines for two three-hour-long financial literacy sessions. During a visit to the field site in early 2015, I piloted these session outlines in consultations with the study's qualitative research officer (Dr. Jenny Doubt), two local research assistants (Phelisa Mphimphilashe & Kholiswa Mabizela), and the lead implementation officer from the partner organisation *Clowns Without Borders* (Sibongile Tsoanyane). Based on these consultations and discussions, I revised session outlines with regards to clarity, feasibility, and cultural acceptability. The final version of the two financial literacy sessions is now published as part of the *Sinovuyo Teen* programme curriculum on the World Health Organisation's website and is advocated as an integral component of the "Parenting for Lifelong Health" initiative (both session outlines are presented in *Appendix 4*).

The evaluation of the 'economic strengthening' component of the *Sinovuyo Teen* Project makes up the core of my DPhil project. The *Sinovuyo Teen* intervention was tested in a large-scale randomised controlled trial with over 550 families in South

Africa. During the implementation of the RCT, I acted as a project manager in King William's Town, South Africa (April–December 2015). Together with two co-project managers (Yulia Shenderovich and Rocio Herrero Romero), I was responsible for the design and execution of the research project and the management and oversight of day-to-day fieldwork logistics. This role included recruitment, training, and supervision of a team of ten international fieldwork coordinators and 40 local research assistants (interviewers) who carried out participant recruitment and data collection. I was further responsible for in-field data storage and safety, ensuring confidentiality and anonymity of data, troubleshooting potential problems with programmed questionnaires on mobile tablets, and managing the data transfer to the open-source platform OpenDataKit. I also developed systems to support specific at-risk adolescents to prompt and monitor referrals to medical and social services. This included children/adolescents who had disclosed cases of severe abuse, deprivation, and neglect or serious health concerns. Further to this, I led the oversight of the fieldwork budget and was responsible for monthly expense claims and projecting costs for consecutive budget cycles. After returning from the field site, I took the lead in data cleaning and database management, drafted a codebook and the trial analysis plan, and was actively involved in all trial data analyses, including those on primary and secondary outcomes (see Cluver, Meinck, Steinert, et al., 2018). All analyses presented in this thesis were conceptualised and conducted by myself only.

Wider Research Study

This DPhil project is nested within the **Sinovuyo Teen Study** that was led under the principal investigation of Professor Lucie Cluver, the candidate's primary supervisor. The research study was a collaborative effort between UNICEF, the World Health Organisation, the Universities of Oxford and Cape Town, and the South African Departments for Social Development and Basic Education. The primary motivation for the research study were high rates of intra-household violence and child maltreatment in Africa. While parenting programmes are endorsed as a successful, evidence-based strategy to reduce the risk of violence and conflict in families, most evidence stems from high-income contexts (largely the US and

Australia). In addition, intervention manuals of existing parenting interventions are commercialised and costly to deliver, which makes them inappropriate for low-resource settings like rural South Africa.

To respond to these limitations, the *Sinovuyo Teen* research project set out to develop and rigorously evaluate a free, manual-supported parenting programme. The *Sinovuyo Teen* intervention consists of a 14-session curriculum. 12 sessions are focused on practicing evidence-based parenting principles, such as increasing praise, socio-emotional learning, modelling positive behaviour, and shared problem solving. The two economic strengthening sessions – designed and owned by the candidate (see above) – were highlighted as an essential programme component in the study's pilot. Here, participants identified financial insecurity and monetary worries as a major source of caregiver stress and intra-household conflict. The impact evaluation of the *Sinovuyo Teen* project was carried out in a sample of highly poor and vulnerable families from rural and peri-urban communities in the Eastern Cape province of South Africa. Findings from this DPhil research and the wider study were (and will be) used to inform programme design and roll-out across Sub-Saharan Africa as well as to other low-income regions.

3. Declaration of Authorship

I, Janina Isabel Steinert, hereby declare that this thesis is my own work, except where otherwise stated.

Signed:

Date:

Place:

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(Presented in separate document)

Appendix 1. Protocol for the Systematic Review and Meta-Analysis

Appendix 2. Forest Plots for Meta-Analysis

Appendix 3. Detailed Risk of Bias Assessment for Systematic Review

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I. Introduction

Twenty-four years after the legal end of Apartheid, poverty is still an urgent topic in contemporary South Africa. This thesis sets out to investigate how to effectively promote financial resilience among poor families in South Africa. The thesis first summarises and critically appraises existing saving and budgeting promotion programmes in Sub-Saharan Africa (*DPhil Paper 1*). Based on this, the thesis identifies important programming gaps and introduces a new, more holistic programme design for building financial resilience among the poor. It then assesses the economic impact (*DPhil Paper 2*) as well as mechanisms of change (*DPhil Paper 3*) of a combined financial literacy and parenting programme targeting poor families in the Eastern Cape province of South Africa.

This DPhil thesis consists of ten chapters, including three stand-alone papers (*Chapters III, VII and VIII*) as required by the DPhil-by-publication track at the Department of Social Policy and Intervention at the University of Oxford:

Chapter II – Background and Theoretical Framework contextualises the thesis by describing the policy context, summarising extant literature on the day-to-day challenges in the financial lives of the poor and introducing the study’s conceptual framework of financial resilience, employing an ecological perspective.

Chapter III (Paper 1) is a systematic review and meta-analysis of experimental evidence from existing saving and budgeting promotion programmes in Sub-Saharan Africa. The analysis reveals significant effects on a range of financial behaviours, including increased savings rates and higher business investment as well as increased consumption, business profits and food security. As evidenced in meta-regressions, giving access to formal bank accounts at reduced or zero cost is most effective for improving financial resilience of the poor.

Chapter IV discusses the implications of the systematic review findings for this DPhil thesis. Although results from the meta-analysis strongly endorse formal banking programmes, these were deemed inadequate in the given policy and low-resource context. Drawing on a range of recent and more holistic programmes targeted at

poor families, the thesis broadens the programmatic scope by focusing on psychological and social factors in building financial resilience.

Chapter V – Programme Development characterises the *Sinovuyo Teen*”intervention that is evaluated in this DPhil thesis, with a specific focus on the two programme sessions that were conceptualised by the DPhil candidate. Key ingredients of the sessions are introduced and underlying theoretical and empirical foundations are presented.

Chapter VI – Methodology describes the research design and methodological approach guiding the two empirical papers (*DPhil Papers 2 and 3*). The chapter provides a detailed description of the research setting, the research design, including sampling strategies and randomisation process, along with ethical considerations. It also discusses the practical, logistic, and emotional challenges encountered during in-field data collection.

Chapter VII (Paper 2) presents findings on the causal effects of the *Sinovuyo Teen* intervention on a range of economically relevant outcomes. Results point to significant improvements in family financial management and economic welfare. The evidence can be considered as a proof of concept, suggesting that brief financial literacy training coupled with a parenting programme can substantially alter participants’ financial behaviour.

Chapter VIII (Paper 3) applies a mixed-methods framework to shed light on the potential mechanisms underlying changes in the financial behaviour of programme participants. The analysis reveals social support, optimism, and self-efficacy as key facilitators of programme success.

Chapter IX – Discussion provides a summary of the key findings arising from this DPhil project, highlights the strengths and limitations of the study, and elaborates on its implications for policy and practice as well as future research. The ethical challenges encountered during the project are revisited and dissemination strategies are discussed.

Further information and detail on research protocols, ethics approvals, data collection tools, and session outlines are provided in the Appendix.

II. Background and Theoretical Foundations

1. Policy Context and Motivating Policy Question of the Thesis

Despite being classified as a middle-income country (World Bank, 2010), almost one in two black South Africans fall below the national inflation-adjusted poverty line¹ and 13% are at acute risk of hunger (Statistics South Africa, 2017a). The poverty headcount is generally higher among women and rural dwellers and highest in the Eastern Cape province (Statistics South Africa, 2017a). The unemployment rate in South Africa is at 36% of the able workforce (Statistics South Africa, 2017b), and across the Eastern Cape, 50% of households are without a single employed adult (Hall, 2013). Furthermore, approximately one third of South African households live without access to drinking water and adequate sanitation facilities, and more than 25% of families live in informal housing (Berry, 2013), namely in shacks as depicted in *Figure 1*.

Figure 1. Informal Settlements ("shacks")



(photo by the author)

Poor households may face numerous financial needs that are persistently larger than their incomes. Their day-to-day lives are thus characterised by a struggle for

¹In 2015, the poverty line was at 992.00 ZAR (67.00 USD) per person per month (upper bound). The lower-bound poverty line was at 647.00 ZAR (44.00 USD) and the food poverty line at 441.00 ZAR (30.00USD).

securing their basic needs and deciding between difficult trade-offs. They also often carry high levels of debt. Since access to formal credit opportunities is lacking, money is often borrowed from informal moneylenders or even loansharks, known in the Eastern Cape as “mashonisas” (Siyongwana, 2004). These financial relationships are characterised by high daily interest rates and oftentimes non-transparent documentation (Karlan, Ratan & Zinman, 2014; Siyongwana, 2004). There are accounts of moneylenders holding a client’s ATM or identity card as collateral. In consequence, borrowers might be forced to take another loan to settle outstanding debts, thus ending up in a debt spiral (James, 2014).

Furthermore, South Africa is home to the world’s largest population of people living with HIV/AIDS (UNAIDS, 2017). Linked to this, households are at high risk of experiencing income shocks: 30% of households report having been exposed to at least one negative event within the past two years – often linked to illness or death of a household member (Burger, Posel & Fintel, 2017). In absence of formal and comprehensive insurance systems, these adverse events can put enormous strains on a poor household and lead to significant income losses. Workforce in a household may be diverted from income generation to caregiving, and medical expenses for counselling, food supplements required for antiretroviral therapy, and transport to health care centres can put an additional burden onto affected families. Households may also experience stigmatisation and social marginalisation and therefore losses in social capital (Cluver & Orkin, 2009; McIntyre et al., 2006). In consequence, health-related income shocks likely further exacerbate the economic hardship of poor families (Hulme & Shepherd, 2003).

In light of the above, poverty reduction remains a key policy concern for the South African government. The National Development Plan (2012) states that, *“no political democracy can survive and flourish if the mass of our people remain in poverty, without land, without tangible prospects for a better life [...] attacking poverty must therefore be the first priority of a government.”* In 2004, the South African government launched a comprehensive social assistance initiative aiming to improve standards of living and alleviate social inequality. Accordingly, needs-based, largely unconditional welfare grants are paid out to poor families, currently

reaching 17 million beneficiaries, a third of the country's population (Hagen-Zanker, Morgan & Meth, 2011).² A recent poverty report by Statistics South Africa (2017a) commented that “[a]lthough initially seen as a short-term measure to address poverty, social grants have increasingly become a source of livelihood in South Africa and have played an instrumental role in reducing poverty levels”. Yet, despite the quite elaborate social security system, poverty rates have not fallen substantially since 2004 (Statistics South Africa, 2017c). Relatively small grant amounts are often shared between many household members and may therefore, in some cases, fail to secure subsistence levels. More importantly, families receive little guidance on how to most effectively use the grant money they receive. Consequently, they often have difficulties in smoothing their consumption levels between monthly grant cycles.

Thus, it remains a crucial policy question of **how to build financial resilience among poor families in South Africa?** In his analysis of consumption, poverty, and welfare, Nobel Prize winner Angus Deaton (1989) describes how deliberate saving and dissaving can help poor households to secure consumption levels in contexts of high economic uncertainty. Drawing on this logic, some recent development programmes have shifted their focus from the provision of income supplements to facilitate financial planning and encourage saving. For instance, some organisations have launched large financial literacy campaigns with the intention of teaching sustainable and future-oriented budgeting skills (Fernandes, Lynch, & Netemeyer, 2014; Karlan et al., 2014; Sherraden, Johnson, Guo, & Elliot, 2011). Other interventions have started to leverage on promoting saving by offering access to formal banking, distributing lock boxes or sending out saving reminders. Some proponents have even labelled saving promotion interventions as “the next [...] revolution” on the poverty reduction agenda (Banerjee & Duflo, 2011, p. 190).

In view of this growing policy interest, my DPhil thesis aims to examine whether interventions that seek to promote planned budgeting and saving can effectively help the poor to make their ends meet from a payment cycle to the next, and

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

eventually build their financial resilience. Insights and evidence generated from this project will also help to answer the timely question of how to bolster the effectiveness of South Africa's cash transfer programme.

2. The Financial Lives of the Poor

Before I analyse and discuss interventions and development policies that seek to promote financial management and saving among the poor, it is important to gain a more nuanced understanding of the reality of their financial lives and of the adversities that they face in managing their money. The next chapters introduce some empirical insights on the poor's financial management and presents both the external and internal challenges that likely exacerbate their experience of financial hardship.

Apart from research that has focused on the consequences of living in poverty, there is now a large body of literature that examines how poor people manage the little financial resources they have on a day to day basis (e.g. Collins, Morduch, Rutherford & Ruthven, 2009; Rutherford & Arora, 2009; Banerjee & Duflo, 2007). One of the most seminal analyses is the project on the "Portfolios of the Poor", based on extensive field research in South Africa, Bangladesh, and India (Collins et al., 2009). To explore the financial lives of more than 250 poor households, the study authors devised a research strategy termed 'financial diaries'. Accordingly, participating households were visited fortnightly over the period of one year in order to collect data on every financial transaction that had been made. Thus, the 'financial diaries' documented extensive details on cash flows, money saved, borrowed, owed, and repaid (and to whom). Findings from these diaries establish an antidote to the prevalent misconception that poor people are 'too poor to save' (or worse: too unsophisticated or too undisciplined) (Karlan & Appel, 2012). Collins and colleagues (2009) show that not every dollar is used for mere hand-to-mouth survival, but that the financial portfolios of the poor unfold in complex systems of money saving, and borrowing, and maintenance of various financial relationships. For instance, a representative South African low-income household uses on average

17 different financial instruments over a year's time, ranging from money lent to the neighbour and owed to the local retailer, to money held in a burial society. Thus, while we may assume that low income leads to simple financial lives, the exact opposite is true. Being poor means that sophisticated financial management becomes a fundamental part of the daily life. Put differently, *"families living on low incomes are, by necessity, experts in optimising every penny. They often have a much better understanding of the costs of everyday items than their middle- and upper-income counterparts, with an almost encyclopaedic knowledge of where and when they will find the best deals."* (Damingier, Hayes, Barrow & Wright, 2015, p. 18f). These findings have important policy implications as they suggest that there is room to manipulate and alter financial decision making and financial behaviours in beneficial ways.

3. Adversities in the Financial Lives of the Poor

The following sections address the multiple challenges and constraints that the poor face in managing their financial resources, here referred to as "adversities". Some of these challenges (behavioural ones) are faced by individuals across the globe, others are due to structural constraints and thus specifically caused by poverty. Throughout the sections, the way in which adversities may lead to suboptimal financial behaviours is explored. For instance, how they may prompt a person to give in to temptations, to overborrow money, and to chronically undersave (see Kast, Meier & Pomeranz, 2012). In consequence, poverty may be reinforced. At worst, households may become trapped in a cycle of poverty.

3.1 Institutional and Infrastructural Adversity

Constrained access to financial institutions, market imperfections, and infrastructural failures are characteristic of the context of developing countries. These external constraints can have a profound impact on the financial lives of the poor (Dalton, Ghosal & Mani, 2016; Bernard, Dercon, Orkin & Taffesse, 2014). For example, they can deter saving by imposing restrictive and costly institutional regulations on low-income clients (Mullainathan & Shafir, 2009). Regulations may

include administrative costs such as bank account opening, transaction, and withdrawal fees, demand for extensive identification documents, and prohibitive eligibility criteria (Karlan et al., 2014, Hulme, Moore, & Barrientos, 2015; Lee et al., 2015; Brune, Gine, Goldberg & Yang, 2011). Low geographic penetration of bank branches in rural areas adds further indirect costs for transportation and waiting time (Brune et al., 2011; Mendoza & Thelen, 2008). Banks may also not provide sufficient flexibility to accommodate the cash flow needs of small savers (Beaman, Karlan & Thuysbaert, 2014). For instance, notification periods for withdrawals can be long (up to 20 days) and thus constrain the accessibility of money (James, 2014). This limited liquidity becomes particularly problematic in light of frequent exposure to financial emergencies in low-income populations (see *Chapter I, 1* above). As a consequence of these institutional barriers, the poor may end up not saving altogether or opt for more risky informal saving strategies (Avdeenko, Bohne, Frölich & Kemper, 2015; Karlan et al., 2014; Ky, Rugemintwari & Sauviat, 2016). Holding of liquid assets further exposes individuals to increased risk of loss, theft, shack fires, or depreciation in result of high inflation rates (Christen & Mas, 2009; Peck et al., 2008; Wright & Mutesasira, 2001).

Despite frequent exposure to adverse events (e.g. health emergencies), most poor households do not have access to formal insurance markets or effective mitigation instruments due to restrictive entry constraints (Kaiser & Menkhoff, 2017; Dercon, 2005). Even if some insurance policies are in place – such as the burial societies in South Africa (Thomson & Posel, 2002)– they rarely protect against the full risk (Collins et al., 2009). In absence of a formal cushioning mechanism, the poor may be forced to adopt harmful coping strategies. For instance, they may over-borrow at disproportionately high interest rates, sell high-return assets, reduce their food intake or lower the quality of their nutrition, and disinvest in human capital by removing children from school (Noponen & Kantor, 2004; Dallimore, 2013; Hoddinott, 2006; Dercon & Krishnan, 2000). These coping strategies may then lead to a spiral into poverty.

Lastly, the poor likely have constrained access to relevant information and (financial) knowledge (Mani, Mullainathan, Shafir & Zhao, 2013). Education levels

are generally low among black South Africans, with recent studies estimating that 66% of *Grade 5* children lack elementary numeracy skills (Reddy et al., 2015). Low numeracy is likely associated with low levels of financial literacy. This can translate into limited capacity to project the costs of borrowing money, low appreciation of the potential benefits of saving money, and difficulties in anticipating possible income shocks and building up security buffers (Karlan et al., 2014; Brune et al. 2011; Mendoza & Thelen, 2008). Limited access to information can also create fertile grounds for mistrust in formal financial institutions, which can then hinder take-up rates and use of formal services (Dupas, Karlan, Robinson & Ubfal, 2018). Accordingly, survey data has listed perceived unreliability of services and fears of embezzlement as key predictors of low usage of bank accounts in many developing countries (Dupas, Green, Keats & Robinson, 2012).

3.2 Social Adversities

In light of the above institutional constraints, social and informal institutions have become important means of filling this gap (World Development Report, 2015). For instance, constrained access to formal saving and credit markets has motivated the formation of locally organised saving groups and clubs³ that have become the most prevalent savings institutions in the developing world (Guerty, 2007). These groups can provide members with a means of saving their money in a semi-institutionalised way and meet their potential credit demands via a rotating lump sum pay-outs (Karlan et al., 2014; Beaman et al., 2014; Karlan & Appel, 2011; Banerjee & Duflo, 2007; Ambec & Treich, 2007; Ashraf, Karlan, & Yin, 2006; Ashraf et al., 2003). Moreover, family and friendship networks can provide support when a person is faced with an emergency and thus take on the role of an important social insurance (Wydick, 1999).

³These groups are typically referred to as Rotating Savings and Credit Associations (ROSCAs) (Ardener, 1964), Village Savings and Loan Association (VSLA) (Bundervoet, 2012), economic self-help groups (Brody et al., 2015), stokvels in South Africa (Scheepers, 2007), or 'merry-go-rounds' (Rutherford & Arora, 2009).

Conversely, this logic also implies that there is high social demand on any untapped financial resources – which in turn puts certain major constraints on future-oriented financial management (World Development Report, 2015). Therefore, disposable income is often bound by social approbation mechanisms and webs or reciprocal social obligations (Dizon, Gong & Jones, 2016). Individuals therefore experience social pressure to share disposable cash with family members or friends in need (Ambec & Treich, 2007; Noponen & Kantor, 2004; Platteau, 2000). The consequences are twofold: individuals may either meet their social obligations and simply undersave or decide to quickly spend all liquid cash, partly on non-essential items, so that demands from family members, friends or neighbours can be turned down (Ky et al., 2016; Brune et al., 2011).

Apart from these sharing obligations, socially motivated expenses can be explained by strong social norms and expectations for spending on traditional rituals and festivals. In this regard, Banerjee and Duflo (2007) reveal that a median income household in India spends an estimated 10% of the annual budget on festivals. Likewise, Bloch and colleagues (2004) report that a daughter's wedding in Southern India can amount to up to six times the family's annual income. In South African communities, funeral ceremonies are often used to reflect the social status and importance of the deceased person and can therefore come at the cost of a whole year's income (Aker et al., 2016). Further to this, participation in communal and social life may require that individuals donate significant amounts of their incomes to church (Collins & Murdoch, 2011). Nevertheless, it would be premature to dismiss this behaviour as irrational, considering the important social function of celebrations and rituals in signalling status and consolidating social reputation (Aker et al., 2016; Rao, 2001a). Accordingly, Rao (2001a) describes life cycle events as *"theatres where public reputations are maintained, and stadiums where people compete in games of status competition"* (p. 89). Hence, social capital can often substitute formal (financial) institutions and thus has important economic implications by providing a social cushion against risk and access to important information, for instance on available job or credit opportunities (Ziakas, 2016; Rao et al., 2001a & 2001b). However, considering that a person's social network is

usually also poor and exposed to similar income shocks and adversities, the social security buffer is likely unstable.

3.3 Behavioural Adversities

An alternative explanation for suboptimal financial decision making can be found in literature from the fields of psychology and behavioural economics, which explicitly moves beyond a rational *homo economicus* assumption of individual behaviour (Karlan et al., 2014; Camerer, Loewenstein & Rabin, 2011). While it is important to note that behavioural biases can be exhibited by the rich and poor alike, the latter have fewer resources to absorb these (World Development Report, 2015; Mani, 2013; Banerjee & Mullainathan, 2010; Bryan, Karlan & Nelson, 2010). More importantly, the poor in developing countries are living in contexts that are characterised by poor institutional capacity, market imperfections, and fragile safety nets (see preceding chapters) and therefore need to be even more attentive and disciplined than individuals in developed countries (Haushofer & Fehr, 2014; Mullainathan & Shafir, 2009).

One behavioural anomaly lies in the tendency to overweigh the present relative to the future (World Development Report, 2015; Bernheim, Ray & Yeltekin, 2015; Benabou & Tirole, 2004; Delavallade, Dizon, Hill, & Petraud, 2015; Dupas & Robinson, 2013). This can then lead to what has been referred to as “hyperbolic discounting”, namely preference for smaller immediate rewards over larger rewards that lie further in the future (Schilbach, Schofield & Mullainathan, 2016; Hardcastle, 2012; Diamond & Vartiainen, 2012).⁴ Put differently, if a person suffers from myopia and present bias s/he is more likely to opt for short-term gratification and discard future-oriented planning such as building precautionary savings or putting aside money for the end of the month (Haushofer & Fehr, 2014; Harcastle, 2012). Closely linked to the problem of present bias is limited self-control which can

⁴ In surveys, present bias is often measured via questions of the form: “Would you prefer a dollar today or three dollars next week?”.

have economically relevant consequences such as procrastination, overconsumption, overborrowing, and temptation spending (World Development Report, 2015; Karlan et al., 2014; Bernheim et al., 2015). Empirical evidence for such behavioural tendencies is documented in survey findings from 13 countries across Africa, South and Middle America and Asia. For instance, data reveal that alcohol and tobacco show up as prominent expense categories among the extremely poor, although respondents indicate that they would like to cut expenses on these goods (Ky et al., 2016; Banerjee & Duflo, 2007).

However, behavioural biases should not exclusively be ascribed to bounded rationality, but may also reflect conditions of the environments and the circumstances that the poor live in. Hence, it is possible that the strong focus on the present is dictated by pressing immediate needs, for instance finding medical care for a sick child or securing food for the next day. It can also be explained by direction of attention towards areas where perceived scarcity is highest (Shah, Shafir & Mullainathan, 2015). Furthermore, it is possible that in a context of high economic insecurity and volatility, salience of the present is explained by low trust in the future and in possible distant rewards (see Esopo et al., 2018; Carvalho, Meier & Wang, 2016; Laajaj, 2012). Hence, what may look like impatience and myopia at first sight may actually be more indicative of risk adversity, presumed unreliability of services, and anticipation of future environmental constraints (Laajaj, 2012; Porcelli & Delgado, 2009).

Another behavioural explanation for suboptimal financial decision making stems from the observation that individuals with lower human capital and social status have a higher tendency to engage in conspicuous consumption (Moav & Neeman, 2012; Fafchamps & Shilpi, 2008). Cole and colleagues (1992) speak of an “aspiration effect” according to which a person seeks to attain a higher social status by over-accumulating visible goods such as jewellery, clothes, or cars (Charles, Hurst & Roussano, 2009) – or by engaging in elaborate celebrations and cultural rituals as discussed in *Chapter II, 3.2* above. Moav and Neeman (2012) point out that such social status spending can generate a poverty trap in which a proportional amount of money is spent on non-essential goods for mere signalling purposes.

3.4 Psychological Adversities

Living in poverty has far-reaching consequences beyond economic ones and can even occasion substantial psychological costs. Accordingly, the World Health Report estimates that the prevalence of mental disorders is twice as high when comparing the poorest wealth quintile of a population to the richest (Haushofer & Fehr, 2014; World Health Organization, 2011; Lund et al., 2010; Fernald, 2008; Li et al., 2007; Cohen et al., 2006). At the same time, poor mental health functioning may have the potential to distort financial behaviour and decision making (Bertrand, Mullainathan, & Shafir, 2004). For instance, a large body of literature discusses the link between poverty and low aspirations. Hereby, a person's aspirations, forward-looking goals, and hopes are formed with reference to his or her immediate environment and based on the experiences of individuals from similar socio-demographic backgrounds (Genicot & Ray, 2017; Hart, 2016). Living in poverty and deprivation may therefore substantially lower the aspirations that a person holds – as echoed by Sen's (1985) words: *"considerations of 'feasibility' and of 'practical possibility' enter into what we dare to desire and what we are pained not to get"* (p.15). It may follow that this adaptation process limits the set of choices that are considered as relevant and may lead a person to adopt a range of self-imposed restrictions. Consequently, some behaviours and preferences, albeit lying within the range of available resources and capabilities, might be dismissed (Flechtner, 2017; Bernard et al., 2014; Mani, 2013; Appadurai, 2004). In other words, a poor person may *"rationally decide to hold back his or her efforts, avoid investment, and thus achieve even less than he or she could otherwise have attained"* (p.32) (Duflo, 2012). Empirical evidence points to correlations between low aspirations and economic outcomes, including productivity and job performance (Kim, Sorhaindo, & Garman, 2006), precautionary financial planning (Barr, 2012), entrepreneurial activity (Bernard et al., 2014), and educational attainment (Beaman et al., 2012). Poverty can thus directly provoke behaviours that make it difficult to escape poverty and thereby generate a "psychological poverty trap" (Flechtner, 2017; Dalton, Ghosal & Mani, 2016; Dalton & Ghosal, 2016).

Further to this, poverty is often associated with social stigma and might be internalised by those who suffer from it (Ghosal et al., 2015; Hall, Zhao & Shafir, 2004). Stigmatisation can instil a sense of failure and distort a person's self-esteem and self-image. In line with Beck (1967), individuals may tend to ascribe adverse environmental conditions to their own assumed deficiency and engage in self-blaming behaviour (Quidt & Haushofer, 2016). Related to this, low self-esteem has been identified as a key correlate of counterproductive (economic) behaviours, such as poor investment decisions (Chatterjee, Finke & Harness, 2011), poor take-up of benefit programmes (Currie et al., 2001), self-sabotaging behaviour (e.g. engagement in high-risk sexual behaviour) (Ghosal et al., 2015; Moffit, 1983), and undersaving (Avdeenko et al., 2015; Blattman, Jamison & Sheridan, 2017). This link is explained by an adaptive psychological mechanism: Individuals with little trust in their skills and their capacity to change future life outcomes diminish their level of effort and lower their willpower (Ghosal et al., 2015; Bernard et al., 2014). This principle has also been labelled as "learned helplessness" (Seligman, 1975) whereby the adoption of an endorsed behaviour *"is mediated by thinking that one may fail"* (Benabou & Tirole, 2004; Leahy, 2002).

Self-esteem is also closely linked to the concepts of personal agency and self-efficacy (Ghosal et al., 2015; Bandura, 1982). These have a long-standing tradition in social cognitive theory and are viewed as key determinants of actual behaviour (Fishbein & Yzer, 2003; Bandura, 1986, 1977). Accordingly, self-efficacy and agency define the extent to which a person can follow through with a goal, execute perseverance, and adhere to plans (Esopo et al., 2018). Conversely, low self-esteem can impose constraints on the perceived level of control over behaviours and thus impede action, for instance, the decision to save money or make investments for potentially profitable purposes.

3.5 Cognitive Adversities

A prominent body of previous research has put forth the argument that scarcity may have the potential to impede a person's cognitive function (Mani et al., 2013). This research has been summarised under the label of "cognitive load theory" (Mullainathan & Shafir, 2013) and claims that the association between poverty and

cognitive capacities is not only driven by environmental or socio-demographic factors but is inherently causal (Haushofer & Fehr, 2014). Scarcity, or in other words “having too little”, forces the poor to carefully juggle their expenses, decide between difficult trade-offs, and cope with a high frequency of emergencies (Schilbach et al., 2016; Shah, Mullainathan & Shafir, 2012; World Development Report, 2015). While a number of default arrangements (e.g. direct deposits, automatic insurance enrolments, debit of earnings, etc.) substantially release the decision making burden for individuals living in high-income countries, the poor usually lack such supportive financial infrastructure (*see Chapter II, 3.1*). It is argued that the number of day-to-day financial decisions puts a ‘tax’ on their mental bandwidth and deplete some cognitive resources. This can then lead to suboptimal financial decisions and behaviours that may perpetuate poverty (Schilbach et al., 2016; Shah et al., 2015, 2012; Lichand & Mani, 2016).

Firstly, reduced mental bandwidth can impair cognitive performance and function by decreasing memory, attention, and concentration. This argument is corroborated by laboratory evidence. For instance, Mani and colleagues (2013) conducted an experiment with Indian sugarcane farmers at two points in time, namely before and after harvest. They found that farmers performed significantly worse on a test of fluid intelligence and cognitive control at pre-harvest when economic scarcity was highest. The authors also ruled out possible alternative explanations for the effect, namely nutrition and work effort. In a companion experiment in a US shopping mall, participants were presented with different everyday financial scenarios with the intention of activating any possible real financial concerns that they may have. After exposure to either a low-stress or a high-stress scenario, participants performed computer-based cognitive tests. The authors revealed that low-income participants exposed to the high-stress scenario performed significantly worse compared to richer participants (with a difference equivalent to 13 IQ points), while performance was equal following the low-stress scenario. The authors interpreted these results as suggestive of additional cognitive load imposed by probing participants to think about financially stressful events (World Development Report, 2015; Mani et al., 2013).

Scarcity and related stress may also make the poor more susceptible to behavioural biases such as impatience and a narrow short-term focus (see *Chapter II, 3.3*). Accordingly, a recent laboratory experiment demonstrates that a stress hormone treatment, tested against a placebo treatment, exerts a direct physiological effect on temporal discounting⁵ (Riis-Vestergaard et al., 2018). Poverty-induced stress can further distort the quality of decisions. Hence, a person under stress likely resorts to habit-based decision making and relies on mental shortcuts rather than focusing on future goals (World Development Report, 2015; Bernard et al., 2014; Masicampo & Baumeister, 2008). Consequences include the failure to smooth consumption between payment cycles or the inability to build precautionary saving stocks for potential adverse events.

Lastly, scarcity can deplete the cognitive resources required for exerting self-control (Baumeister, Vohs & Tice, 2007). Previous research has shown that decision making processes involve competition between two different parts of the brain, namely *System 1* that is associated with fast, automatic, and effortless decision making and *System 2*, characterised by a higher level of abstraction and slow, deliberate, and costly thinking (McClure, Laibson, Loewenstein & Cohen, 2004). Scarcity and stress induce a mental tax that likely exhausts *System 2* processes and gives dominance to *System 1*, thus diminishing self-control (Schilbach et al., 2016). As already discussed in *Chapter II, 3.3*, low self-control can have significant economic consequences such as overborrowing, overspending, and undersaving.

It is again important to emphasise that the above elaborations should not be misconstrued as suggesting that the poor lack discipline and act irrationally. They are rather a direct consequence of living in severe poverty and suggestive of situational dynamics rather than individual characteristics. In fact, the above should motivate the assumption that any human put in a similar context and exposed to the same level of scarcity will likely exhibit the same cognitive processes and tendencies (Damingier et al., 2015).

⁵ Temporal discounting assumes that a reward (money or goods) is valued higher at an earlier date when compared to a later date.

4. Conceptualising Financial Resilience

Having considered the multiple adversities the poor face when managing their financial resources, this chapter moves on to examine the question of how to build financial resilience in the context of high poverty and the adversities illustrated in the preceding chapter. This chapter introduces the concept of financial resilience which is instrumental both for defining the key outcomes presented in this thesis and for identifying key protective factors. Throughout this chapter, I draw on an ecological approach for specifying protective factors. Consequently, I argue that an intervention and its underlying theory of change should target malleable protective factors in order to promote financial resilience and help the poor develop tools to mitigate multiple risks.

4.1 Resilience Theory: Overview

Resilience is defined as the capacity to adapt positively and achieve good outcomes despite exposure to severe adversities (Ungar, 2012; Masten & Cicchetti, 2010; Rutter, 2006; Luthar, 2003; Masten et al., 1999). Thus, being “resilient” is equated with achieving “better than expected” outcomes, development, and functioning (Windle & Bennett, 2012). Resilience is thereby viewed as an active and dynamic process rather than a static trait or personality characteristic (Maholmes, 2014; Ungar, 2012; Werner, 1990). It entails careful navigation between protective and vulnerability forces to sustain positive coping mechanisms in contexts of risk and over time (Owens & Shaw, 2003).

Resilience theory emanates from the fields of psychology and education (Masten, 2012). It is characterised by a paradigm shift from a negative, risk-oriented focus to an emphasis on protective factors, competencies, and assets (Owens & Shaw, 2003; Mohaupt, 2008). Protective factors are defined as key facilitators for developing positive outcomes in contexts of risk (Luthar, Sawyer & Brown, 2006; Secombe, 2002).⁶ Resilience theory and research specifically attend to *malleable* protective

⁶ Notably, resilience literature differentiates between promotive and protective factors. Accordingly, promotive factors are generally associated with positive outcomes, irrespective of context, whereby

factors, that is, risk modifiers that can be manipulated and altered via external interventions. Accordingly, these factors can become the key target points of a programme and inform its underlying theory of change (Fraser, Richman, Galinsky & Day, 2009; Luthar, Cicchetti & Becker, 2000).

Resilience theory has traditionally been applied to the developmental process of children growing up in adversity and has thus primarily addressed child-centred outcomes. However, more recently, it has also been extended to include wider concepts such as adult or family resilience (see for instance Walsh, 2015; Becvar, 2012; Patterson, 2002). Accordingly, Patterson (2002) defines family resilience as *“the processes by which families are able to adapt and function competently following exposure to significant adversity or crises”* (p. 352). In the same vein, this thesis focuses on resilience in the realm of the family (or the household) and considers both children and adults, as well as the dynamics and interactions between them. It is thereby important to consider the cultural and sociodemographic context in which a family resides. In the context of South Africa, a large share of children are cared for by rather distant relatives, while their biological parents may have migrated for work or died from HIV/AIDS (Bray & Brandt, 2007). Family units may therefore be particularly disrupted and parenting styles dysfunctional. Respective interventions will need to take this into account.

4.2 Financial Resilience: Definition and Application

To my knowledge, resilience theory has not yet been applied to the field of development economics. It is therefore pertinent to introduce a formal definition of financial resilience. Following Rutter’s (2006) definition from above, this thesis denotes financial resilience as *positive adaptation in economic domains despite exposure to high adversity*. Here, on the one hand, high adversity is characterised by high levels of poverty and deprivation, frequent exposure to income shocks (possibly linked to illness and death), and poor quality of financial infrastructure

protective factors are operationalised under the assumption of risk and adversity (Masten & Powell, 2003). Given that I am particularly interested in positive coping in a context of poverty-related adversities, I will refer to protective factors throughout the thesis.

(see *Chapter II, 3* and *Table 1, Column (1)*). Positive adaptation, on the other hand, is captured by key economic outcomes used in previous studies, including the abilities to a) smooth consumption over income contingencies⁷ (e.g. Kinnan & Townsend, 2012; Browning & Crossley, 2009; Chetty & Looney, 2006; Kazianga & Udry, 2006; Morduch, 1995); b) avoid debt spirals (e.g. Mashigo, 2006; Ardington et al., 2005; Siyongwana, 2004); c) build security buffers against emergencies (e.g. Rutherford & Arora, 2009; Collins et al., 2009; Dupas & Robinson, 2009; Hulme et al., 2005); and d) secure basic needs (Sahn & Stifel, 2000, 2003; Filmer & Pritchett, 2001) (see *Table 1, Column (3)*).

Therefore, rather than primarily emphasising money-metric measures such as increases in income and consumption, I shift the focus to a range of positive financial coping behaviours. Hence, the outcomes used in the empirical papers of this thesis (see *Chapters VII & VIII*) are arguably more attainable in contexts of high scarcity and do not rely on infusion of external capital and resources. It is also important to note that coping behaviours in high-poverty contexts can take another character as in developed countries. For instance, in high-income countries, saving typically serves both the purpose of transferring income between high- and low-productivity phases (*life cycle saving*) and between generations (*intergenerational saving*). In low-income countries, conversely, saving is “high-frequency” and more present-oriented (Ashraf, 2003; Deaton, 1989). Emphasis is put on “saving through” the month rather than accumulating lump-sum stocks for future investments or use (Rutherford & Arora, 2009).

⁷ In the case of South Africa, this is given by the ability to smooth consumption over monthly receipt of government-provided unconditional cash grants (see *Chapter I, 1*).

Table 1. Financial Resilience Framework

(1) Adversity	(2) Protective Factors	(3) Positive Adaptation
• High poverty • High deprivation • Frequent exposure to income shocks (mainly linked to illness and death of household members) • Poor financial infrastructure (limited access to formal banking, credit, and insurance) • Social appropriation mechanisms • Scarcity-induced behavioural, psychological and cognitive biases	• Individual level: self-efficacy, agency, self-esteem, self-control, optimism, future outlook, hope, faith • Microlevel: family harmony, affection, emotional support, social learning • Exolevel: social support, informal (financial) infrastructure • Macrolevel: community social support, social norms, cash transfers	• Smoothing consumption between welfare grant cycles (<i>measured as avoiding shortages of money in past month</i>) • Avoiding debt spirals (<i>measured as frequency of borrowing</i>) • Building security buffers against emergencies (<i>measured as saving and self-rated coping capacity after hypothetical economic shock</i>) • Covering basic needs (food, housing, health care, and education) (<i>measured as access to basic need items</i>)

Source: Author's own compilation.

Before moving on, it is important to emphasise that the focus on the concept of resilience should by no means imply that adversities such as poverty and deprivation should be accepted as a “given” (Rutter, 2012). On the contrary, policy efforts and interventions need to pay considerable attention to the changing of risk environments and the reduction of poverty. The resilience-based perspective of this DPhil thesis should be understood as an individual-level strategy for alleviating the potentially destructive impacts of existing adversities. It should complement more structural policies and interventions, such as the social security provision in South Africa.

4.3 An Ecological Perspective on Resilience

Early studies of resilience were largely focused on specific individual traits and qualities that helped explain positive adaptation and resilience. Rutter's (1987) seminal work helped to broaden the understanding of resilience by recognising the importance of contextual and environmental factors in shaping individual behaviour and development (Ungar, 2012). Drawing on Bronfenbrenner's (1979)

ecological framework, scholars began to acknowledge that individuals are nested within interacting spheres of influence, ranging from the molecular level of the family, to their wider socioeconomic environments (Maholmes, 2014; Lerner, 2006; Schoon, 2006). According to this ecological perspective, resilience is defined in an interplay between individuals and their wider environment – and ongoing reciprocal interactions between these (Cicchetti, 2010; Vanderbilt-Adriance & Shaw, 2008; Luthar, 2006). This interactive dimension assumes that a range of individual traits – such as self-esteem or self-efficacy – are not stable and “given”, but are reactive to external factors, for instance family cohesion, secure attachment, and peer or mentor approval (Kidd & Shahar, 2008). This is further reflected in what Howard (1996) refers to as the “triad of protective factors” for positive adaptation, namely (1) personal resources (e.g. temperament, cognitive skills, pro-social behaviour), (2) cohesive families (e.g. affection and support), and (3) external support systems (e.g. institutions, teachers, neighbours).

Bronfenbrenner’s ecological framework of human development (1979) can be operationalised for the identification of protective factors in each ecological domain (see *Table 1, Column (2)*). Acknowledging the interactive dynamic between individuals and their environment, it is also possible that activation and targeting of a protective factor in one sphere can catalyse protective processes in other spheres (Luthar, Cicchetti & Becker, 2000). Although most theoretical work has studied resilience in the fields of psychopathology, education or criminology, this thesis proposes that similar factors may matter in determining financial coping. The framework can thus serve as a useful model to understand the complex, multi-level processes that define financial resilience in a context of economic deprivation and the multiple adversities linked to this (see *Chapter II, 3*).

As depicted in *Figure 2*, the ***individual level*** puts emphasis on characteristics inherent to the individual, including attitudes, emotions, beliefs, and self-conception. For example, Benard (2004) identified (1) social competence (comprising communication skills and empathy), (2) problem-solving and planning skills, (3) autonomy (comprising an internal locus of control and self-efficacy), and (4) a sense of purpose (comprising goal direction, aspirations, and optimism) as the four main attributes of resilience. More generally, empirical research has repeatedly

revealed positive correlations between such psychological traits and a range of positive outcomes, including achievements in economic domains (Maholmes, 2014; Mani et al., 2013; Ray, 2006; Murali & Oyeboode, 2004; Luthar, 2003). For instance, studies have highlighted happiness and optimism as important determinants of patience and self-control (Haushofer & Fehr, 2014; Lerner, 2013; Ifcher & Zarghamee, 2011). These personal traits can then translate into reduced impulsive spending, higher future-oriented savings, and higher investments (World Development Report, 2015). Similarly, empirical studies have confirmed self-efficacy and confidence as important influences on financial behaviour and accumulation of wealth, that remain significant and substantial after controlling for both financial knowledge and poverty status (Tang & Baker, 2016; Avdeenko et al., 2015; Chatterjee et al., 2011).

The *microsystem level* indicates the individual's direct and immediate social environment, comprising family and friendship networks (McLeroy et al., 1988). It is assumed that such primary groups play a key function in determining social identity and role definition, providing socio-emotional support, and thus directly shape a person's feelings and behaviours. The central role of family processes in mediating positive adaptation is widely acknowledged (Maholmes, 2014; Masten et al., 1999). Linked to this, parenting practices are assumed to exert a major influence on family functioning, communication, and emotional connectedness between family members (Fernandez, Schwartz, Chun & Dickson, 2012; Walsh, 2012; Masten et al., 1999). Family cohesion and nurturing, empathic, and warm relationships are then important predictors of a person's confidence and self-worth (Maholmes, 2014; Armstrong, Birnie-Lefcovitch & Ungar, 2005; Luthar, 2003; Howard, 1996). Similarly, structure and orderliness in a household can foster self-regulatory competencies and self-control, which can then predispose prudent financial behaviour (Maholmes, 2014; Walsh, 2015).

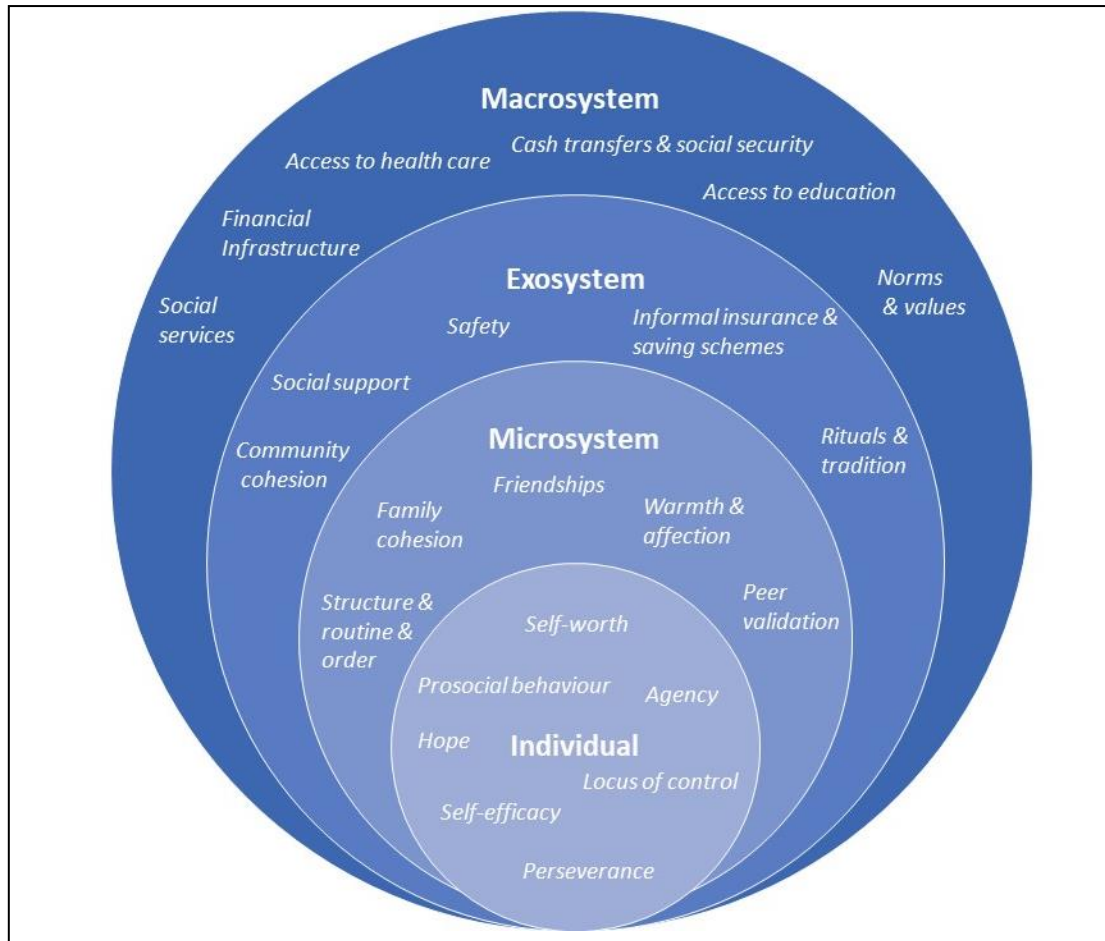
Likewise, high-quality friendships may have several positive externalities, and empirical evidence has pointed to links with mental health functioning and a range of more general positive life outcomes (Riegle-Crumb, Farkas & Muller, 2006; La Greca & Harrison, 2005). Peers can also serve as role models and thereby shape

social norms and attitudes around endorsed financial and other behaviour (Berg & Zia, 2014; Batista & Vicente, 2013) As illustrated above (*Chapter II, 3.4*), poor mental health can be a major impediment to building financial resilience. That is, feelings of hopelessness, avoidance of risks, and depression can drive cognitive processes such as overgeneralisation, use of negative filters, and confirmation bias which may then perpetuate poverty (World Development Report, 2015; Heflin & Iceland, 2009). In contrast, warm and affectionate family relationships as well as friendship support networks can deconstruct such negative mental models through increasing a person's self-esteem, confidence, and hope (Darolia & Wydick, 2011).

The *exosystem level* includes formal and informal social structures in which the family and individual are embedded. Communities are an integral part of the exosystem and are defined by geographical terms, shared interests, and a collective identity. In this context, positive adaptation can be strengthened through instrumental support such as informal insurance schemes, saving circles, and neighbourhood networks that can help cope with the day-to-day complexities associated with material hardship (Owens & Shaw, 2012; Teti et al., 2012). Similarly, peer monitoring mechanisms can increase self-control and liability, as shown in research on group lending schemes (Cassar & Wydick, 2010; Wydick, 1999). Lastly, social norms – described as the “glue” or “cement” of a society – can shape a person's behaviour and beliefs and can exert an important influence on collective economic welfare (World Development Report, 2015).

The *macrosystem level* describes the economic, cultural, and political context as well as the prevailing cultural and social values that shape social processes (Boothby, Strang & Wessells, 2006). State policies, laws, socioeconomic infrastructure and institutions, and general economic conditions thereby determine the dimensions of a problem and define a person's scope of action. Macro-economic policies such as social security provision or insurance covers can have important implications for financial resilience and economic wellbeing. Conversely, if macroeconomic structures are dysfunctional or unreliable, micro- and exolevel support can partly substitute these forces, for instance by replacing formal insurance markets with informal social insurance (see *Chapter II, 3.2*).

Figure 2. Ecological Resilience Framework



Source: Author's own compilation based on theoretical work cited above.

4.4 Programming Implications

The above theoretical framework highlights a range of potential protective factors. Therefore, it has important implications for designing programmes to foster financial resilience among the poor. Although the link between suggested protective factors and economic outcomes has not been exhaustively (and causally) tested in empirical work, the ecological model can conceptually inform a programme's theory of change. The following implications can be drawn from the model above:

- 1) **Promoting psychological properties** for building (financial) resilience (see *individual ecological level*): The ecological model suggests that psychological

properties such as self-efficacy, self-esteem, optimism, and self-control could be important determinants of a person's positive adaptation in contexts of adversity. Poverty likely has a direct and negative influence on these psychological factors, for instance, it may diminish optimism, aspirations, patience, and agency (see *Chapter II, 3.4*). This, in turn, could hinder a person's saving discipline and future-oriented financial planning. Therefore, a programme design could potentially benefit from addressing and strengthening these psychological capacities in order to bolster financial resilience.

- 2) **Improving family functioning and parenting styles** (see *microsystem level*): Acknowledging the vital importance of supportive and nurturing family relationships for a range of positive life outcomes, programmes should pay concerted attention to promoting these. Accordingly, parenting programmes could serve as a first-choice strategy for improving parenting styles and thus activating beneficial impact on the psychological wellbeing of family members, emotional support between them, and consequently wider family wellbeing and resilience.
- 3) **Activating wider social influence** (see *micro- and exosystem levels*): As described above, individual factors promotive of financial resilience may also be influenced by a person's social environment, including peers and the wider community. A successful intervention strategy should consider promoting community social support and social capital. These factors could potentially improve a person's psychological state and thereby improve financial planning capacities. Additionally, peer-based programmes can stipulate social learning cascades and herding effects. That is, by delivering programmes to groups rather than individuals, it is possible that impact could be reinforced.
- 4) **Addressing multiple ecological levels**: Resilience theory highlights the interplay between different ecological levels. This motivates intervention designs that adopt a holistic approach by addressing individual-level, family-level, and community-level factors. Similarly, financial resilience

programmes could occur in conjunction with macro-level-interventions and changes to wider policy frameworks (e.g. social security schemes).

- 5) **Focussing on strengths and assets:** Drawing on the above theoretical framework, interventions should attempt to reduce vulnerability to poverty through a focus on building capacity, positive cognition, and strength. This could include targeted skills for financial management, leveraging cooperation within the family and community, and promoting positive mindsets.

The above considerations will also inform the conceptualisation of the programme design that is introduced in *Chapter V*.

5. Research Aims and Questions

This DPhil thesis aims to advance both the scientific and practical understanding of programmes that seek to promote financial resilience among the poor. The ultimate goal of this thesis is to contribute to the development of answers to the vital policy questions of a) what the most effective existing programme types and strategies are and b) how innovations in programme designs can further increase effectiveness and relevance of these interventions, particularly in contexts of high poverty and deprivation with their corresponding adversities. Specifically, the thesis is guided by the following key research questions (RQ):

RQ 1 (Paper 1): What is the state of quantitative experimental evidence on the effectiveness of saving and budgeting promotion interventions in Sub-Saharan Africa?

- a. What is the aggregated programme effect on *intermediate outcomes* such as financial literacy levels and increases in savings?
- b. What is the aggregated programme effect on *distal outcomes* such as household consumption, asset holdings, food security, and educational and health aspects?
- c. Can variations in programme design and target population explain differences in effectiveness?

RQ 2 (Paper 2): What is the economic impact of a combined parenting and financial literacy programme for poor families in South Africa?

- a. Does the programme improve financial behaviours such as self-reported saving and borrowing?
- b. Does the programme improve wider aspects of financial welfare, including reductions in financial distress and improved access to basic needs?
- c. Are programme effects differential for certain subgroups?

RQ 3 (Paper 3): What are the key mechanisms that explain changes in financial behaviour?

- a. Do psychological factors such as hope, self-esteem, and self-efficacy explain changes in financial behaviour?
- b. Do social factors such as family functioning and community support explain changes in financial behaviour?

III. Paper 1: Do Saving Promotion Interventions Increase Household Savings, Consumption, and Investments in Sub-Saharan Africa? A Systematic Review and Meta-Analysis

This is the first paper of this DPhil thesis and is based on secondary data. The paper aims to document the “state of the art” by conducting a systematic review of existing saving and budgeting promotion interventions in Sub-Saharan Africa. This paper has been published in *World Development*.

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Statement of Authorship

I confirm that I completed the majority of the work in this study. I conceptualised the study and research question and led the full process from title registration to final write-up. I wrote the review protocol, developed and implemented the search strategy, conducted the effect size calculation, and drafted the first version of this article. All review authors contributed to data extraction and quality assessment of included studies in order to satisfy the double rating criterion. They further contributed to the write-up and interpretation of findings.

Abstract

Saving promotion interventions have gained momentum in international development in recent years. Our analysis investigates whether saving promotion programmes can effectively increase savings, consumption, and future-oriented investments in Sub-Saharan Africa. In an extensive search of 28 academic and policy-focused databases in the fields of economics, psychology, and social sciences, 9330 titles and abstracts of published and unpublished studies were screened and 27 randomised controlled trials on saving promotion interventions fulfilled the inclusion criteria. Of these, 24 studies reporting on an aggregated sample of 87,025 individuals provided sufficient information to be included in a meta-analysis. Robust-variance estimations of pooled effect sizes showed small but significant impacts on poverty reduction, including increases in household expenditures and incomes, higher returns from family businesses, and improved food security. They also showed positive and significant impacts on more intermediate outcomes, including higher total savings and pro-saving attitudes, improved financial literacy, and increased investments in small-scale family businesses. Our results did not show significant effects on assets, housing quality, education, or health. Results from meta-regressions suggest that supply-based programmes were superior to demand-enhancing programme types such as financial education. They further revealed reduced programme effectiveness for women. Overall, findings from this analysis highlight that saving promotion schemes are highly relevant in reducing poverty in Sub-Saharan Africa, and that future efforts should focus on expansion of banking services to the poor and on gender-sensitive targeting.

1. Introduction

Saving is widely recognised as an important means for sustainable cash-flow management and consumption smoothing for the poor (Karlan, Ratan & Zinman, 2014). In response, scholars and practitioners alike have celebrated saving promotion programmes as a promising poverty alleviation strategy for international development. Banerjee and Duflo (2011) go so far as to portray microsavings as “the next microfinance revolution” (p. 190). Savings can serve as investment capital, for instance for business, education, or job search (Curley, Ssewamala & Han, 2010; Karlan et al., 2012; Dupas & Robinson, 2013a; Karlan &

Linden, 2014; Flory, 2016), as self-insurance against health shocks and property damage (Dupas & Robinson, 2013b; Carter, Laajaj & Yang, 2015). Saving can also help smooth consumption over income contingencies (Brune, Giné, Goldberg & Yang, 2015).

Compared to other financial tools such as microloans or cash transfers, saving can strengthen a feeling of self-efficacy and self-worth instead of creating dependency (Ssewamala et al., 2016; 2009) and does not hold the risks of clients' indebtedness and defaulting (Hulme et al., 2015; Karlan et al., 2014; Duflo et al., 2013). More importantly, saving promotion can be a cost-efficient alternative to more conventional poverty reduction strategies as it leverages the management of existing resources instead of the infusion of large sums of external capital.

It remains to be seen whether saving promotion is an effective poverty reduction tool. Randomised controlled trials (RCTs) have been popularised as the “gold standard” research design for generating causal evidence on the impact of development programmes. As a result, the number of RCTs evaluating the effectiveness of savings interventions has increased. Many of these have focused on the Sub-Saharan African region where a high percentage of people still live below the poverty line. Therefore, new insights on the viability of saving promotion in reducing poverty are highly relevant for designing adequate policies and programmes in this region.

Using state-of-the-art systematic review methodology and meta-analysis techniques, this study quantitatively synthesised evidence on the effectiveness of saving promotion interventions in Sub-Saharan Africa. Meta-analysis has several key strengths over individual quantitative studies: First, while a single study can generate findings with high internal validity, a systematic synthesis across multiple studies allows for more generalisable conclusions. Second, by pooling results across several studies and thus increasing the sample size, statistical power and precision of estimates are increased. Third, search strategies are set up to also identify and include estimates from unpublished studies, thus correcting pooled estimates for potential publication bias. Lastly and most importantly, cross-study estimates from a meta-regression can provide insights on how components of programme design, intervention types, and participant characteristics may influence outcomes beyond

the explanatory power of a single study (Card, 2012). Meta-analysis is therefore a first-choice tool to guide policy design.

Studies for our analysis were selected on three criteria. First, the intervention under evaluation had to feature a saving promotion component (e.g. access to formal bank accounts, savings groups, financial education on saving). We thereby excluded any intervention that combined saving promotion with additional components that could hypothetically have an impact on poverty or saving behaviour through another mechanism.⁸ Second, the intervention had to be evaluated within a randomised controlled design. With our exclusive focus on randomised controlled trials, considered the “gold standard” approach to impact evaluation, we were able to ensure high internal validity of considered studies and thus obtain credible effect size estimates.⁹ Third, the study had to report impacts on saving- and poverty-related outcomes. We allowed for a relatively wide range of relevant outcome measures to gain a nuanced understanding of possible impacts. We therefore also drew on a body of literature that went beyond *intermediate outcomes* (e.g., saving and investments) to shed light on a range of poverty-related *distal outcomes*, including consumption, education, and health.

Our database search identified 27 eligible randomised controlled trials on saving promotion programmes. Results from our meta-analysis show that saving promotion interventions can help households in Sub-Saharan Africa to accumulate savings and, more importantly, improve poverty-related outcomes. Specifically, we document small but significant impacts on household expenditures and incomes, higher returns from family businesses, and improved food security.

To our knowledge, the present review is the first to quantitatively synthesise evidence on a comprehensive range of saving promotion interventions. Three

⁸We therefore exclude programmes with components such as microcredit, insurance, mentorship, or cash transfers. We further exclude programmes featuring financial incentives to save, such as provision of monetary top-ups contingent on realized saving amounts (see e.g., Ssewamala et al., 2010a, 2010b, 2009). Incentivisation schemes are equivalent to a conditional cash transfer contingent on saving compliance and may therefore differ from other saving promotion interventions both for necessitating infusion of external capital and manipulating levels of household poverty through channels other than saving.

⁹ Although there is a range of high-quality quasi-experimental study designs, comparison analyses have pointed to discrepancies in findings when compared to truly experimental study designs, with a tendency of the former to over-estimate effect sizes (Glazerman, Levy & Myers, 2003; Shadish & Ragsdale, 1996).

systematic reviews were carried out to investigate the impact of general financial literacy programmes. Yet, these studies included evidence from developed countries where context and participants exhibit a range of characteristics that differ from low- and middle-income countries (Kaiser & Menkhoff, 2017; O'Prey & Shephard, 2014; Fernandes et al., 2014). Three further reviews examined a broader range of programmes, including microcredit interventions and self-help groups, which therefore featured programmatic components that could impact poverty alleviation through channels other than saving (Stewart et al., 2012; Duvendack et al., 2011; Brody et al., 2015). Another review put exclusive focus on formal banking services in low- and middle-income countries, thereby excluding a range of other saving interventions such as group-based approaches (Pande et al., 2012).

The remainder of this paper proceeds as follows: The next section defines the geographic scope of our review. Section 3 discusses the theoretical literature on saving promotion interventions and their outcomes. Section 4 describes the data source and measurement of variables. Section 5 introduces the statistical methods for effect size aggregation and meta-regression. The main results are presented and discussed in Section 6, before the conclusions are set out in Section 7.

2. Geographic Scope

This systematic review is focused on Sub-Saharan Africa as motivated by two key considerations. First, Sub-Saharan Africa remains one of the most impoverished and under-serviced regions and its study is therefore justified from an equity perspective. Financial inclusion on the continent continues to lag behind, and penetration of formal banking is the lowest globally. Across Sub-Saharan Africa, only 35% of adults hold a formal bank account (with largest access rates in Kenya and South Africa), compared to at least 50% in Asia, Latin America, and the Caribbean, and 95% in high-income countries (World Bank, 2016; Demirgüç-Kunt & Klapper, 2012). The aggregated savings rates in Sub-Saharan Africa only amount to 15% of the gross national income. While savings rates have been rising in other regions over the past few decades, doubling in East Asia for example, they have stagnated in Sub-Saharan Africa (Loayza et al., 2000). Apart from this, the global disease burden is

still highest in Sub-Saharan Africa, and financial mechanisms to alleviate the impact of associated income shocks are therefore most warranted. For instance, both prevalence and mortality rates from HIV/AIDS exceed those of other regions, and 75% of all new global HIV infections in 2015 were registered in Sub-Saharan Africa (see Wang et al., 2016). In absence of formal insurance mechanisms, precautionary saving can be a crucial protection mechanism against the financial burden resulting from death or chronic illness of a breadwinner.

Second, our geographic focus was essential for limiting heterogeneity of settings and populations (Duvendack, Garcia Hombrados, Palmer-Jones & Waddington, 2012). In line with previous scholars, we argue that “context matters” for programme design and particularly for an underlying theory of change (see Bates & Glennster, 2017). For instance, the design of a programme would need to account for existing levels of saving demand, financial literacy, and structural constraints. By focusing on Sub-Saharan Africa, we aim to generate evidence and policy recommendations that are locally and culturally relevant. Consequently, our aggregated findings can be more easily transferred and scaled-up to similar contexts within Sub-Saharan Africa and are thus more useful for policy-making in general.

3. Previous Literature

Mobilisation of savings has been viewed as critical, both on macro-economic and individual levels. Higher gross national savings rates tend to be correlated with economic growth, and scholars have pointed to a virtuous cycle of saving and prosperity (Karlan et al., 2014; Krieckhaus, 2002; Loayza et al., 2000). Accordingly, Gurley and Shaw (1995) have highlighted that economic development heavily depends on the sophistication of financial intermediation – particularly between savers and investors – and is hindered by reliance on self-finance in developing countries.

On an individual level, savings can be essential for securing the livelihoods of poor households, namely by smoothing consumption, providing a buffer stock for coping with adverse events such as health emergencies or death of a family member, and

securing participation in culturally relevant obligations like weddings or funeral ceremonies (Chowa, 2006). Traditional theoretical models such as the *life-cycle hypothesis* (Modigliani, 1966) and the *permanent income hypothesis* (Friedman, 1957) assume that individual saving behaviour is determined by balancing current versus anticipated consumption, such as accumulating savings while earning and dissaving when retired. However, these models are less applicable to the African context and more collectivist societies because responsibility for care of the elderly is borne inter-generationally rather than by the individual (e.g. Roberto & Jarrott, 2008; Aron, 2007, Smith, 1998).

Saving behaviour in Sub-Saharan Africa is thus more likely driven by other externalities, most prominently by imperfections of insurance and credit markets and inadequate financial intermediation (see Liu & Woo, 1994). Consequently, poor households tend to under-save¹⁰ (Karlan et al., 2014). Accordingly, individuals make sub-optimal financial decisions due to a range of different saving barriers. The existing research literature thereby puts focus on identifying and overcoming three particular types of barriers: supply, demand, and behavioural constraints to save. It further examines how increases in savings may help households to rise out of poverty. We discuss these barriers and mechanisms below.

3.1 Saving Barriers

When formal saving opportunities are unavailable or unattractive, individuals use second-best options such as putting money under a mattress, keeping grain reserves, buying jewelry, construction material, or livestock (Karlan, Ratan & Zinman, 2014; Rutherford & Arora, 2009; Kimuyu, 1999).¹¹ Yet, these types of

¹⁰ We define “under-saving” in line with Karlan and colleagues (2014) as “a lower level of savings than one would have in a world with perfect markets (perfect information, zero transaction costs, and perfect competition amongst financial institutions) and fully attentive, fully rational, fully consistent, etc., decision making” (p. 38).

¹¹ Wright and Mutesasira (2001) report the odds of savings loss by comparing various saving “technologies” for Uganda. While the risk of loss was similar for savings held at banks (15% of savers lost their savings in the past 12 months due to bank break down) and held in cash (13% loss due to theft), it was higher for in-kind savings (25% loss due to theft and 25% loss due to drop in value from price fluctuations). In addition, maintaining cash at home was substantially harder than at a formal institution in consequence of temptation of petty consumption and assistance requests from relatives and friends.

savings are often subject to substantial loss rates, through theft, damage, and requests for financial assistance from relatives and friends (Wright & Mutesasira, 2001). At worst, the lack of safe storage may diminish the motivation to save altogether (Wright & Mutesasira, 2001). In response to this, a range of programmes have been developed to address such *supply constraints* (see Karlan et al., 2014, Hulme et al., 2015; Lee et al., 2015; Mendoza & Thelen, 2008). These programmes provide, for instance, access to formal bank accounts at no or subsidised costs (e.g. Prina, 2015; Pande et al., 2012). Other programmes introduce mobile banking schemes that allow monetary transactions via text messages to overcome physical distance to bank branches (e.g. Suri & Jack, 2016; Munyegera & Matsumoto, 2016). Programmes may further distribute simple savings devices such as lock boxes or seek to semi-institutionalise saving by mobilising savings groups (such as Rotating Savings and Credit Associations), with the intention of making saving more secure and more regular for poor households (Dupas & Robinson, 2012).

Other interventions have focused on educational or motivational elements to attenuate *demand constraints* that hinder individuals to build savings (see Dupas, Keats & Robinson, 2016; Karlan et al., 2014). For instance, interventions that emphasise financial literacy may counteract lack of trust in financial institutions and help increase knowledge on saving and banking strategies. These programmes hypothesise that financial knowledge is an antecedent to healthy financial decision making and that increases in financial literacy will ultimately increase savings rates (Fernandes et al., 2014; Karlan et al., 2014). Motivational components may consist of saving “nudges”¹² such as visual representations of saving goals, drafting of detailed saving plans, and text- or mail-delivered saving reminders. These programmes are thereby built on the assumption that money, once “earmarked” for saving purposes, is perceived as less available for some more present-oriented temptation spending. Consequently, both savings and the uptake of savings products are increased (Soman & Cheema, 2011).

¹² Thaler and Sunstein (2009) define nudges in the following way: “A nudge, as we will use the term, is any aspect of the choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting fruit at eye level counts as a nudge. Banning junk food does not.” (p. 6)

Finally, a growing body of literature discusses how saving commitment tools may help to work against *behavioural constraints* (Karlan & Linden, 2014; Dupas & Robinson, 2013; Ashraf et al., 2006). While behavioural anomalies such as myopia or temptation spending are characteristic of individuals across the globe, they are more consequential for the poor who have fewer resources to absorb such mistakes (Banerjee & Mullainathan, 2010; Bryan et al., 2010). Several interventions have introduced commitment tools, including withdrawal restrictions or accounts that only authorise transfers for health- or education-specific purposes (e.g. Dupas & Robinson, 2013; Ashraf, Karlan & Yin, 2010). Commitment devices can also consist of self-established regulatory frameworks, such as those in savings groups, that make violations of saving intentions costly through feelings of failure, guilt, and damage in social reputation (Soman & Cheema, 2011; Benabou & Tirole, 2004). The primary function of saving strategies that involve group pressure or commitment schemes is to increase individuals' self-control and to reduce liquidity of money so that the purchase of temptation goods and present-biased decision making are mitigated (Strotz, 1956).

3.2 Savings and Poverty Alleviation

Assuming that the mechanisms outlined above can in fact help the poor to save (or to save more), it remains unclear how increased savings rates may causally translate into poverty reduction and have a downstream impact on the distal outcomes defined in this paper. Research on the link between savings and poverty alleviation has thereby focused on three causal hypotheses.

Opportunity Investments

First, one argument proposes that savings can be used as '*opportunity investments*' in productive assets, house repairs, children's education, higher quality food, or health care. This can have a positive impact on a range of poverty-related outcomes such as higher quality of education, nutrition, and health, as well as improved housing quality and asset portfolios (van Rooyen, Stewart & de Wet, 2012; Rutherford & Arora, 2009; Collins et al., 2009; Dupas & Robinson, 2009). Investments in the future have the potential to not only increase the general

economic situation of a household but also reduce the inter-generational transmission of poverty.

Quasi-Insurance

Second, savings can take the form of *quasi-insurance* in the face of unanticipated economic shocks and adverse events. For instance, illness or death of a household member may eliminate important sources of income and necessitate high expenses on medical or funeral costs. Saving stocks can provide a buffer against emergencies and eliminate alternative detrimental coping mechanisms such as fire sales of high-return assets, reduced food intake, borrowing at disproportionately high interest rates, or removal of children from school (Hulme et al., 2015; Pande et al., 2012; Dupas & Robinson, 2009; Churchill, 2002; Jacoby & Skoufias, 1997). Thus, saving may increase resilience to economic shocks and reduce vulnerability to poverty (Klasen, Lechtenfeld & Povel, 2015).

Mental Accounting Mechanism

Third, scholars have described how earmarking money for saving purposes has the potential to not only increase savings rates but also counteract a range of behavioural anomalies. Scholars have referred to this as a '*mental accounting mechanism*' whereby the perceived immediate availability of cash is reduced and thus induce changes in overall consumption behaviour (Dupas & Robinson, 2009; Rutherford & Arora, 2009; Thaler, 1990). Accordingly, money dedicated to a specific purpose (such as savings) is perceived as less fungible for other expenses, as expenditure would evoke feelings of guilt and failure. This psychological enforcement mechanism may also reduce discrepancy between present and future consumption choices and promote long-term planning (Soman & Cheema, 2011; Thaler, 1990). Consequently, household spending could be directed from temptation goods towards more future-oriented expense categories such as health, education, housing, or the accumulation of assets (Prina, 2015; Soman & Cheema, 2011; Banerjee & Mullainathan, 2010; Bryan et al., 2010; Ambec & Treich, 2007; Prahalad & Hammond, 2002). More deliberate spending patterns and prioritisation of the future over the present can then have important implications for household poverty.

4. Data

The database for this meta-analysis was built by an extensive search and screening process of the literature on randomised impact evaluations of saving interventions in Sub-Saharan Africa, identification of relevant studies, and extraction of respective measures. Data were collected according to the guidelines for systematic reviews as outlined by the Cochrane Collaboration and the Campbell Collaboration (Higgins & Green, 2011). A protocol specifying the search strategy and methods used was pre-published in the Campbell Collaboration Library (see *Appendix 1*).

4.1 Database Search and Study Identification

In order to objectively identify and process all possibly relevant studies for our analysis, we carried out a comprehensive systematic literature search. Following best practice systematic review guidelines, we made explicit efforts to identify grey literature in addition to publications in peer-reviewed journals. This allowed us to exploit one of the main features of meta-analysis, namely a direct assessment of publication bias, which is a potential threat to the external validity of published evidence¹³ (see Higgins & Green, 2011). We searched 28 electronic databases in the fields of economics, psychology, and social sciences. In addition, reference lists of all included studies and existing reviews of microfinance, financial literacy, and financial inclusion were hand-searched. We also contacted distinguished experts in the field to refer us to further relevant studies.

Subsequently, all identified records were assessed for relevance for this systematic review according to the eligibility criteria laid out above, namely (1) featuring a saving promotion component, (2) providing experimental evidence, (3) assessing savings- and poverty-related outcomes, and (4) being implemented in Sub-Saharan Africa. Screening of titles and abstracts was conducted by the first author. A subset of 10% of identified titles were double-screened by a second author, yielding high inter-rater reliability (>0.95).

¹³For an empirical investigation of publication bias, see for example: Easterbrook et al. (1991) on publication bias in clinical research, Brodeur et al. (2016) in economics research, and Gerber & Malhotra (2008) in political sciences research.

4.2 Data Extraction

Data from included studies was independently extracted by two review authors and entered into a pre-piloted data extraction form. We extracted a range of study-level characteristics and key statistics on all outcomes. We aligned our operationalisation of poverty with the multidimensional approach that moves beyond money-metric measures and additionally considers wider aspects of human wellbeing (see Sen, 1993). *Distal outcomes* therefore comprised household expenditures and incomes, food security, investments in and status of health, investments in education and actual educational attainment, and asset ownership and quality of housing. *Intermediate outcomes* included increases in total savings¹⁴, financial literacy, savings attitudes, and investments and returns from businesses. If information was missing, study authors were contacted with up to four follow-up emails over the course of six months.

4.3 Risk of Bias

Since a meta-analysis of unreliable or biased results may lead to erroneous conclusions, it is essential to critically appraise the validity of included studies. This becomes particularly important if the analysis includes unpublished studies that have not been peer-reviewed. We therefore independently rated the quality of included studies using the Cochrane Risk of Bias Assessment Tool for Randomised Controlled Trials¹⁵ (Higgins et al., 2011). Studies were assessed for integrity of the trial, specifically randomisation procedures and blinding of participants and researchers, and for potential imbalance between study arms at baseline or between end line completers and “attriters”. We further examined whether reporting of

¹⁴It is crucial to account for potential crowd-out effects that can arise from the shifting of saving resources to the saving device endorsed by the interventions. We have therefore made efforts to focus on *total* household savings and otherwise sought to aggregate all information on savings held in different places to reach an average effect.

¹⁵ The Cochrane Risk of Bias Assessment Tool evaluates the quality of randomised controlled trials based on the following six categories: 1) random sequence generation, 2) allocation concealment, 3) blinding of participants/personnel, 4) blinding of outcome assessors, 5) incomplete outcome data, 6) selective outcome reporting. The tool was adapted for this review in collaboration with the Campbell Collaboration International Development group. Nine domains were assessed for risk of bias and quality of evidence, whereby three of the categories (implementation fidelity, balance at baseline, and potential for contamination/spill-over) were added to the existing tool to improve adequacy for complex international development programmes.

outcomes corresponded to *a priori* trial registration and pre-analysis plans. Lastly, we assessed whether programme curricula were implemented as intended (including aspects of attendance rates, participant engagement, facilitator training, and session observations) and whether there was risk of spillover of programme content to the control arm. Risk of bias for each individual study was rated independently by two review authors and classified as “low”, “unclear” (if sufficient information was lacking), or “high”. If there was disagreement between ratings, a third author was consulted for arbitration.

5. Methods

5.1 Calculation of Effect Sizes

In order to aggregate findings across studies, we calculated standardised effect sizes for all outcomes of interest. Standardised effect sizes are scale-free measures and can thus provide information about the magnitude and direction of a programme’s effect that is comparable between different studies. For continuous outcome measures, we calculated Hedges’ *g* effect sizes. Hedges’ *g* is defined as the standardised mean difference (SMDs) between treatment and control group for any outcome of interest, which is then divided by the pooled standard deviation of the respective outcome variable. In addition, Hedges’ *g* values are corrected for potential bias that could result from low sample size or unequal size of treatment arms in the primary study. For outcomes that were measured on a continuous scale in some studies (e.g. percentage increase in savings amounts) and dichotomised in other studies (e.g. any increases in savings), we transformed odds ratios from binary measures into SMDs and used Hedges’ *g* correction for small sample bias as described above (for transformation, see: Borenstein, Hedges, Higgins & Rothstein, 2009; Sánchez-Meca, Marín-Martínez & Chacón-Moscoso, 2003). For outcomes predominantly measured on a binary scale (e.g. school enrolment), we reported odds ratios as an effect size measure.

We further carefully assessed how clustered study designs (i.e. studies that randomised villages and schools rather than individuals) were reflected in the estimation of effect sizes. Most cluster RCTs in our sample have adjusted standard

errors accordingly: only two out of 24 meta-analysed studies did not. If studies did not account for clustering, we applied corrections by multiplying standard errors with the variance inflation factor as suggested by Littell and colleagues (2008).¹⁶

5.2 Meta-Analysis and Meta-Regression

When pooling effect sizes across studies it is important to consider the underlying dependency structure of the data. Most of the studies we identified reported multiple measures for one overarching outcome construct such as poverty. For example, if a study examines the effects of saving promotion on household poverty, authors may report both past-month earnings as well as past-month expenses for each sampled household. Considering that effect sizes would be correlated and non-dependent in the above scenario, standard meta-analysis approaches have selected only one coefficient per outcome category and omitted those of conceptually similar outcomes (see Borenstein et al., 2009). However, we adopted a more sophisticated meta-analytical method: We included all reported individual outcome measures for one construct, but then applied robust variance estimation (RVE) techniques to correct standard errors for within-study correlation of multiple effect size estimates per outcome (Tipton, 2013; Hedges, Tipton & Johnson, 2010).

Following Tanner-Smith, Tipton & Polanin (2015), the RVE model for pooling effect sizes was defined as:

$$y_{ij} = \beta_0 + u_j + e_{ij}, \quad (1)$$

where y_{ij} captures the outcome of interest (e.g. total savings, household income/expenditures) and more specifically the estimated effect size $i=1...k_j$ in study $j=1...m$, and β_0 is the true effect size. Further, u_j is the study-level random effect, $\text{Var}(u_j)=\tau^2$ is the between-study variance component, and e_{ij} represents the residual for the i th effect size in the j th study.

The above y_{ij} yielded the pooled Hedges' g effect size estimate across all studies that have observed the respective outcome of interest. For each pooled effect size, we

¹⁶We calculate the adjusted standard error as the unadjusted standard error times $\sqrt{1+(m-1)}$ multiplied by the intra-cluster correlation, where m is the average cluster size.

additionally examined the degree of heterogeneity. Heterogeneity denotes the variability between studies, including diversity in interventions, settings, study designs, or operationalization of outcome measures. We calculated both I^2 and τ^2 statistics to assess heterogeneity. I^2 describes the percentage of the variability in Hedges' g estimates that stems from heterogeneity rather than sampling error (see Higgins & Green, 2011). τ^2 is a point estimate of the between-study variance of true effect sizes. Acknowledging that I^2 and τ^2 are less reliable with a small number of individual studies, we avoided the use of simple thresholds to diagnose heterogeneity.

In a next step, we examined sources of heterogeneity between studies by testing whether effect size estimates varied significantly with a) intervention type, b) duration of the intervention, c) participant sex, or d) participant age. In a similar vein, sensitivity analyses were run to check whether effect sizes differed significantly by e) time to follow-up, f) risk of bias rating, or g) publication status. For this purpose, we augmented the model from equation (1) by including each of these characteristics as so called “moderators” (i.e. covariates). This resulted in a mixed-effects model of the following form:

$$y_{ij} = \beta_0 + \beta_1 x_j + u_j + e_{ij} , \quad (2)$$

where x_j represents the respective effect size moderator (e.g. intervention type, intervention duration, etc.), β_1 is the coefficient of interest that denotes changes in effect sizes across studies that are caused by the respective moderator, u_j is a random effect of unobservable study characteristics and e_{ij} is an error term independent of β_1 and u_j . The above mixed effects model incorporated two types of effects: fixed and random. In the terminology of mixed effects models, $\beta_1 x_j$ are often called “fixed effects” as β_1 varies only as a function of known characteristics (here, characteristics of programme design, recipient characteristics, and aspects of study design). However, as we presumed that between-study heterogeneity was not exhaustively explained by the observable characteristics x_j , we incorporated u_j as unobservable characteristics in the form of a random effects model.

Given that we lacked sufficient statistical power, we added only one moderator at a time in all specifications.¹⁷ Following Cochrane Collaboration conventions, meta-regressions were considered inappropriate for outcome categories composed of less than 10 individual studies (see Higgins & Green, 2011). To further address the limited statistical power, we applied a small sample correction procedure in each meta-regression. The procedure has been suggested by Tipton (2015) for use in meta-regressions with less than 40 individual studies and potentially skewed covariates. The small sample adjustment corrects both the robust variance estimator itself as well as the degrees of freedom of the t-distribution used for determining significance levels and confidence intervals. By applying both of these corrections, Type I error rates may be substantially reduced as demonstrated in simulation studies (see Tipton, 2015).

6. Results

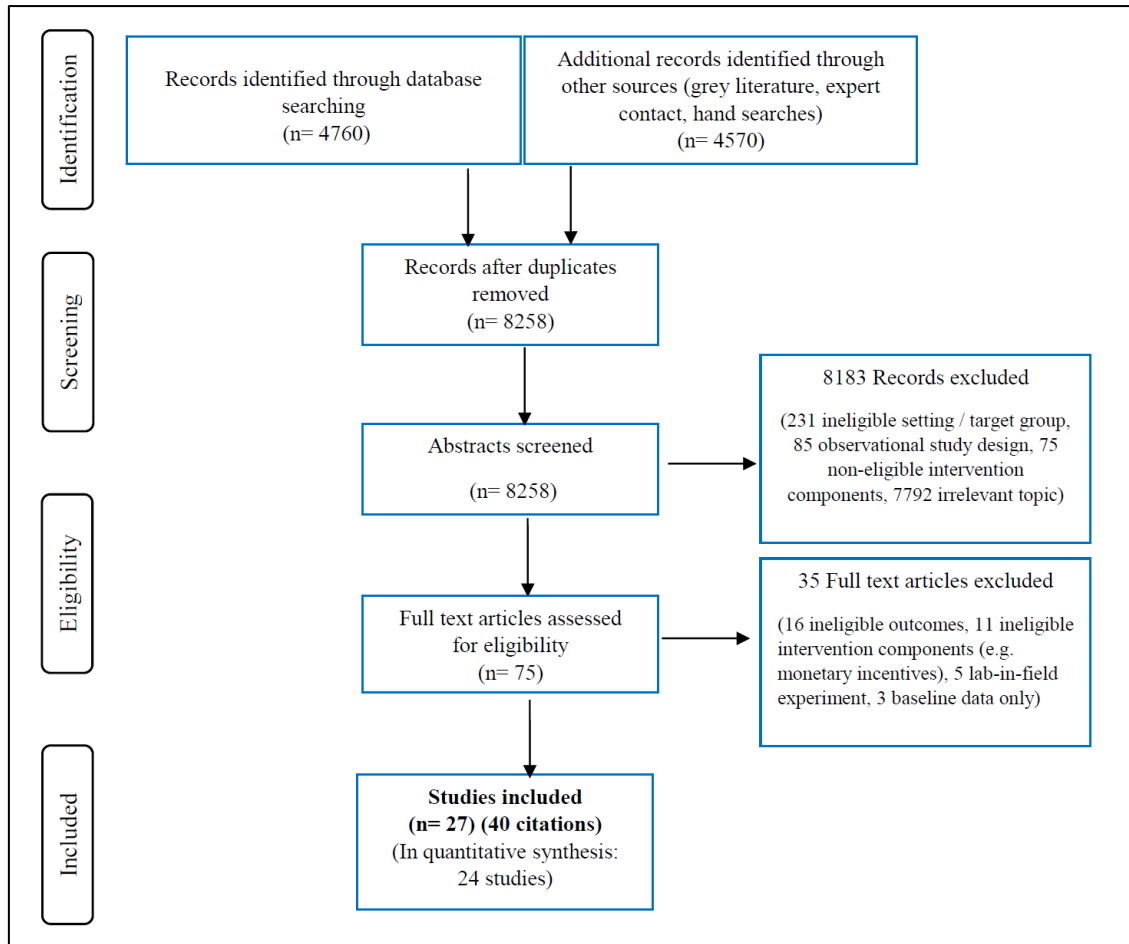
6.1 Identified Studies

Our database search identified 9330 records of which a total of 27 studies met the eligibility criteria of this review. A flowchart that details stages of the search and screening process is provided in *Figure 3*. We were unable to collect sufficient information on three studies, which consequently had to be excluded from the meta-analysis.¹⁸ The 24 trials included in the meta-analysis enrolled a total of **87,025** study participants.

¹⁷In one specification, the effect size moderator is a variable with three categories (female participants, male participants, both). The model therefore technically includes two dummy variables that are coded as 0 for male participants and 1 for female or both.

¹⁸ For Eissa, Habyarimana & Jack (2014) and McConnell, Mullainathan & Zinman (2010) we could not retrieve information on the sample size for control and intervention group and for Cole et al. (2014) information on standard deviations/standard errors (as well as p-values for a possible t-test) were lacking.

Figure 3. Flow Chart



Note: The flow chart depicts the flow of information that was processed throughout the different phases of the systematic review. The chart maps out the number of records identified, the records included and excluded, and the reasons for exclusions (see Moher et al. 2009).

Characteristics of included studies are summarised in *Table 2*. Only six out of the 27 studies were academic publications; the majority of records were grey literature outlets or working papers. This imbalance partly speaks to the topicality of saving promotion programmes as some of the identified studies were so recent that they could not conceivably have completed any publication process yet (records range from 2011 (one study) to 2016/17 (8 studies)). The 27 identified studies featured three broad programmatic foci: 1) supply of formal (7 studies, e.g. bank account, mobile money) or semi-formal (13 studies, e.g. savings group, money box) savings infrastructure or reduction of financial and administrative barriers to use existing infrastructure, 2) delivery of financial education curricula around savings (14 studies), and 3) behavioural control schemes for promoting saving self-discipline (10 studies), either through imposing hard commitments (flexibility constraints or economic penalties) or soft psychological commitments (peer pressure). Notably, some of the studies featured combinations of the above components.

There was substantial variation in programme set-up, ranging from brief awareness raising campaigns (such as in Coville, Di Maro, Zottel & Dunsch, 2014) to complex multi-component interventions (such as in Dizon et al., 2016; Dupas & Robinson 2013b). Further, studies were heterogeneous in terms of time to follow-up (ranging from two months to three years) and duration of the intervention itself. Some programmes were brief once-off interventions, while others lasted for several months. Although the policy discourse on saving promotion is geared towards poverty reduction, only about half of the included studies evaluated more distal outcomes such as household expenditures and incomes. In particular, studies on pure financial literacy programmes tend to disregard these outcomes. *Figure 4* depicts the geographic scope of included randomised studies on savings programmes in Sub-Saharan Africa. While most trials were implemented in Kenya, Malawi, and Uganda, no studies have been carried out to date in any of the most fragile and impoverished countries on the continent.

Table 2. Summary of Included Studies

Study	Country	Participants	Intervention Components	Intervention Duration	Intermediate Outcomes	Distal Outcomes	Trial Design	Sample Size	Time to Follow-Up
Annan, Bundervoet, Seban & Costigan 2013	Burundi	Poor families with children	- Savings group (VSLA) - Family-based parenting intervention <i>"Healing Families and Communities"</i>	For Savings group: 3 months training and 9 month cycle, in addition weekly discussion sessions (2 h/session)	N/A	- Expenditures/ Consumption - Poverty level - Household assets	cRCT	- Intervention: 805 individuals - Control: 743 individuals (across 77 self-help groups)	12 months
Batista & Vicente 2013	Mozambique	Household heads of rural dwellers	- Access to formal bank accounts - Mobile banking scheme - Information on use in community theatre and community meeting	N/A	- Adoption of mobile savings - Financial literacy/knowledge - Intention/ willingness to save - Trust in financial services - Deposit amounts	N/A	cRCT	- Community outreach & agent: 1020 individuals (51 Enumeration Areas) - Information leaflet: 204 individuals - Control: 1020 individuals	2 months
Beaman, Karlan & Thuysbaert 2014	Mali	Female household members	- Savings group (VSLA) run in weekly meeting, democratically elects officer and sets by-laws - Sharing of savings goals	Introductory village meeting led by NGO agent, savings group meets on weekly basis for pre-determined cycle (varies in length)	- Uptake of Savings - Savings - Consumption Smoothing	- Food security - Business profits - Health expenditures - Investments in education - Housing quality - Expenditures	cRCT	- Intervention: 209 village, 2508 women - Control: 291 villages, 3492 women	3 years
Berg & Zia 2014	South Africa	Medium- to low-income households	Soap opera with financial literacy messages, evolving around financial mismanagement and debt	Screening of 26 episodes over a period of two months	- Financial Knowledge - Saved money in the past 6 months	N/A	iRCT	- Intervention: 553 - Control: 478	4 months
Berry, Karlan & Pradhan 2015	Ghana	School children in grades 5 & 7	- Financial literacy training - Children rights training - Creation of school-based savings clubs - Distribution of lock boxes	<i>Honest Money Box</i> arm: 8 weekly one-hour sessions <i>Aflatoun</i> arm: approx. 24 hrs in total and continued school-based saving clubs	- Savings - Savings behaviour - Savings attitudes - Financial literacy	N/A	Multi-arm cRCT	- Honest Money Box: 45 schools, 1800 students - Aflatoun: 45, 1800 - Control: 45, 1800	9 months

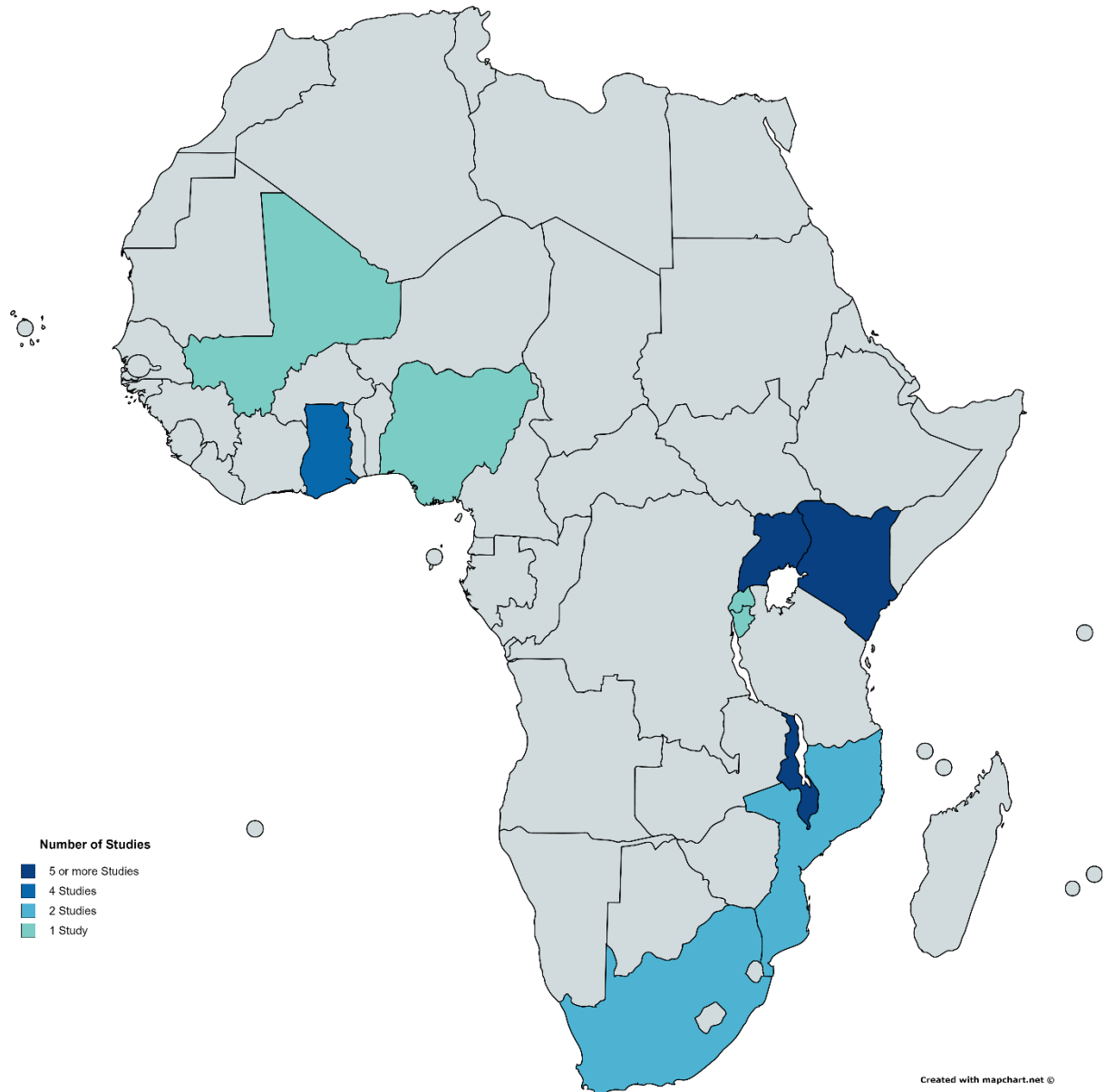
Brune, Giné, Goldberg & Yang 2015	Malawi	Smallholder cash crop farmers	• Access to formal bank accounts • Saving commitment schemes freezing amount until specified withdrawal date (for one arm) • Publicly announcing individuals' savings balances	2 months	• Deposits into savings accounts • Savings balances • Uptake of bank account • Agricultural input	• Total expenditure last 30 days • Profit from farming	Multi-arm cRCT	• Ordinary accounts: 1804 individuals • Commitment accounts: 1763 individuals • Control: 583 individuals	1-1.5 years
Buehren 2011	Uganda	Microfinance borrowers	• Financial literacy training (compulsory attendance for borrowers) • Saving mobilisation through microfinance organisation	6 months, weekly sessions	• Savings	• N/A	cRCT	• Treatment arm: 809 individuals (270 Microfinance groups) • Control: 628 (135 Microfinance groups)	6 months
Carter, Laajaj & Yang 2015	Mozambique	Farmers	• Access to formal bank accounts • Financial literacy training using comics and board game	3 sessions (duration of each not specified)	• Formal Savings	• Per capita consumption • Total household assets • Expenditures on education	Multi-arm cRCT (focus on 1 arm as others include incentive scheme)	• Intervention: 269 households • Control: 258 households • (1 individual per household)	Three waves: 5 months, 1.5 years, approx. 2 years
<i>Cole et al. 2014 (not included in quantitative synthesis)</i>	South Africa	Members of burial society and women's business development group	• Financial literacy using short video clips and interactive budgeting exercise	1 day (8 hours)	• Financial Literacy • Savings • Expenditure	• N/A	cRCT	• Intervention: 589 individuals • Control: 661 individuals	6 months
Coville et al. 2014	Nigeria	Micro-entrepreneurs	• Access to formal bank accounts • Financial literacy training via movie screening, portraying stories of business success	Once-off, 8-11 am film screening	• Intentions to save • Financial literacy	• N/A	Multi-arm iRCT	• Movie Screening: 327 • Bank account: 287 • Movie & Bank Account: 307 • Control Arm: 309	4 months
Dizon, Gong & Jones 2016	Kenya	Vulnerable women (female sex workers, single/ widowed women)	• Access to formal bank accounts • Formulation of savings goals • Weekly savings reminders via SMS • Soft commitment through account labelling	6 months	• Takeup of mobile banking • Consumption smoothing • Savings	• N/A	iRCT	• Intervention: 304 women • Control: 323 women	8-12 months
Dupas et al. 2018	Uganda, Malawi, (Chile)	Household heads of unbanked households	• Access to formal bank accounts	Once-off	• Uptake of savings product • Savings • Business investment	• Income • Assets • Food, eucation, health, housing expenditures	iRCT	• Intervention: Uganda 1079, Malawi 1053 • Control: Uganda 1081, Malawi 1054	4, 8, and 20 months

Dupas, Keats & Robinson 2016	Kenya	Household heads around three market centers	Access to formal bank accounts	Once-off home visit for delivery of bank vouchers	- Uptake of savings product - Usage of bank account - Savings	- Food Security - Expenditures	Multi-arm cRCT	- Intervention: 198 single-headed/ 404 dual-headed households - Control : 283 households	2 years
Dupas & Robinson 2013a	Kenya	Market vendors and taxi drivers	Access to formal bank accounts	Not specified	- Account usage - Savings - Business investment	- Business profit - Expenditures	iRCT	- Treatment: 195 (130 female market vendors) - Control: 197 (132 female market vendors)	6 months
Dupas & Robinson 2013b	Kenya	Members of a ROSCA	- Distribution of saving devices (e.g. lock boxes) - Saving commitment schemes - Formulation of health goals - Earmarking/ peer pressure	1 ROSCA meeting (and then ROSCA cycle)	Take-up of savings technology	- Resilience to health emergencies - Investment in preventative health products	Multi-arm cRCT	- Safe Box: 354 individuals - Lock Box: 458 - Health Pot: 311 - Health Savings Accounts: 470 - Control: 320	6 and 12 months, 3 years with a random subsample
<i>Eissa, Habyarimana & Jack 2014</i> <i>(not included in quantitative synthesis)</i>	Kenya	High School students in last 2 years of school	Financial literacy training via comics and radio broadcasts	Weekly treatment materials for a period of 6 weeks	- Savings - Financial literacy	N/A	Multi-arm cRCT	- Comic & CD with financial education materials: 60 schools, 1140 students - Full financial literacy program: 54 / 1140 - Placebo (comics without financial education): 52 / 1140 - Control: 51 / 1140	6 months
Flory 2016	Malawi	Households in central Malawi	Financial literacy training (happening in conjunction with expansion of mobile banking)	Trained assistants visited treatment communities 1-2 times/month, visits lasted up to a few hours	- Awareness of financial services - Uptake of saving devices - Savings (only analysed for subgroup of account opener) - Investment in agricultural business (land and fertilizer)	- Crop Income - Food consumption (only analysed for subgroup of account openers)	cRCT	- Intervention: 56 clusters, 1003 households - Control: 56 clusters, 1003 households	2 years
Jamison, Karlan & Zinman 2014	Uganda	Members of Youth Clubs	- Access to group-based formal bank accounts - Financial literacy training	15-hour course delivered over 10 weeks	Financial literacy (financial knowledge,	- Income - School attendance - Expenditures	Multi-arm cRCT	Financial literacy: 60 clubs, 702 individuals	9-12 months

					awareness, and numeracy) • Savings	• Nutrition		• Bank Account: 60 / 702 • Both: 60 / 702 • Control: 60 / 702	
Karlan et al. 2012	Ghana, Malawi, Uganda	Low-income households	• Savings Group (VSLA), democratically elected committee and treasurers	Cycle usually between 8-12 months	• Uptake of VSLA membership • Saving (total and weekly contributions) • Investment in agriculture	• Business Profits • Household poverty (assets and consumption) • Food security • Education • Health	cRCT	• Intervention: Ghana: 88 villages/ 2640 individuals, Malawi: 95 / 2265, Uganda: 98 / 2270 • Control: Ghana 87 / 2231, Malawi 95 / 2265, Uganda 98 / 2270	Ghana: 2 years, Malawi & Uganda: 3 years
Karlan & Linden 2014	Uganda	Students grades 4-7	• Saving commitment schemes with pre-determined pay-out dates • School-based saving account	5 school terms, regular visits by intervention team	• Saving (both administrative data and self-reported) • Savings attitude • Uptake of saving product	• Expenditure on education (school fees) • School attendance	Multi-arm cRCT	• Cash treatment: 1350 students, 39 schools • Voucher treatment: 1350 students, 39 Schools • Control: 2007 students, 58 schools	2 years
Ksoll et al. 2016	Malawi	Household heads in rural Malawi	• Savings Group (VSLA), democratically elected money guardians	Varies by cycle, typically 12 months	• Uptake of VSLA membership • Total Savings • Agricultural input	• Food Security • Expenditures • Income/Poverty level • Housing Quality • Agricultural output	cRCT	• Intervention arm: 23 villages, 568 households • Control arm: 23, 569	2 years
Lee et al. 2015	Ghana	Low-income youth	• Marketing outreach for use of formal bank accounts, including awareness raising, mass and social media campaign	3-7 visits to schools by bank staff over the course of a year	• Account opening • Savings	• N/A	Multi-arm cRCT	• In-School banking: 25 schools, 5501 students • Marketing outreach: 25 schools, 7207 students • Control: 50 schools, 9760 students	2.5 years
McConnell 2012 (not included in quantitative synthesis)	Ghana	Market vendors	• Marketing campaign for use of saving accounts • SMS reminders	NA	• Account opening • Account usage • Intention of account usage		iRCT	Unclear	1 month & 3 months (not clear)
Sayinzoga, Bulte & Lensink 2016	Rwanda	Representative s of village banks	• Financial literacy training	5 days (8 am to 5 pm)	• Savings • Financial literacy	• N/A	cRCT	• Intervention: 174 individuals • Control: 167 individuals	15 months

Schaner 2015	Kenya	Low-income married couples	• Access to formal bank accounts	One day for opening the account, interest rate running for six months	• Account usage • Savings	• Income • Assets	Multi-arm iRCT	• Intervention: 3372 • Control: 1302	6 months, 3 years
Shephard, Kaneza & Moclair	Rwanda	Teachers & students	• Financial literacy training • Creation of student clubs • Teacher training for building pedagogical capacities	Full Aflatoun curriculum	• General financial capability • Saving attitudes	• N/A	cRCT	• Intervention: 875 students, 125 teachers • Control: 875 / 125	midline 3-4 months, endline 7 months
Supanantaroek Lensink & Hansen 2017	Uganda	School children	• Financial literacy training, including songs, workbooks, and games • Children rights training	3 months, 40 hours in school	• Savings • Saving attitudes	• N/A	cRCT	• Intervention: 22 schools, 936 students • Control: 22 / 810	3 months

Figure 4. Geographic Distribution of RCTs on Saving Promotion Interventions



Note: The figure shows the geographic Distribution of the 27 randomised controlled trials on saving promotion interventions in Sub-Saharan Africa that were identified in this systematic review.

6.2 Pooled Effect Sizes

We report pooled effect sizes for each outcome category separately. Outcome categories are grouped into intermediate and poverty-related distal outcomes. We provide pooled RVE effect sizes as well as I^2 - and τ^2 -statistics for a first assessment of heterogeneity. The pooled estimates should be interpreted with caution if heterogeneity between studies is high. Corresponding forest plots, presented in *Appendix 2*, visualise individual effect sizes as well as grand pooled estimates (indicated by the “diamond” in each graph) for studies in each outcome category.

Intermediate Outcomes

Table 3 reports pooled effect sizes for intermediate outcomes. Column (1) shows a positive and significant effect on *total savings* ($g_{pooled}=0.077$, $p<0.001$, 95% CI [0.03, 0.12]). Thus, the interventions considered in our analysis led to an overall increase in total savings amounts that was significantly different from zero. Further, Column (2) shows that the pooled effect size for *pro-savings attitudes* was positive and borderline significant ($g_{pooled}=0.061$, $p<0.1$, 95% CI [-0.02, 0.09]). This points to a trend towards improvements in financial attitudes across four studies reporting on this outcome. Similarly, findings show a trend towards increases in *financial literacy* levels, but heterogeneity levels were high ($g_{pooled}=0.12$, $p<0.10$, 95% CI [-0.01, 0.24]) (see Column (3)). Column (4) depicts that *business investments* were positively associated with participation in savings interventions ($g_{pooled}=0.045$, $p<0.10$, 95% CI [-0.00, 0.09]). Although the effect size for investments was small, we saw significant downstream impacts on *business returns and profits* ($g_{pooled}=0.044$, $p<0.01$, 95% CI [0.02, 0.07]) as reported in Column (5).

While all pooled effect sizes were positive and (borderline) significant, heterogeneity between individual effect sizes was not negligible for some outcomes: I^2 statistics for savings and business investments ranged from high to moderate with 69.6% and 43.9%, respectively. Further, an I^2 statistic of 86% pointed to substantial variations in studies assessing financial literacy levels, possibly because there are no validated scales and standardised procedures for quantifying financial literacy.

The wide range of effect sizes might therefore reflect differing quality of the various applied measures.

Table 3. Pooled Effect Sizes for Intermediate Outcomes

	Total Savings	Saving Attitudes	Financial Literacy	Business Investment	Business Profits
	(1)	(2)	(3)	(4)	(5)
Hedges' G	0.077***	0.061[†]	0.12[†]	0.045[†]	0.044**
(SE)	(0.02)	(0.02)	(0.05)	(0.02)	(0.01)
95% CI	[0.03, 0.12]	[-0.02, 0.09]	[-0.01, 0.24]	[-0.00, 0.09]	[0.02, 0.07]
I ²	69.6%	24.4%	85.9%	43.9%	20.8%
Tau ²	0.004	0.001	0.017	0.002	0.000
N studies	18	4	7	9	7
N effect sizes	43	8	23	28	14

Notes: [†] p<0.1, *p<0.05, **p<0.01, ***p<0.001. Note that some studies are multi-arm trials and therefore contribute effect sizes to two or more intervention type categories.

Poverty-Related Distal Outcomes

Programme impact on distal, poverty-related outcomes is summarised in *Table 4*. We found significant increases in households' *expenditures and incomes* ($g_{pooled}=0.066$, $p<0.01$, 95% CI [0.02, 0.12], Column (1)). With regards to the wider aspects of household poverty and wellbeing, our results pointed to significant increases in *food security* ($g_{pooled}=0.052$, $p<0.05$, 95% CI [0.01, 0.10]) as reported in Column (2). By contrast, across interventions, we did not find significant impacts on *asset ownership and housing quality* ($g_{pooled}=0.038$, $p>0.1$, 95% CI [-0.01, 0.09], see Column (3)). It is conceivable that these two measures may either need longer follow-up periods for any visible changes or are generally less malleable to change (see Suri & Jack, 2016). Similarly, we did not find indication of programme effectiveness with regards to health and education. Columns (4)-(5) show that effect sizes for educational investment ($g_{pooled}=0.009$, $p>0.1$, 95% CI [-0.03, 0.05]) and school enrolment (log odds=0.059, $p>0.1$, 95% CI [-0.18, 0.3]) did not reach significance across included studies. Likewise, savings interventions failed to materialise any downstream impacts on general health status or health investments ($g_{pooled}=0.010$, $p>0.1$, 95% CI [-0.01, 0.03]) as reported in Column (6). However,

pooled estimates relied on only a few studies, and results should therefore be interpreted with caution.

Heterogeneity in the remaining outcome categories ranged from high to moderate (with I^2 values ranging from 38.5% to 65.9%). A likely explanation may be that the studies in our sample were quite diverse, despite efforts to generate a relatively narrow sample. It is possible that factors such as intervention design, socio-economic characteristics of participants, or social and cultural context explain the variation in effect size estimates across studies. Particularly, variation was most pronounced in expenditure/income and asset/housing outcome categories. This may be indicative of some noise in measuring these outcome concepts in poor populations that could stem from seasonal fluctuations, potential recall bias, or reporting bias due to fear from taxation (see Sahn & Stifel, 2000).

Table 4. Pooled Effect Sizes for Distal Outcomes

	Expenditures/ Income	Food Security	Assets/ Housing	Education Investment	School Enrolment (binary)	Health / Health Investment
	(1)	(2)	(3)	(4)	(5)	(6)
Hedges' G	0.066**	0.052*	0.038	0.009	0.059	0.010
(SE)	(0.02)	(0.02)	(0.02)	(0.01)	(0.05)	(0.01)
95% CI	[0.02, 0.12]	[0.01, 0.10]	[-0.01, 0.09]	[-0.03, 0.05]	[-0.18, 0.3]	[-0.01, 0.03]
I^2	61.7%	38.5%	65.9%	41.9%	39.7%	2.7%
Tau ²	0.003	0.001	0.003	0.000	0.005	0.000
N studies	11	8	9	6	3	5
N effect sizes	38	18	22	17	11	17

Notes: †p<0.1, *p<0.05, **p<0.01, ***p<0.001. Note that some studies are multi-arm trials and therefore contribute effect sizes to two or more intervention type categories. Pooled effect sizes for Enrolment (binary variable) are log odds.

6.3 Meta-Regression: Heterogeneity in Effect Sizes

Meta-regression can indicate how participant, program, and design characteristics affect outcomes. It is also an attempt to explain high levels of heterogeneity in effect sizes. Given the limited number of individual studies per outcome, we pooled effect sizes into broader categories to meet the requirement of 10 individual studies per regression (Higgins & Green, 2011). In line with our theoretical framework, we generated three broad categories of outcomes, namely (i) savings, (ii) consumption

proxies, and (iii) future-oriented investments. Our savings category hereby included 'cash' and 'kind', ranging from account deposits, cash savings, and total savings, to livestock and household asset holdings. Second, consumption comprised food and household expenditures, any income, profits from agricultural activity and small-scale business, actual food insecurity, and frequency of meals. Lastly, for the investment category, we combined human capital investment (i.e. expenditures in health and education), and investments in income-generating activities, business, agricultural inputs or fertilizer. We also included returns on investments by adding broader measures of actual health and educational attainment. Results from meta-regressions are summarised in *Tables 5-6*.

Intervention Design and Components

In our first set of regressions, we investigate whether variations in outcomes can be explained by differences in programmatic characteristics (see *Table 5*). For this purpose, we recorded whether interventions featured supply-enhancing components, demand-enhancing components, or any form of behavioural constraints (see *Table A1*). Most programmes under investigation featured some sort of supply component (either formal or informal), sometimes combined with either a demand or behavioural component. Further, seven studies featured treatment arms that comprise single demand-enhancing components. We did not identify any stand-alone behavioural interventions in our sample, as behavioural components were usually tied to supply programmes.

Based on their prevalence, supply-based programmes were used as the base category in all regressions. Intercepts therefore determine the magnitude and significance level of pooled effect sizes for these programmes. We found that supply-based programmes showed consistently positive and significant effect sizes for all three outcome categories (see constants in Columns (1)-(9), ranging from $\beta=0.04$, $p<0.05$ to $\beta=0.09$, $p<0.01$). Among these, programmes with formal supply components (i.e. increasing access to bank or mobile money accounts) appeared more effective in increasing savings, compared to programmes with informal supply components (i.e. initiation of group-based savings schemes or supply of money boxes): Actual savings amounts were significantly lower for programmes with an

informal supply provision ($\beta=-0.07$, $p<0.05$), as reported in Column (1). The difference in savings outcomes between formal and informal supply components could reflect possible loss rates in informal savings due to lower levels of security (Wright & Mutesasira, 2001). When we examined the investment and consumption categories, coefficients were close to zero and non-significant, as evident from Columns (4) and (7), thus suggesting that formal and informal programmes did not differ in their effectiveness. One possible explanation for this might be that many informal savings groups additionally feature rotating group loans. These could then both encourage investment and (temporarily) boost consumption.

For completeness, we also used demand promotion instead of supply promotion as the base category (not included in table) to determine whether demand components were equally effective. In fact, constants remained similar but turned non-significant for savings: ($\beta=0.07$, $p=0.28$), and dropped close to zero and were non-significant for consumption ($\beta=0.00$, $p=0.83$) and investment ($\beta=0.01$, $p=0.67$). Thus, demand-based programmes, namely financial literacy and financial education, were not associated with significant changes in any of the three pooled outcomes. They appeared particularly ineffective in influencing distal outcomes. This corroborates with previous meta-analyses of financial literacy programmes that found no or little evidence of programme effectiveness (Fernandes et al., 2014) with particularly low effect sizes for interventions implemented in developing countries (see Kaiser & Menkhoff, 2017). Further, we found no evidence for an add-on effect when combining supply-based components with literacy or motivational components (i.e. demand promotion) (see *Table 5*, Columns (2), (5), (8)).¹⁹ We may, however, caution that the demand-based programmes included in here were quite heterogeneous and ranged from subtle endorsement of certain financial behaviours via TV soaps or movie screenings to full-fledged financial education curricula. It is therefore possible that some of these programmes are more promising, but that we were not powered to detect this.

Lastly, we found no support for the hypothesis that “tying one’s hands” through *external or psychological constraints* (such as purpose-labeled accounts, peer

¹⁹Note that confidence intervals are quite large and it is therefore conceivable that low statistical power makes it impossible to detect some small but true differences between pooled effect sizes.

pressure, and institutionalised withdrawal restrictions) can increase effectiveness of supply-based programmes. Coefficients remained virtually zero across all three outcome categories (see Columns (3), (6), and (9)).

Finally, we compared once-off/one-day programmes with longer programmes featuring several sessions or complex curricula (see *Table 6*). We found no evidence that longer programme duration yielded higher effect sizes (see Columns (1), (7), (13)). In contrast, programme length was *negatively* associated with the effectiveness of consumption outcomes ($\beta=-0.05$, $p<0.01$, Column (7)). This finding feeds back into the above discussion of programmatic components: While longer programmes tend to target demand aspects only (e.g., financial education curricula), we may still expect to see higher effects from a once-off programme with a strong supply component. It would be interesting to examine the impact of programme intensity and duration solely for the sub-group of literacy programmes, but unfortunately, we did not have a sufficiently large number of studies to proceed with such post-hoc analyses.

Table 5. Meta-Regression: Intervention Components

	Savings			Consumption			Investment		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Informal Supply-enhancing Component	-0.07* (0.03)			-0.02 (0.02)			-0.01 (0.02)		
Demand-enhancing Component		0.02 (0.04)			0.04 (0.03)			0.00 (0.03)	
Behavioural Constraint			-0.03 (0.03)			-0.02 (0.02)			0.00 (0.02)
Const. (Formal supply)	0.09** (0.02)			0.08*** (0.02)			0.04* (0.01)		
Const. (Any Supply)		0.05* (0.02)	0.08** (0.02)		0.06*** (0.01)	0.08** (0.02)		0.04* (0.01)	0.04* (0.01)
Sample		Any Supply			Any Supply			Any Supply	
N (Studies)		17			12			13	
N (Effect Sizes)		62			65			59	
I ² in % (original, resid.)	68.5, 61.2	68.5, 69.4	68.5, 68.6	63.0, 65.0	63.0, 64.2	63.0, 65.2	34.0, 35.5	34.0, 37.6	34.0, 37.7

Notes: † p<0.1, *p<0.05, **p<0.01, ***p<0.001. Standard errors from robust variance estimation in parentheses. Intervention channels defined as follows: (i) *formal supply* as access to institutionalised banking, (ii) *informal supply* as savings groups or lockboxes etc., (iii) *demand* as literacy or motivational scripts/outreach, (iv) *behavioural control* as priming on mental accounting, and formal commitment devices or peer pressure and regulatory frameworks in groups.

Participant Characteristics

In the next set of meta-regressions (see *Table 6*, Columns (2), (8), (14)), we sought to elucidate whether programme effectiveness varied with participant characteristics. Our analyses revealed relatively larger programme effects for male participants across all three outcome categories as well as some substantial decreases in heterogeneity statistics (for investments, I^2 values decreases from 33.7% to 13.9%).²⁰ We can only speculate about the mechanisms underlying this difference in effectiveness by gender. One interpretation, in line with previous research, regard women at a disadvantage with respect to intra-household financial decision making and resource distribution (Schaner, 2015; De Mel, McKenzie & Woodruff, 2009; Ashraf, 2009). That is, female programme recipients may face resistance from male household heads when seeking to implement certain savings practices in their households, as endorsed by the intervention. Alternatively, our finding could be linked to socioeconomic characteristics of the male and female samples. While most women-targeted programmes enrolled specifically vulnerable and economically deprived samples, there were only three studies with a more specific focus on men who were small entrepreneurs and farmers (Ksoll, Lilleør, Lønborg & Rasmussen, 2016; Carter et al., 2015; Brune et al., 2015). It is therefore conceivable that these interventions turned out more effective because of the socioeconomic background of participants rather than their sex. We did not have sufficient data to examine the hypothesis across all studies.

In terms of participants' age, interventions seemed to be somewhat more effective in promoting savings and consumption when targeting adults rather than school-going children and adolescents (see *Table 6*, Columns (3), (9), (15)). This might partly be explained by the fact that some programme types, such as those that target access to bank accounts, often constrain eligibility for younger populations. In addition, children and adolescents likely have fewer monetary resources than adults, which limits their ability to save. It would be interesting to evaluate whether other outcomes such as pro-savings attitudes and financial literacy are more malleable to change when implemented in younger populations, especially with

²⁰Note that, in contrast, Dupas & Robinson (2013a) find higher programme effectiveness for (largely) female market vendors than for male bicycle taxi drivers. However, differences in outcome could be defined by occupation rather than gender.

children. Similarly, it would be compelling to examine the long-term effects of youth programmes. However, limited data availability leaves these questions to future research.

Study Design

When considering study design characteristics, we observed that effect sizes for consumption significantly decreases with the time to follow-up, pointing to a “fading out” of programme impact ($\beta=-0.02$, $p<0.05$, see *Table 6*, Column (9)). For instance, post-hoc sub-group analyses (not included in tables) revealed that the pooled effect size for household incomes and expenditures was $g_{pooled}=0.12$ (95% CI [0.05, 0.19]) after six months of programme delivery and diminished to effectively zero after more than two years ($g_{pooled}=0.02$, 95% CI [-0.01, 0.04]). Coefficients for savings (see *Table 6*, Column (4)) and for investments (see *Table 6*, Column (14)) were negative as well but non-significant.

Table 6. Meta-Regression: Study Design, Participant Characteristics and Bias

	Savings						Consumption					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Duration	-0.04 (0.02)						-0.05** (0.01)					
Female		-0.08* (0.03)						-0.06† (0.02)				
Mixed		-0.07† (0.03)						-0.01 (0.03)				
Youth			-0.05 (0.04)						-0.03* (0.01)			
Follow Up Time				-0.01 (0.01)						-0.02* (0.01)		
Risk of Bias					0.00 (0.01)						0.01 (0.01)	
Publication Status						0.07 (0.05)						-0.01 (0.02)
Const.	0.12** (0.03)			0.08† (0.04)	0.07* (0.03)	0.05* (0.02)	0.10** (0.02)			0.14** (0.03)	0.15* (0.04)	0.07** (0.01)
Const. (Male)		0.12* (0.03)						0.09* (0.02)				
Const. (Adults)			0.08*** (0.02)						0.08*** (0.01)			
Sample			Full						Full			
N (Studies)			20						12			
N (Effect Sizes)			66						70			

Notes: † p<0.1, *p<0.05, **p<0.01, ***p<0.001. Standard errors from robust variance estimation in parentheses. *Intervention duration* is a dichotomous variable, coded 0 for brief ('once-off' or one day) and 1 for longer programmes. *Participant sex* has three categories for primarily male, female, or mixed programme beneficiaries. The threshold for primarily male/female was defined as more than 75% of all participants. *Participant age* has three categories for adults, children/youth (up to 24 years), or both. *Time to follow-up* has four categories: 0-6 months, >6 months – 1 year, >1-2 years, and > 2 years. *Risk of Bias* was coded as a continuous variable with higher scores reflecting higher risk of bias. A summative scale score was created for each individual study by coding low risk of bias as -1, unclear risk of bias as 0, and high risk of bias as +1.

Table 6. ctd.

	Investment					
	(13)	(14)	(15)	(16)	(17)	(18)
Duration	-0.01 (0.02)					
Female		-0.07* (0.02)				
Mixed		-0.06* (0.02)				
Youth			-0.04 (0.02)			
Time to Follow Up				-0.02 (0.01)		
Risk of Bias					0.00 (0.00)	
Publication Status						0.06 (0.04)
Const.	0.05 (0.04)			0.08* (0.03)	0.04 (0.03)	0.02 [†] (0.01)
Const. (Male)		0.09* (0.02)				
Const. (Adults)			0.04* (0.01)			
Sample	Full					
N (Studies)	13					
N (Effect Sizes)	62					

Notes: [†] p<0.1, *p<0.05, **p<0.01, ***p<0.001. Standard errors from robust variance estimation in parentheses.

6.4 Risk of Bias

The quality of included studies ranged from moderate to high as detailed in *Figure 5* (and *Appendix 3*). Three points are noteworthy. First, blinding of participants is notoriously difficult in non-medical trials and was thus not ensured in most included studies (Scriven, 2008). However, some innovative study designs included quasi-placebo treatment arms that received the same intervention (e.g. a public movie screening) without specific financial content (see Berg & Zia, 2014; Coville et al. 2014; Dupas & Robinson, 2013b; Eissa, Habyarimana & Jack, 2014). Second, documentation on process evaluation was difficult to identify for most included interventions, although quality of programme implementation and fidelity may be crucial in determining a programme's success or failure (see Durlak & DuPre, 2008; Dane & Schneider, 1998). Third, none of the 27 included studies used any corrections for multiple hypothesis testing, such as family wise error rate or false discovery rate adjustments (see Fink, McConnell & Vollmer, 2014; Anderson, 2008).

Sensitivity analyses were conducted to explore whether study quality was associated with magnitude and significance of effect sizes (see *Table 6*, Columns (5), (11), (17)). Risk of bias did not explain heterogeneity in treatment effects for any of the three outcomes, thus suggesting that study quality was not a significant factor in explaining differences in effect sizes.

Figure 5. Risk of Bias of Included Studies

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Implementation fidelity	Baseline differences	Spillover and contamination
Annan et al. 2013	+	+	-	+	+	?	?	?	+
Batista & Vicente 2013	?	?	-	+	-	?	?	-	-
Beaman, Karlan & Thuysbaert 2014	+	?	-	+	+	+	+	+	+
Berg & Zia 2014	+	+	+	+	+	?	?	+	-
Berry, Karlan & Pradhan 2015	+	+	-	+	+	+	+	+	+
Brune et al. 2015	+	+	-	+	+	+	?	+	+
Buehren 2011	+	+	-	?	-	?	?	-	-
Carter, Laajaj & Yang 2015	+	?	-	?	+	+	?	-	+
Cole et al. 2014	+	+	-	+	-	?	?	+	+
Coville et al. 2014	+	+	+	+	-	?	+	+	-
Dizon, Gong & Jones 2016	+	+	+	+	+	+	?	+	-
Dupas, Karlan, Robinson & Ubfal 2016	+	+	+	+	+	+	+	+	+
Dupas, Keats & Robinson 2016	+	+	-	+	+	+	+	+	+
Dupas & Robinson 2013a	+	+	-	+	-	+	+	+	+
Dupas & Robinson 2013b	+	+	+	+	+	+	?	+	+
Eissa, Habyarimana & Jack 2014	?	?	+	+	-	?	?	?	+
Flory 2014	+	+	-	+	+	-	?	+	+
Jamison, Karlan & Zinman 2014	+	+	-	+	+	+	-	+	+
Karlan & Linden 2014	+	+	+	+	+	+	+	+	-
Karlan et al. 2012	+	+	+	+	+	?	?	+	-
Ksoll et al. 2016	+	+	-	+	+	+	?	+	-
Lee et al. 2015	?	?	+	+	?	?	?	-	+
McConnell 2012	?	?	-	+	-	?	?	+	-
Sayinzoga, Bulte & Lensink NA	?	?	-	?	+	?	?	+	+
Schaner 2013	+	+	-	+	+	-	-	+	+
Shephard, Kaneza & Moclair (under review)	+	+	-	+	+	+	+	+	+
Supanantaroeek (in press)	-	-	-	+	?	+	?	?	+

Notes: The Cochrane Collaboration defines the risk of bias categories as follows: (1) Random sequence generation: blind/external randomisation to prevent selection bias, (2) Allocation concealment: those enrolling participants into study ignorant of upcoming assignment, (3) Participant blinding to prevent performance bias, (4) Outcome assessor blinding to prevent detection bias, (5) Incomplete data if systematic attrition and no sensitivity analyses, (6) Selective reporting if analysis neglects a priori specified outcomes. Three auxiliary categories were added to assess (7) Possibility of null effects due to delivery/implementation failure, (8) imbalance at baseline or absence of baseline checks, and (9) Unintended spillover to control.

6.5 Publication Bias

Finally, potential publication bias was assessed for the studies included in this meta-analysis. Visual inspection of the funnel plots displayed in *Figures 6-8* pointed to, on average, higher effect sizes for published studies both for aggregated savings (*Figure 6*) and aggregated investments (*Figure 8*). Effect sizes for consumption-based outcomes did not vary by publication status (*Figure 7*). While differences in effect sizes between published and unpublished studies failed to reach statistical significance in our meta-regressions (see *Table 6*, Columns (6), (12), (18)), we note that the estimated coefficients for savings and investment were relatively large and may only be non-significant due to a lack of statistical power. We therefore cannot fully rule out the existence of publication bias. The eligibility framework applied in this meta-analysis therefore helps avoid overestimating the impact of saving promotion programmes in Sub-Saharan Africa.

Figure 6. Funnel Plot: Savings



Note: Standardised Hedges' g effect sizes displayed on x axis and level of precision as indicated by the variance of Hedges' g on y axis.

Figure 7. Funnel Plot: Consumption

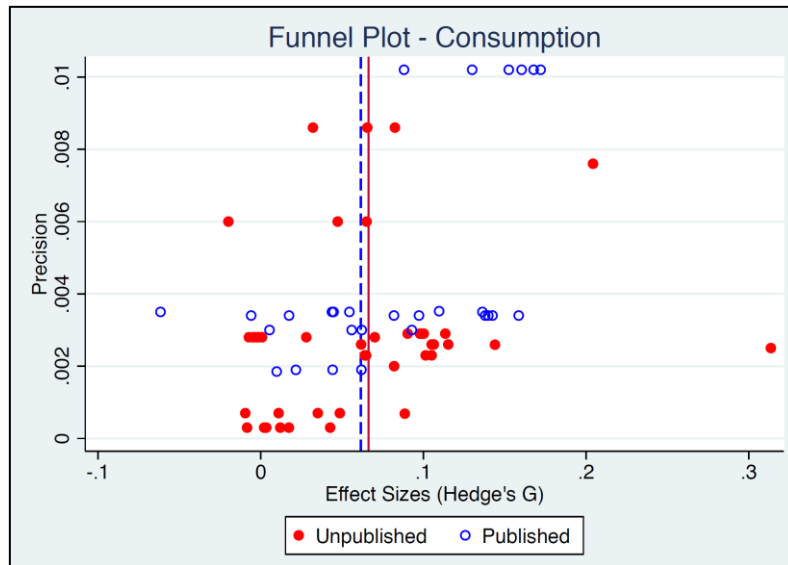
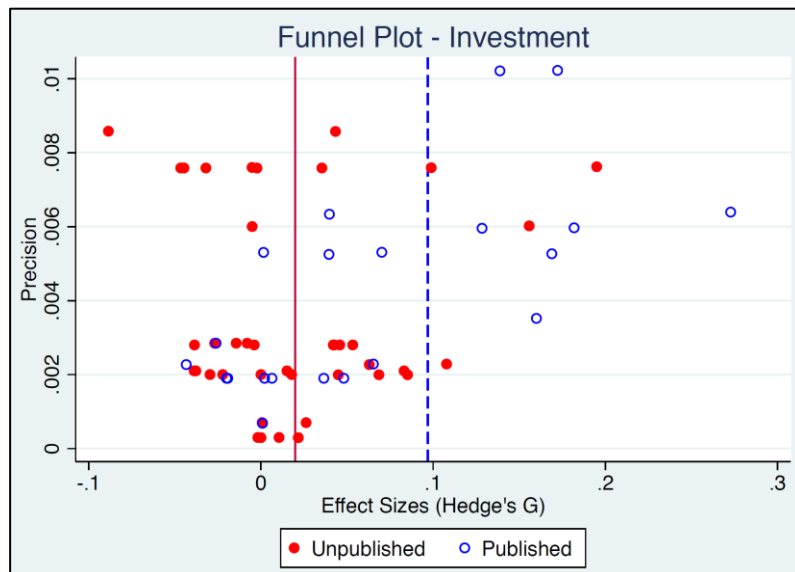


Figure 8. Funnel Plot: Investments



7. Discussion

This study examined the poverty-alleviating potential of saving promotion programmes in Sub-Saharan Africa. Financial inclusion and saving promotion are increasingly researched in the region, as expressed by 27 studies included in this review, and more studies still underway. Our findings suggest that savings

interventions do indeed show significant impacts, for instance by increasing total savings amounts and promoting small-scale family businesses. Yet, it is important to move beyond these intermediate outcomes in order to assess whether saving promotion programmes can fulfill the promises they make with regards to poverty alleviation. This is not only important from a policy perspective but can also help rule out any potential harmful effects. For instance, it is conceivable that higher savings are in fact realised through cuts in food consumption or other human capital expenses rather than through more deliberate budgeting and reduced temptation spending. In this case, we would expect to see negative effects on poverty-related outcomes. However, we find no indication of harm for any aspect of household economic welfare. Rather, we observe positive and significant impacts on some poverty-related outcomes, including increases in household expenditures, incomes, and improved food security. This is particularly remarkable when considering that saving promotion does not necessitate the infusion of large external capital.

Findings from our meta-regression point to two important policy implications. First, we found that programmes with supply-enhancing components appear most promising across all observed outcomes. Linking this to our theoretical framework, our findings thus suggest that undersaving in Sub-Saharan Africa may primarily stem from barriers in supply and absence of institutionalised structures to facilitate saving. The results therefore provide strong empirical grounds to dispel the misconception that poor people are “too poor” (or worse: too unsophisticated) to save. Hence, the aggregated evidence from 24 meta-analysed trials points to a gap between the demand for saving and the actual provision of reliable, safe, and easily accessible savings institutions. Indeed, the large majority of low-income households in Sub-Saharan Africa remains alienated from the formal financial sector. In the least developed countries of the continent, formal banking still reaches less than 20% of the general population. In view of this gulf, mobile banking technology is currently developing as a promising savings tool. Accordingly, Suri & Jack (2016) estimate that “M-PESA”, the Kenyan mobile money scheme, has helped to lift 2% of the Kenyan population out of poverty. Mobile banking is particularly attractive for geographically remote areas as it can reduce dependence on the brick-and-mortar presence of bank branches (Munyegera & Matsumoto, 2016). While physical bank branches are scarce, mobile phone coverage is high across Sub-Saharan Africa, and

mobile money may thus have the potential to considerably boost supply in the coming years. In addition, savings groups that feature access to group loans might effectively increase investment rates in contexts where individual credit constraints are high.

Second, our findings suggest that saving promotion programmes do not seem to generate the intended economic impacts for female low-income recipients. Impact might partly fail to materialise due to their constrained intra-household bargaining power with respect to male spouses or partners. To date, women tend to hold low hierarchical status in many Sub-Saharan African societies (Kim et al., 2006; Chowa, 2006) and may therefore face resistance when seeking involvement in household financial decision making and resource allocation. Some studies have even highlighted the potential of harm, arguing that economic empowerment of women may provoke conflict with male partners and thus exacerbate the risk of partner-perpetrated violence (Kim et al., 2006; Jewkes, 2002). It may therefore be desirable for future saving promotion programmes to mobilise not only women but also male household heads, thus promoting intra-household consensus on any endorsed changes in financial management and budgeting. Indeed, a recent multi-arm randomised controlled trial from Indonesia found that impacts of a literacy programme on a range of financial behaviours were significantly increased when the entire family was targeted, rather than only the male migrant worker or the remaining family members (Doi et al., 2014). It may also be worthwhile to combine economic strengthening curricula with additional components focused on gender awareness training or sexual risk taking (such as in Annan et al., 2013; Kim et al., 2006) in order to further strengthening the role of vulnerable women.

Our analysis also points to avenues for future research. First, while our meta-analysis highlights causal impacts on both financial behaviour and aspects of household poverty, it can not provide empirical insights on the underlying causal mechanisms. Future research will need to open this “black box” and examine how different components of a programme can translate into poverty-relevant outcomes. For instance, future studies might benefit from drawing on mixed-methods designs to elicit the role of programme setting and context, or on qualitative in-depth interviews with programme recipients to explore narratives of change. It is also

essential to scrutinise why hypothesised trickle-down effects on education and health have failed to materialise.

Second, only a small number of assessed programmes have featured institutionalised commitment devices (see Karlan & Linden, 2014; Dupas & Robinson, 2013b; Brune et al., 2015). Evidence from the Philippines (Ashraf et al., 2006) suggests that administrative behavioural constraints, if combined with access to banking, may help consolidate effects on savings (and potentially on other outcomes). However, another study from the Philippines has indicated harmful effects of a commitment product that enforced fixed regular deposits, revealing that 55% of participants defaulted on their saving plans and consequently experienced welfare losses in the form of monetary penalties (John, 2018). More research is thus needed to establish the viability of commitment contracts for Sub-Saharan African settings.

Further, the highest impact in our sample was achieved for programmes targeted at male entrepreneurs or farmers. More evidence is therefore needed on the question of whether savings programmes can reach those most in need and maintain effectiveness even for the ultra-poor (Halder & Mosely, 2000). Lastly, the average time to follow-up across the 27 included trials was 16 months. Future trials should therefore aim for longer follow-up periods to generate additional insights on whether programme effects are sustainable over time.

On a cautionary note, while our findings are encouraging, it must be stressed that effect sizes, albeit significant, were very small across all outcome categories ($g_{pooled} < 0.20$).²¹ This could either indicate that take-up of the offered savings tools is low^{22,23} or that programme impact, overall, is too small to substantially lift individuals out of poverty. More importantly, our results suggest that programme effects tend to fade out over time and that possible reductions in poverty levels may not be sustained over a longer period of time. In a similar vein, Ashraf et al. (2006) present evidence from the Philippines where bank accounts were not actively used

²¹ Cohen (1988) classifies effect sizes of 0.20 as small; 0.40 as a medium; and 0.80 as large.

²²For instance, a three-country study finds that take-up rates for formal bank accounts were as low as 17% in Chile, 54% in Uganda, and 69% in Malawi (Dupas, Karlan, Robinson & Ubfal, 2018).

²³Given that included studies applied intent-to-treat analyses it is likely that they offer realistic estimates of take up in the “real world”.

one year after programme roll-out, even by those who were registered as high-frequent users in the first few months. This finding requires further analytical investigation but, from a policy perspective, may call for continued support to those who take up savings and for follow-up outreach one to two years after a programme's launch. Future research will also need to include cost-effectiveness analyses that weigh overall programme costs against material and psychosocial benefits for target populations.

Nonetheless, the effect sizes in this review did not differ vastly from those of other interventions in the field of international development. For instance, a meta-analysis of the impact of conditional cash transfers on educational outcomes found similar effect sizes for primary and secondary school enrolment (Saavedra & Garcia, 2012). Likewise, McEwan (2015) examined a range of school-based interventions in developing countries and found that monetary grants and school-based deworming programmes had effect sizes close to zero. The review revealed that the largest effect size for technology and computer training still did not exceed a standardised mean difference of 0.15. Lastly, a meta-analysis on technical and vocational training for youth in low- and middle-income countries found a mean effect size of 0.13 on income which was, again, quite similar to our findings (Tripney & Hombardos, 2013).

Findings from this analysis may caution against predictions of a savings-driven 'revolution' in the global fight against poverty. Yet, they are promising enough to position saving promotion somewhere at the top of the agenda in international development. Ultimately, our findings have demonstrated that the poor in Sub-Saharan Africa are indeed able and willing to save their money, but face constraints that can be overcome. The 2030 Sustainable Development Agenda pledges to *"strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all"*. Our research supports this policy imperative through empirical evidence of how an expansion of the (semi-)formal financial sector to the world's poor and a better adaptation of services to their specific financial needs can help achieve development for all.

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Supplementary Tables

Table A1. Coding of Intervention Components

Study	Supply: Informal	Supply: Formal	Behavioral Control	Demand
Annan et al. 2013	1	0	1	0
Batista & Vicente 2013	0	1	0	1
Beaman et al. 2014	1	0	1	0
Berry et al. 2015 (Arm 1)	1	0	1	1
Berry et al. 2015 (Arm 2)	1	0	1	1
Dizon et al. 2016	0	1	1	1
Brune et al. 2015 (Arm 1)	0	1	0	1
Brune et al. 2015 (Arm 2)	0	1	1	1
Buehren 2011	0	0	0	1
Dupas, Keats & Robinson 2016 (Arm 1)	0	1	0	0
Dupas, Keats & Robinson 2016 (Arm 2)	0	1	0	0
Dupas, Keats & Robinson 2016 (Arm 3)	0	1	0	0
Dupas & Robinson 2013a	0	1	0	0
Dupas & Robinson 2013b (Arm 1)	1	0	1	0
Dupas & Robinson 2013b (Arm 2)	1	0	1	0
Dupas & Robinson 2013b (Arm 3)	1	0	1	0
Dupas & Robinson 2013b (Arm 4)	0	1	1	0
Flory 2014	0	1	0	1
Jamison et al. 2014 (Arm 1)	0	1	0	0
Jamison et al. 2014 (Arm 2)	0	0	0	1
Jamison et al. 2014 (Arm 3)	0	1	0	1
Karlan & Linden 2014 (Arm 1)	1	0	1	1
Karlan & Linden 2014 (Arm 2)	1	0	1	1
Karlan & Linden 2014 (Arm 3)	1	0	1	0
Karlan & Linden 2014 (Arm 4)	1	0	1	0
Karlan et al. 2012	1	0	1	0
Ksoll et al. 2016	1	0	1	0
Berg & Zia 2014	0	0	0	1
Carter et al. 2015	0	1	0	1
Schaner 2015 (Arm 1)	0	1	0	0
Schaner 2015 (Arm 2)	0	1	0	0
Schaner 2015 (Arm 3)	0	1	0	0
Lee et al. 2015 (Arm 1)	0	1	1	1
Lee et al. 2015 (Arm 2)	0	1	1	1
Supanantroek et al. (in press)	0	0	0	1
Coville et al. 2014 (Arm 1)	0	1	0	0
Coville et al. 2014 (Arm 2)	0	0	0	1
Coville et al. 2014 (Arm 3)	0	1	0	1
Sayinzoga et al. 2016	0	0	0	1
Shephard et al. (under review)	0	0	0	1
Dupas et al. 2016	0	1	0	0

IV. Systematic Review Implications for this DPhil Thesis

The systematic review and meta-analysis in *Chapter III* have synthesised evidence on the effectiveness of saving and budgeting promotion programmes in Sub-Saharan Africa. This chapter summarises the implications of the review findings for the body of empirical work presented in this thesis.

While the meta-analysis has highlighted formal banking programmes as most beneficial, this policy lesson had limited applicability to the setting and population of this DPhil project. First, bank opening and maintenance fees in South Africa are high and scalability of a subsidy-based intervention would therefore be questionable. The research team also looked into the possible viability of promoting use of bank accounts that the South African Social Security Agency (SASSA) opens for grant holders. However, further investigations²⁴ revealed that trust in these accounts had severely eroded after the bank had authorised deductions from recipients' monthly grant pay-outs according to entries they had in the national debt registry. Hence, rather than using these bank accounts for the purpose of saving, recipients tend to instantly withdraw the full amount of their grant in cash at the beginning of each month so as to avoid losing the money. Prevalent mistrust in banks, as well as concerns with regards to safety and inflexible withdrawal regulations were also reflected in the qualitative interviews and focus groups with our study participants:

"You do not save enough because the bank charges you. Then you do not know where the money went." (Adult participant, focus group discussion).

"There are lies that you are told when you take your money to the bank." (Adolescent participant, focus group discussion).

"If you want your money you have to wait for the bank to decide and give them like 30 days notice." (Adult participant, focus group discussion).

²⁴The results of these investigations were released in a newspaper article written by one of the team members (David Carel): <https://www.dailymaverick.co.za/opinionista/2014-12-10-greed-inc-making-millions-off-the-countrys-poorest/#.WoGxoOjwY2x>.

Furthermore, there was a fair amount of mistrust in savings groups (referred to as 'stokvels' in Xhosa communities) among study participants, thus leading the research team to refrain from reliance on this saving method as well:

"It is not safe to keep money with other people. They will use it and some will disappear with your money." (Adult participant, focus group discussion).

"People can just make up stories about thieves and not bring it [money] back." (Adolescent participant, focus group discussion).

"People are cruel, they can eat the money that you have saved for the whole year and run away. And then you cannot get the money if you have a problem." (Adult participant, focus group discussion).

Hence, considering that banking programmes are (too) costly to deliver and acknowledging practical concerns specific to the study context, the programme evaluated in this DPhil project largely relied on a saving-focused financial literacy training. Similar to some of the interventions included in the systematic review, the following low-cost components were featured in this intervention design: (a) formulation of saving goals (see Beaman et al., 2014; Dizon et al., 2016), (b) earmarking of money for the purpose of saving (see Dizon et al., 2016), (c) use of inspirational stories and role models (see Carter et al., 2015; Coville et al., 2014; Berg & Zia, 2014; Batista & Vicente, 2013), and (d) positive peer pressure through public announcements of goals or savings balances (see Brune et al., 2015).

It is further noteworthy that the majority of programmes included in the systematic review had quite focused programme curricula. That is, featured programme components were closely aligned with the study outcomes (e.g. giving access to bank accounts, teaching about the importance of saving). Only three interventions additionally included non-economic components: One intervention, similar to ours, featured a wider family-based parenting programme (Annan et al., 2013) and two interventions additionally focused on the promotion of children's rights (Supanantroek et al., 2017; Shephard et al., 2017). Revisiting the theoretical framework introduced in *Chapter II, 4*, financial resilience may be built by addressing a range of ecological factors at different levels, ranging from the individual to the family and wider community and leveraging financial but also psychological and social components.

In line with this, some development interventions in Sub-Saharan Africa have sought to deliver intervention curricula that are holistic rather than exclusively focused on financial aspects. While none of these studies were specifically combined with a saving and budgeting training (and therefore did not meet the eligibility criteria of the systematic review), they are noteworthy from a policy and programming perspective. These include the *Suubi-Maka* programme in Uganda that combines asset-based economic empowerment with psychological counselling and a mentorship programme (Ssewamala, Han & Neilands, 2009); the *Sustainable Transformation of Youth in Liberia (STYL)* programme which couples distribution of unconditional cash transfers with cognitive behavioural therapy (Blattman et al., 2017), a programme in Togo that tests a standard business training against a psychological training approach that aims to instil a proactive and positive mindset (Campos et al., 2017), and a programme in Ethiopia consisting of movie screenings for entrepreneurship and business training through targeting psychological factors such as future orientation, hope, and aspirations (Bernard et al., 2014). All of the above studies document significant positive impact on economically relevant outcomes, including saving, business management, and schooling outcomes.

Hence, the systematic review highlights a programming gap that largely neglects psychosocial aspects in saving and budgeting promotion interventions in Sub-Saharan Africa. The intervention that is evaluated in this DPhil thesis aims to contribute to the evidence base by testing a broader and more holistic programme curriculum that moves beyond pure financial literacy and saving training. The next chapter moves on to describe the development and design of this intervention.

V. Development of the Sinovuyo Teen Programme

1. General Programme Information

Since this DPhil project is nested within the *Sinovuyo Teen* study (see p. 13-14), this chapter will provide a brief background on the development of the intervention, and particularly the part that was designed and conceptualised by the candidate. The study is part of the World Health Organisation's *Parenting for Lifelong Health* initiative that was created in response to a paucity of evidence-informed parenting programmes for the prevention of child abuse and maltreatment in low-resource settings. Parenting for Lifelong Health includes four different programmes targeted at children of different ages: (1) *Thula Sana* and (2) *Early Carer-Child Book-Sharing* for children aged 0-23 months, (3) *Sinovuyo Kids* for children aged 2-9 years, and (4) *Sinovuyo Teen* for children aged 10-18 years (World Health Organization, 2017). The manuals of these interventions are freely accessible under the Creative Commons License and were explicitly designed to be low-cost for delivery by non-professionals. Two pilot studies of *Sinovuyo Teen* preceded the randomised controlled trial reported in this DPhil project. In 2013, a first pre-post pilot was implemented with 30 families (Cluver et al., 2016a) and a larger pre-post pilot with 115 families followed in 2014 (Cluver et al., 2016b). Both pilots tested feasibility and cultural acceptability of the programme and contributed to the refinement of the session curricula according to participants' feedback and requests.

The programme design draws primarily on social learning theory that assumes a direct link between harsh or ineffective parenting and child problem behaviour (Lachman et al., 2016; Bandura, 1977). Therefore, key components of the *Sinovuyo Teen* curriculum are focused on improving parent-child relationships and include promotion of non-violent discipline, spending time together, socio-emotional learning, and practicing specifically labelled praise, thus building on research that depicts praise as a compelling predictor of self-esteem, effort, and aspirations (Genicot & Ray, 2017; Darolia & Wydick, 2011). Further session components comprise anger and aggression management, coping with stress, practicing joint problem solving, and integration of rules and routines in the household and day-to-day family life. Given the high-crime context of the programme setting, content also

addresses the issue of safety and discusses strategies to avoid and cope with community violence. It further introduces adequate family communication strategies for sensitive topics such as HIV/AIDS and poverty as well as mindfulness practices for stress reduction (Lachman et al., 2016).

Sessions emphasise a collaborative, activity-based learning approach (see *Figure 9*) (Kaiser & Menkhoff, 2018). Sessions follow a similar structure each week, starting with a shared meal, followed by home practice discussions where participants report on their experiences with implementing learned lessons in their homes. Facilitators then introduce the week's core lesson in the form of an illustrative story of a South African family. New skills and behaviours are introduced in relation to the story, and parents and adolescents can practice new skills in role plays and interactive exercises. At the end of each session, participants receive a home practice task for the following week. Local cultural practices are infused into the curriculum through songs, dances, and shared prayers, in order to keep participants engaged, build trust, and strengthen social ties between members of the group. Basic elements from cognitive behavioural therapy (CBT) are used throughout each session with the intention to override automated and fast decision making with more conscious and deliberate reflections (Blattman et al., 2017; Heller et al., 2017). These include active practicing of new behaviours through repetition, homework practices, and positive reinforcement provided by facilitators or peers (Blattman et al., 2017).

Figure 9. Group Sessions in Treatment Villages



Source: Clowns Without Borders.

The pilot version of the curriculum included 12 sessions focused on the aforementioned components, to be delivered over 12 consecutive weeks. However, during piloting, participants repeatedly identified financial distress and concerns about money as key sources of family conflict. These reports tie back to empirical research indicating links between economic scarcity and impulsive, aggressive, and violent behaviour (Murphy et al., 2017). Research further illustrates a downward spiral from economic pressure to caregiver emotional distress and depression. This may then feed into risk of marital conflict and harsh parenting, thus disrupting family harmony (Conger & Conger, 2007; Conger et al., 2002). In focus group discussions following the study's pilot, participants therefore requested inclusion of a financial strengthening component. In response, two sessions with a specific economic strengthening focus were integrated into the programme. As I was largely responsible for conceptualising these two sessions (see *Table 7*, Sessions 7&11), the following sections describe their development as well as the practical and theoretical rationales behind inclusion of the different components.

Table 7. Session Outline of the Sinovuyo Teen Project

Session	Content	Delivery Mode
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	What do we do when we are angry?	Separate
6	Problem solving: Putting out the fire	Joint
7	Motivation to save and making a budget with our money	Joint
8	Dealing with problems without conflict I	Separate
9	Dealing with problems without conflict II	Separate
10	Establishing rules and routines	Joint
11	Ways to save money & making a family saving plan	Joint
12	Keeping safe in the community	Joint
13	Responding to crisis	Joint
14	Widening circles of support	Joint

2. The Economic Strengthening Component

2.1 Programme Context and Implications

The *Sinovuyo Teen* programme is primarily targeted at economically deprived families. In the context of very high unemployment rates, state-provided welfare grants are typically the primary income source of participating families. Although the majority of families receive monthly unconditional cash transfers, there is little guidance on how to most effectively use these. The primary goal of the economic strengthening component of the *Sinovuyo Teen* intervention was thus to a) promote effective budgeting and help families “save through” a monthly grant cycle and b) encourage precautionary saving to build resilience against emergencies and income shocks. The programme can therefore be understood as a complement to state-led social security provision (and also to employment and any other income sources).

2.2 Delivery Format

Programme content of the *Sinovuyo Teen* intervention was delivered in an interactive, applied, and non-didactic format, featuring modules such as group discussions, role plays, games and songs (see Doi et al., 2014). Given low literacy and numeracy rates in the population, financial training modules were kept simple and brief. This approach is in line with Drexler and colleagues (2014), who found that a simplified rule-of-thumbs training and reliance on simple heuristics achieved the highest effectiveness in a population of low-skilled microentrepreneurs (see also Lusardi, Keller & Keller, 2009). Additionally, programme sessions were designed with the intention of offering a range of alternative strategies (e.g. different ways to save money and to prioritise monthly expenses) and encouraging participants to choose between different options. This was motivated by research suggesting that active choosing can both help overcome inertia and ensure that choices adequately reflect the individual needs and circumstances of participants (see Sunstein, 2012).

The *Sinovuyo Teen* programme was delivered to caregiver-adolescent pairs within the same household, and the same family (although not necessarily biological). Previous research has shown that engaging several family members can result in

greater impacts on financial behaviours when compared to exclusive targeting of one household member, such as the breadwinner (see Doi et al., 2014). This observation can likely be explained by a social learning effect that stems from modelling behaviour as well as monitoring and feedback within the family (Boudet et al., 2016; Friedline, 2011; Otto, Schots, Westerman & Webley, 2006; Furnham, 1999). Further, *Sinovuyo Teen's* targeting of adolescent participants was built on the premise that early exposure to money management and financial education would influence financial behaviours in adulthood and thus potentially achieve long-lasting impact for participating adolescents (not tested in here) (Supanantarook, Lensink & Hansen, 2017; Boyden, Dercon, Singh, 2015; Sherraden, Johnson, Guo & Elliot, 2011).

Apart from leveraging on family reinforcement, the programme was delivered in a group setting (12-16 caregiver-adolescent pairs from within one village, township, or community) with the intention of utilising the role of peers and their influence on a person's financial behaviour (see Duflo & Saez, 2000). According to behavioural theory, social learning promotes information cascades and "herding effects" that tend to generate uniform behaviour among members of a group (see Baddeley, 2013). For instance, a recent study revealed the positive effect of peer pressure on individuals' financial behaviours, where savings rates could be increased by 35% if information on realised saving amounts was shared with another village member (a "social monitor") (see Breza & Chandrasekhar, 2015). Corroborating this argument, a meta-analysis on the general effectiveness of behaviour change interventions found that group-delivered programmes were more effective than individually delivered programmes (Steinmetz et al., 2016). Social pressure might even exert a stronger incentive than monetary rewards, as revealed in an experiment on sanitation in India that tested subsidies against public monitoring (Pattanayak, 2009). Building on this research, it was hypothesised that placing the intervention in a group setting could help encourage learning from peers by observing their financial behaviour and decision making (Thorp, Stewart, Heyer, 2005; Battaglini, Bénabou & Tirole, 2005). In line with the logic underlying pertinent self-help groups such as Alcoholics Anonymous and saving clubs (e.g. ROSCAs), self-control can be increased through holding participants accountable to each other, building social norms, and thus "sanctioning" deviation from the endorsed behaviour with

reputation costs (Fiorill, Potok & Wright, 2014; World Development Report, 2015; Kast et al., 2012; Wydick, 1999).

2.3 Session Components

The economic component of the *Sinovuyo Teen* programme had to be designed as low-cost. Consequently, strategies used in previous programmes – such as subsidising fees for opening bank accounts, incentivising saving, or giving out microcredits – were deemed inadequate (see *Chapter IV*). The candidate therefore largely drew on psychological and social strategies that have been associated with changes in financial behaviour, both theoretically and empirically. The section below provides a detailed description of the “active ingredients” (Fraser et al., 2009; Elliot and Mihalic 2004; Kumpfer et al. 2008)²⁵ of the economic strengthening interventions as well as their corresponding theoretical underpinnings.

1) Role Modelling

A first session component introduced a short play²⁶ revolving around common challenges such as “making it through the month” with grant money, coping with unforeseen emergencies, and preparing for major life cycle events (e.g. circumcision school²⁷ or high school graduation). Story characters were purposefully placed in easily relatable settings and contexts for participants, with the intention of making them identifiable as role models. It was hypothesised that positive experiences and success of story characters could bolster participants’ future aspirations and help them envision positive future outcomes for their “best possible selves” (Layous, Nelson & Lyubomirsky, 2013; Sheldon & Lyubomirsky, 2006; Markus & Nurius, 1986). In line with this argument, previous empirical research has found that exposure to role models can change people’s perceptions and expectations of their

²⁵ On a cautionary note, if interventions included a range of components and had not been tested within a multi-arm trial design, it was impossible to determine which components might be effective as stand-alone interventions.

²⁶ Role plays were further summarised in the form of comic strips that were distributed among participants and could be taken home.

²⁷ Circumcision school refers to an initiation rite that is practiced in Xhosa tradition with the intention to prepare boys for the responsibilities of and passage into manhood, often lasting for several weeks during which a group of male initiates go to a forest or a camp for the circumcision ceremony, followed by a phase of seclusion.

own lives via “vicarious learning” (Riley, 2018; Bernard, Dercon, Orkin & Taffesse, 2015, 2014; Bandura, 1977). That is, emotional bonds with role models (even if fictional) likely foster learning and retention of educational messages (World Development Report, 2015; Beaman et al., 2012). Similarly, a field experiment in Ethiopia revealed that the screening of short documentaries on successful business endeavours resulted in higher aspirations, savings rates, and educational investments in exposed communities (Bernard et al., 2014). Likewise, other studies from Brazil and India have shown that exposure to soap operas that feature small, urban families and strong female characters was associated with improved reproductive health (Chong, Duryea & La Ferrara, 2012; Jensen & Oster, 2009).

In a second programme module, anti-role models (see Eissa, Habyarimana & Jack, 2014) were introduced to illustrate the risks associated with borrowing money from a “loanshark”. This module was created on the assumption that vicarious learning could be stipulated by witnessing the negative consequences of borrowing on the lives of a prototype Xhosa family as well as empathising with the destitution and desperation of story characters as a result of their indebtedness (see Raaij, Veldhoven & Wärneryd, 1988).

2) Budgeting Training

Another key ingredient of the economic strengthening sessions was a visual budgeting exercise. For this exercise, participants were first asked to define key areas of monthly expense categories and were then given a monthly budget (samp and beans were used as fictional money) to be allocated to these different categories. Participants were then encouraged to identify essential and non-essential expenses and prioritise them accordingly. In the following step, an economic shocks scenario was simulated by taking away some of the assigned “money” and reallocating the remaining budget. Facilitators used the scenario to illustrate how a savings buffer stock could have enabled better coping with the shock. The exercise was designed based on cognitive load theory, which posits that learning is facilitated by the use of worked examples as well as visual and tactile elements. Additionally, cognitive load theory proposes that learning capitalises on nascent cognitive abilities, rather than higher-order numeracy (Kaiser & Menkhoff,

2018; Mason, Cooper & Wilks, 2015; Paas, Renkl & Sweller, 2003; Mayer & Moreno, 2003; Chandler & Sweller, 1991). The budgeting training was placed in a low-pressure environment, used counters that did not look like money to reduce stress, and was purposefully playful. Hence, participants were given space to think creatively about how to prioritise certain expense areas over others and how to differentiate between “needs” and “wants” in their day-to-day financial decision making.

3) Saving Strategy Choices

A further key component comprised an interactive discussion on different ways and strategies to save money. These included saving mechanisms available in the community – namely, saving at home, in a savings group, or in the bank. Benefits and limitations of each option were discussed in an open dialogue, and participants were encouraged to share their personal experiences and knowledge. The discussion was explicitly set up as non-didactic and collaborative, with the intention of letting participants actively choose the saving strategies that were most appropriate for their families’ needs and personal circumstances. The focus on individual choice was motivated by research suggesting that financial education is most effective if it considers participants’ specific needs and offers individualised financial counselling rather than being delivered in general terms (World Development Report, 2015; Avdeenko et al., 2015; Carpena, Col, Shapiro & Zia, 2017).

4) Goal Setting

Participants were further asked to define saving goals for their families, thus drawing on goal setting theory that postulates a direct link between conscious goals and action (Locke & Latham, 2002; Fiorill et al., 2014; Ryan, 1970). The link is explained by four mechanisms: Firstly, goal setting helps direct attention towards a specified goal (see Karlan et al., 2014); secondly, increases effort and enthusiasm and may thus help to overcome procrastination (see Rogers, Milman, John & Norton, 2016; Morisano et al., 2010); thirdly, it motivates perseverance (Alan, Boneva & Ertac, 2016); and lastly, may lead to discovery of new skills, knowledge, and strategies that can help to reach the goal (Locke & Latham, 2002; 1990). Goal setting may even have a beneficial psychological function, as research suggests that the

mere presence of self-defined goals can increase feelings of well-being and instil higher perceived self-efficacy (Morisano et al., 2010; Brunstein, 1993). Further to this, family saving goals were combined with a concrete implementation strategy, following evidence that found higher goal attainment when implementation intentions were formed (Duckworth, Kirby, Gollwitzer & Oettingen, 2013; Soman & Zhao, 2011; Townsend & Liu, 2011).

5) Soft Commitments

A final component of the economic strengthening sessions introduced the formulation of a detailed saving plan for the family, to help achieve individual saving goals (see above). Family saving plans had to include specific commitments (e.g. *“Depositing 100 ZAR into a savings box every week”*; *“Not spending more than 50 ZAR a week on airtime and tobacco”*; *“Not borrowing from a loanshark”*). Each parent-adolescent pair had to conceptualise individualised saving plans and present them to the group. In following weeks, homework practice discussions gave room for participants to share their success and challenges in realising these financial goals and plans in their households.

The formulation of family saving plans was included with the intention to introduce a soft commitment device or a “nudge” (Burke, Luoto & Perez-Arce, 2014; Thaler & Sunstein, 2009; Shafir & Thaler, 2006). Active commitments and “promises to oneself” can have a binding function through the psychological costs that are associated with breaking self-imposed rules and failure to reach set goals (Benabou & Tirole, 2004). Commitments can therefore increase self-control, increase a person’s willpower and intrinsic motivation, and help resist impulses and temptations. Corroborating this argument, ethnographic evidence has shown that families tend to make mental accounts of budgets and are then less likely to spend money on non-essential items if it is explicitly earmarked (mentally or physically) for a certain purpose (Karlán & Linden, 2014; Dupas & Robinson, 2013; Hardcastle, 2012; Shafir & Thaler, 2006). For instance, an experiment with low-income families in the US showed that parents were better able to save when money was kept in an envelope that had photographs of their children printed on it (Soman & Cheema, 2011). Randomised evidence even suggests that purely psychological commitments

can have an effect on financial behaviour (e.g. savings rates) that goes above and beyond the effect of hard commitment devices that impose external restrictions (Burke et al., 2014).

The group-based nature of our programme may reinforce the psychological force of saving commitments. Discussion of family saving goals and plans with the group has the potential to create strong social norms. Consequently, success in following through with a set plan is shared with the group and thus socially incentivised, whereas failure to adhere to a plan possibly creates feelings of shame and reputation costs (Kast et al., 2012; Munro, Lewin, Swart & Volmink, 2007).

The ingredients described above are further presented in step-by-step session outlines from the programme manual in *Appendix 4* and can be referenced for further details.

VI. Methodology

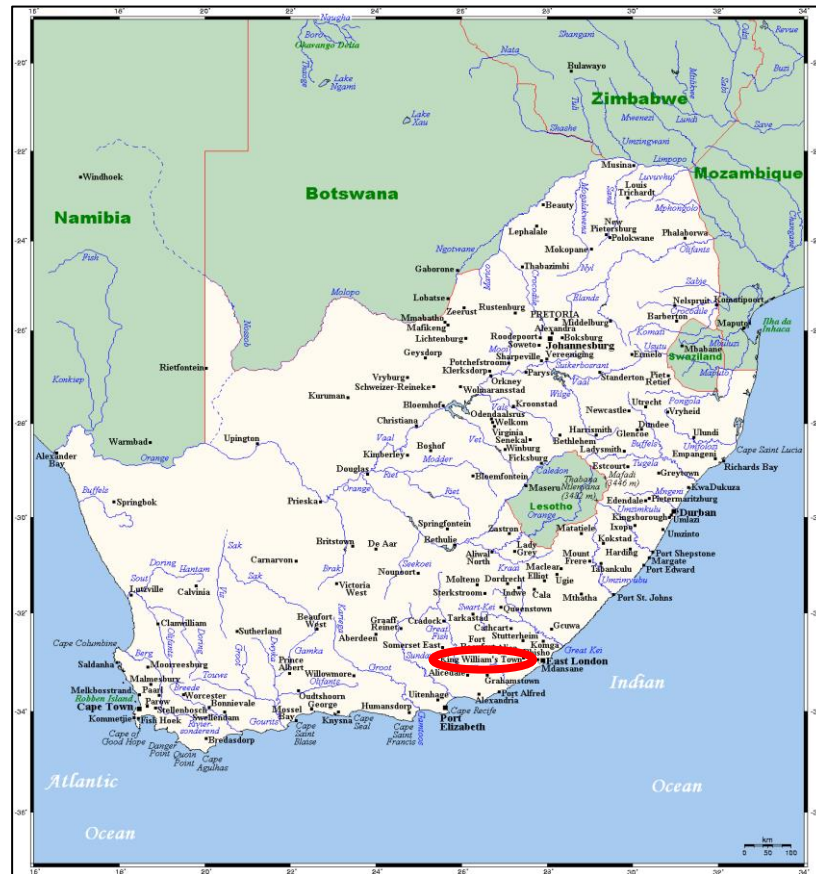
The empirical section of this thesis aims at 1) experimentally evaluating the effectiveness of a combined parenting and financial literacy programme for promoting future-oriented financial behaviour and financial wellbeing among poor families in South Africa (*DPhil Paper 2*) and examining the mechanisms underlying the changes in financial behaviour (*DPhil Paper 3*). The two empirical papers of this thesis are nested within the *Sinovuyo Teen* study, a cluster randomised controlled trial and qualitative assessment, designed to develop and evaluate a free evidence-based parenting programme for vulnerable families in the Eastern Cape province of South Africa. This methodology chapter will contextualise the empirical papers by providing a detailed description of the overarching research study, including sampling, recruitment, trial design, ethical procedures, and practical research challenges encountered during data collection. Statistical analysis methods and description of measures used are not featured in this methods section but described in detail in the respective papers (*Chapters VII & VIII*) and in a published pre-analysis plan (see *Appendix 5*) to avoid repetition.

1. Study Setting

The study took place in 40 rural and peri-urban communities of the Buffalo City Municipality in the Eastern Cape province of South Africa. Clusters were located within a two-hour driving distance from a small town called King William's Town (see *Figure 10*). The Eastern Cape is the poorest province of South Africa, ranking last on many key indicators on access to basic amenities such as water and electricity (South African National Department of Health, 2011; Statistics South Africa, 2012). In terms of financial management, South Africa's low-income population is still largely dependent on informal financial instruments (Dallimore, 2013; Collins & Morduch, 2011; Porteous & Hazelhurst, 2004; Ardington, Lam, Leibbrandt & Levinsohn, 2005; Siyongwana, 2004). The prevalence rate of HIV/AIDS is at almost 30%, and related deaths and sickness can put enormous strains on households' cash flows given that

comprehensive insurance schemes are lacking (Statistics South Africa, 2016; Masanjala, 2007; Russell, 2004).

Figure 10. Study Site Map



2. Sampling and Recruitment

Participants for the research study were recruited via purposive sampling. Local social workers, school staff, and community guides helped with identifying families who were experiencing high levels of intra-household conflict and economic hardship. In addition, recruitment was facilitated through door-to-door screening visits to identify eligible families that were in potential need of the programme, conducted by a trained local research team.

From each eligible household, the study enrolled one adult, namely the primary caregiver, and one adolescent. Inclusion criteria for adolescents and caregivers were defined as follows:

a) Adolescents:

- 1) Aged 10-18 years at the study baseline
- 2) Spending a minimum of four nights per week in the respective dwelling
- 3) Having an adult primary caregiver who lived in the same household

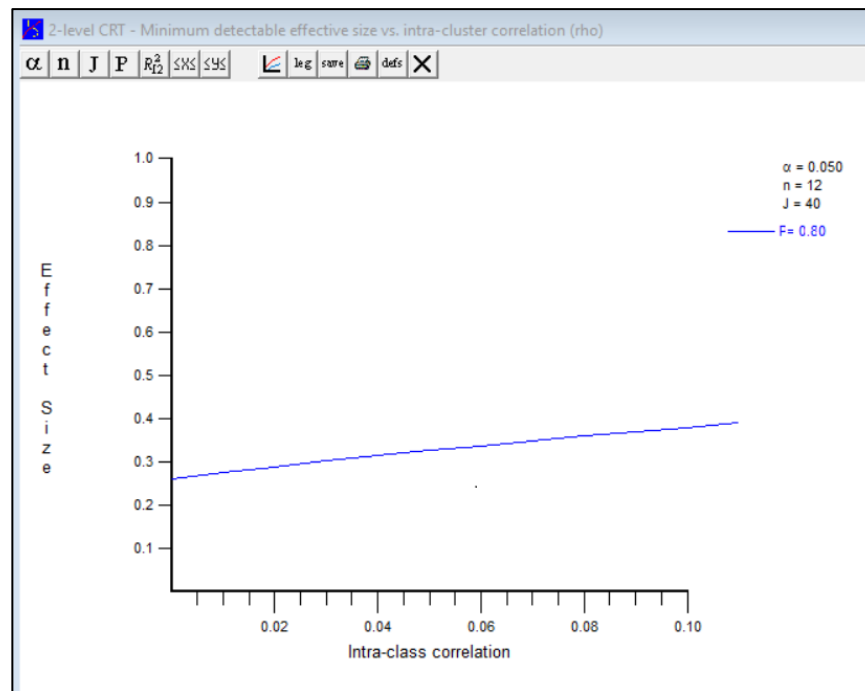
b) Caregivers:

- 1) Aged 18 years or older
- 2) Spending a minimum of four nights per week in the respective dwelling
- 3) Taking the role of the primary caregiver of the child participant (biological or non-biological child)
- 4) Able to attend weekly afternoon sessions (thus excluding full-time employees)

3. Trial Design

The study pilot had revealed that some of the programme's content was shared in communities, schools, and churches. Consequently, a cluster randomised controlled trial (RCT) design was selected over individual randomisation to account for the risk of contamination (see Campbell, Elbourne & Altman, 2004; Puffer, Torgerson & Watson, 2005). The sample size was based on power calculations implemented in Optimal Design Software (Raudenbush et al., 2011) (see *Figure 11*), requiring 40 clusters (villages or townships) with an average of 12 families per cluster for a minimum detectable effect size of 0.36 and desired power of 0.80 with 95% confidence (alpha at 5%). An intra-cluster correlation coefficient (ICC) of 0.08 was assumed for the RCT power calculation, informed by ICC values ranging from 0 to 0.15 from the pilot study. To account for potential attrition, the trial oversampled by 10% of required participants. While the meta-analysis of previous saving and budgeting promotion programmes presented in *Chapter III* showed average programme effect sizes of less than 0.10, the current trial had to be based on the anticipation of substantially higher effect sizes (or low ICCs) due to funding constraints.

Figure 11. Trial Power Calculations



The trial randomly assigned 40 clusters (32 rural and 8 peri-urban) to receive either the 14-session parenting and financial literacy programme (intervention group) or a one-day water handwashing and hygiene workshop (control group). The 40 clusters included 522 caregiver-adolescent pairs. Randomisation was done for clusters within the two strata rural versus urban location in a 1:1 ratio for the intervention and control arms. Following Cochrane guidelines, randomisation was performed by the blinded study statistician (Professor Carl Lombard) after recruitment of participants and baseline data collection. Randomisation was performed using a random number generator in Excel.

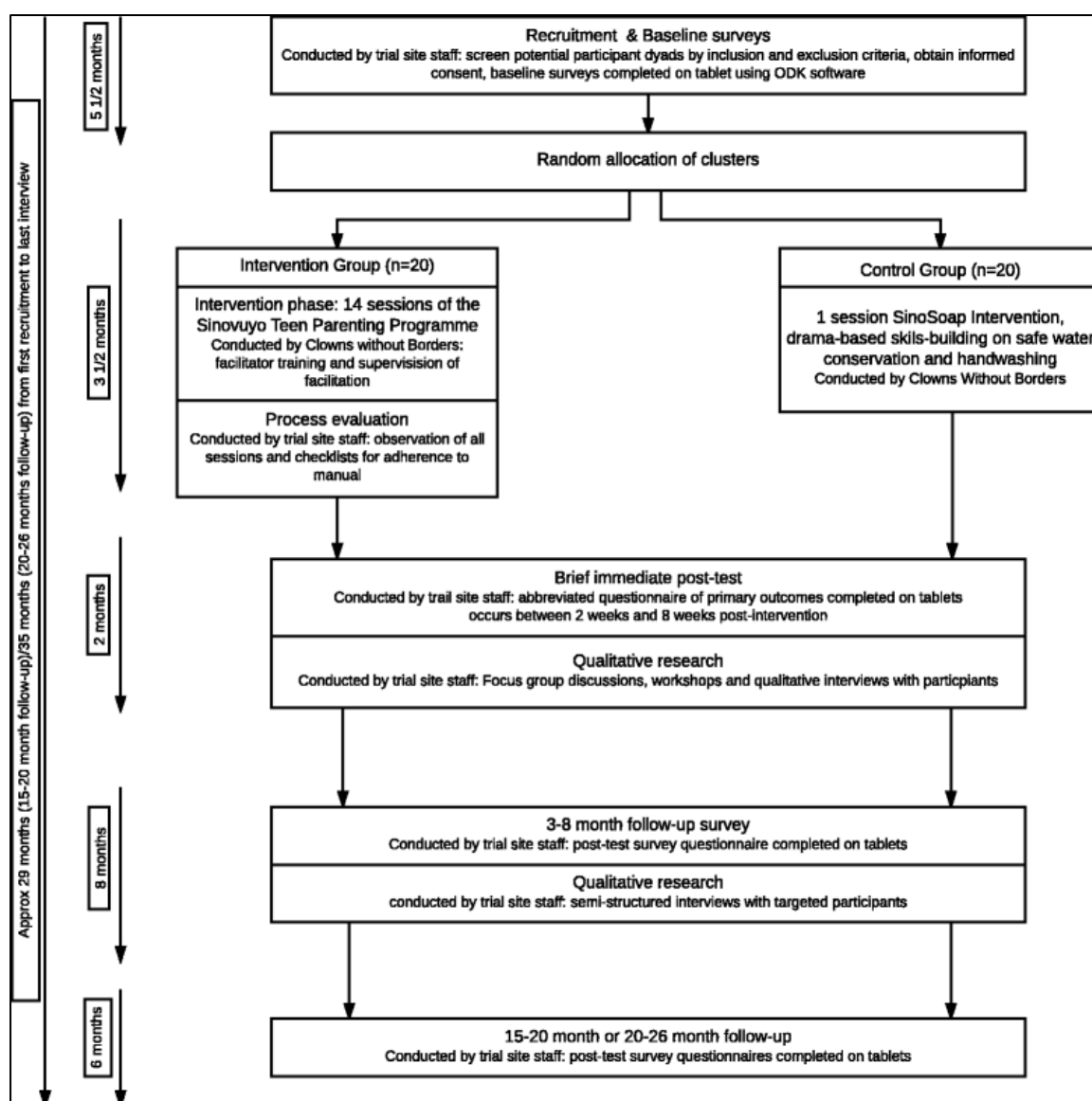
Blinding of participants and programme implementers was not possible because participants knew whether they were receiving the 14-week parenting and financial literacy programme or a once-off hygiene workshop. Blinding of research assistants was assured during baseline data collection in that the research managers did not share any information on the treatment status of study villages. However, due to close cooperation with the implementing partner organisation (*Clowns without Borders*) as well as parts of the research team involved in process evaluation, it was not possible to maintain blinding throughout the project until post-test data collection. Analyses of

primary and secondary outcomes and the economic outcomes specific to this DPhil project were carried out by the DPhil candidate and outcome assessor blinding was therefore not possible, but all data and code were made available for possible replication purposes (see *Chapter VI, 8* below). However, analyses of primary outcomes were doubled by the trial statistician who was blind to the treatment assignment and could therefore serve as an integrity test.

The timing for the trial is depicted in *Figure 12*. Recruitment and baseline surveys were carried out from March to August 2015. The intervention was implemented in the 20 treatment villages between August and November 2015. Post-test surveys were undertaken between March and July 2016. Qualitative data was collected during focus group discussions in eight treatment clusters as well as with programme facilitators in November 2015. Further, in-depth follow-up interviews with a purposive sample of 46 programme recipients were conducted between January and May 2016. A planned long-term follow-up (see *Figure 12*) had to be cancelled due to funding constraints and unforeseen disruptions in post-test data collection due to politically motivated violent protests and riots in study locations.

To increase transparency and reporting integrity, the trial was registered on 27 April 2015 in the Pan-African Clinical Trials Registry under the ID [PACTR201507001119966](#). The trial protocol was also published under the title '[A parenting programme to prevent abuse of adolescents in South Africa: study protocol for a randomised controlled trial](#)' in *Trials* on 19 July 2016. For the empirical papers of this DPhil project, the trial was further registered in the AEA Registry for randomised controlled trials under the ID AEARCTR-0002138 and a pre-analysis plan for the analysis of economic outcomes was uploaded on 11 April 2017.

Figure 12. Trial Timeline



4. Quantitative Data Collection

Data was collected at three points in time (see *Figure 12*). **Baseline** data collection (T1) was divided into two parts due to the considerable length of the full questionnaire and with the intention to build trust with participants before asking more sensitive questions on stigmatised behaviours such as abuse. A **short post-test** (T2) was conducted immediately after the programme's implementation, motivated by a strong policy demand for programme scale-up. Given that very limited time was allocated to this short post-test, questionnaires were shortened and focused on

primary outcomes only, namely child maltreatment and parenting practices. This time point is therefore not relevant for this DPhil thesis and was carried out as part of the larger project with the intention to test for potentially iatrogenic effects on primary outcomes in view of a multi-country scale-up. A **full post-test** (T3) including all study outcomes was conducted over five to nine months following the programme's implementation.

Questionnaires

Data was collected via standardised questionnaires that were administered on mobile computers (tablets) (see *Figure 13*). Participants were considered likely to have had previous exposure to such technology given that mobile phone coverage in the Eastern Cape is above 80% (Eastern Cape Socio Economic Consultative Council, 2012). Questionnaires were designed using OpenDataKit (www.opendatakit.org), an open-source, freely available software. The research team opted for computerised data collection for the following key reasons:

- 1) Confidentiality could be secured through programming password-protected log-in to all project tablets and encrypt stored data in order to ensure that participants' answers and details could not be accessed by any external person if tablets were lost or stolen.
- 2) Social desirability bias could be alleviated through programming surveys as audio- and mobile-assisted self-interviews (ACASI) so that sensitive sections of the questionnaire could be carried out without the support of an interviewer while still accommodating for possibly low levels of literacy through recording questions and response options.
- 3) Respondent fatigue could be reduced through programming visually appealing questionnaires including vignettes, little games, and quizzes that interviewers could draw on when they sensed that respondents became bored or distracted.
- 4) Data quality could be increased by programming built-in skip-patterns, reminders, and consistency checks to prevent item non-response or selection errors.

Figure 13. Audio- and Mobile-Assisted Self-Interviews



Source: Camille Wittesaele.

Questionnaires were available both in English and Xhosa and each question had been translated and back-translated (see Brislin, 1970). Interviews were conducted by local research assistants who were trained to guide participants in the use of the tablets and offered assistance where needed. Adolescents and caregivers were interviewed separately, with each individual interview lasting between 90 to 120 minutes. Respondents could take breaks at any time. Research assistants were recruited from local communities and fluent in both English and isiXhosa. They were extensively trained by the candidate and co-project managers in interview methods, seeking of informed consent, and research ethics such as confidentiality.

The measures used for the analyses are described in detail in each empirical paper (see *Chapters VII & VIII*). The full baseline questionnaire (adult version) is presented in *Appendix 11*.

5. Data Storage and Cleaning

Data was stored electronically on project tablets. The candidate was responsible for developing a system of regular data backup for increasing data safety and to protect data both from possible server failure and breach of confidentiality. Interviews from tablets were backed up daily on USB sticks as well as submitted and saved to the

online server based at the Department of Social Policy and Intervention, University of Oxford. The online server was accessible via a password that was known only to members of the research team. Once a week, all interviews conducted during the preceding week were additionally backed up on an offline server and then deleted from the tablets. Interview counts between online and offline servers were cross-checked regularly to ascertain completeness of submitted and stored data. Any queries on data were followed up weekly by the field research team. In consideration of high levels of crime and housebreakings in South Africa, USB sticks and the offline driver were kept in a fireproof safe in the project office. All other study documentation including consents forms, participant information, and field notes were kept in locked cupboards in the alarm-secured office.

Data cleaning was led by the DPhil candidate in collaboration with two other PhD students (Yulia Shenderovich and Rocio Romero Herrero) and a research assistant (Olivia O'Malley). Data was downloaded in .xml format from the online server and then copied manually into SPSS 22.0. A detailed codebook was created, specifying each variable label and response codes, corresponding questions, composite scales, and reference to previous studies that had used the same measures. Data from all four time points (see *Chapter VI, 4* above) was merged based on manually assigned Family IDs that also served to match caregivers and adolescents from within the same household. Descriptive statistics were computed for all variables to check for outliers and possible inconsistencies. Edits to the data – such as replacing implausible answers with a missing value – were only made in very few cases after consulting the principal investigator and following up with in-field research assistants. This procedure corresponds to evidence from an experimental trial finding that the most accurate data was produced by researchers with extensive field experience and that most accurate data was generated when edits to the survey data were informed by fieldworkers (Sana & Weinreb, 2008). All data was fully anonymised for analysis. No identifiable information related to individuals was or will be reported in publications and presentations. Data will be stored in an anonymised version for a period of five years after the end of data collection.

6. Qualitative Data Collection

Qualitative data was collected with the intention to complement and contextualise findings from quantitative analyses. The qualitative component of the research study was undertaken in partnership with the UNICEF Office of Research – Innocenti, and led by Dr. Jenny Doubt. For this purpose, 20 focus group discussions (FGDs) were conducted, including a) two piloting FGDs in control villages for training purposes (separate FGDs for caregivers and adolescents), b) 16 FGDs in intervention villages (8 FGDs with caregivers and 8 FGDs with adolescents), c) one FGD with programme facilitators, and d) one FGD with process evaluation research assistants (see *Chapter VI, 8* below). Each focus group was held in isiXhosa by two trained moderators and included a mixture of interactive discussions and creative activities such as drawing and handicraft with the intention of decreasing respondent fatigue. Data was recorded by three trained note takers. The research team adopted a rotating system where research assistants ran FGDs for one full day, followed by one day in the office for the purposes of supervision meetings and cleaning up notes.

Discussion guides (see *Appendix 7*) were developed by the candidate and two other researchers, covering themes of programme implementation, participant attendance, and intra-household changes in behaviours as a result of attending the programme. The candidate also oversaw training of research assistants for the focus group discussions and their implementation.

In addition to focus groups, semi-structured in-depth interviews were conducted with 42 participants who were selected via purposive sampling to achieve a balance on aspects of rurality, gender, age, participation, and attendance. Interviews were conducted in participants' homes and lasted around 45 minutes. All interviews were held in isiXhosa, recorded (with the exception of two adolescents who did not consent to be recorded), translated, and transcribed. Semi-structured interview guides were piloted and revised for clarity and focus. Interview guides included open-ended questions which encouraged participants to reflect upon the changes that they and their families had experienced – or not experienced – as a result of the

intervention. Sensitive probes were used to elicit underlying causes and processes of changes.

7. Process Evaluation

Randomised controlled trials are conventionally referred to as the ‘gold standard’ research design that allows for a credible counterfactual to the evaluated intervention. However, details and quality of intervention delivery and implementation process are often disregarded (Pawson & Tilley, 1997). Process evaluation has been developed as a methodology for studying complex social interventions. It collects information about the functioning of an intervention, its implementation, and its context (Craig et al., 2008). Therefore, the *Sinovuyo Teen* study featured a process evaluation component that collected data on the following aspects: a) attendance of sessions (i.e. *dose* of sessions received), b) quality of participation in the sessions, and c) fidelity to the programme manual. Attendance registers were administered by the implementing partner *Clowns without Borders* and cross-checked with session records from process evaluation research assistants. Data on participant engagement and implementer fidelity was collected based on independent observations from two trained research assistants in each session.

Although the candidate had initially planned to examine treatment-on-the-treated effects contingent on session attendance, this was somewhat masked by the fact that participants who had missed a session were visited in their homes where facilitators delivered a condensed version of the key session content. Session exposure and dose were therefore increased to almost 100%. *Appendix 6* presents results for the pre-specified per-protocol analyses, but no clear dose-response effect shows, presumably because of the described home visits.

Additional qualitative data collection for the economic component of the programme was integrated into the process evaluation tool (see *Appendix 8*). Two observers took detailed notes on the group discussions during each of the economic strengthening sessions (20 sessions per week, i.e. 40 sessions in total). These

observations were discussed with research assistants in daily debriefing sessions following each session, supervised by the candidate and fieldwork coordinators. This data was not analysed formally but served as important contextual information on experienced challenges and barriers to saving and planned budgeting and highlighted the need for diverse strategies for managing household finances.

8. Data Analysis and Data Transparency

The data analysis strategies are described in more detail in the respective empirical papers of this thesis (*Chapters VII & VIII*) as well as a detailed pre-analysis plan for *DPhil Paper 2* (See *Appendix 5*). Acknowledging that data and analysis credibility can be enhanced by increasing research transparency as well as reproducibility and replicability of analyses and findings (Duvendack, Palmer-Jones & Reed, 2017; Miguel et al., 2014), the candidate has made datasets, R Codes, and Stata Dofiles publicly accessible via *Figshare*. Access information is provided below in *Table 8*. A noteworthy limitation is that collected qualitative data has not yet been published given that some qualitative analyses are still ongoing and that access rights to that data are held by our research collaborator UNICEF Innocenti.

Table 8. List of Replication Files

Description of File	Access Link
Systematic Review	
Excel files containing standardised effect sizes & study/programme information (categorised by outcome type) (<i>DPhil Paper 1</i>)	https://doi.org/10.6084/m9.figshare.4668139
R Code for robust variance estimation meta-analysis and - regression (<i>DPhil Paper 1</i>)	https://doi.org/10.6084/m9.figshare.4668130
Randomised Controlled Trial	
RCT Dataset (excluding participant identifying information and variables not used in thesis analyses) (<i>DPhil Paper 2</i>)	https://doi.org/10.6084/m9.figshare.6886721
Stata Dofile documenting balance checks, main trial analyses (ITT programme effects), heterogeneity analyses and robustness checks (<i>DPhil Paper 2</i>)	https://doi.org/10.6084/m9.figshare.6886754

R Code used for false discovery rate adjustment (main effects and heterogeneity analyses) (<i>DPhil Paper 2</i>)	https://doi.org/10.6084/m9.figshare.6886772
R Code documenting mediation analyses and sensitivity checks (<i>DPhil Paper 3</i>)	https://doi.org/10.6084/m9.figshare.6886778
<i>R Code documenting the final structural equation model of programme mechanisms (DPhil Paper 2)</i>	https://doi.org/10.6084/m9.figshare.6886802

9. Ethical Considerations

Ethical approval was obtained from the Universities of Oxford (SSD/CUREC2/11-40) and Cape Town (PSY2013-46) and the South African Eastern Cape Provincial Departments of Social Development and Education. Ethical guidelines of this study draw on key research guidelines and legislation in South Africa, including the Department of Health Research Ethics Guidelines (Department of Health, 2004) and the Department of Health Guidelines for Good Clinical Practice in South Africa (Department of Health, 2006). Ethics approval letters can be found in *Appendix 9*.

Informed Consent

Participation in the study was voluntary. Information about the study was provided by local research assistants during home visits. Consent and information forms were distributed in English and in Xhosa. In the context of low levels of literacy in the Eastern Cape, research assistants were trained in reading consent forms to participants to ensure that consent was fully informed. Consent forms contained information about 1) the right to decline participation or withdraw participation at any point in time, 2) confidentiality procedures, 3) purposes of the research study and intervention structure, and 4) contact details of project staff (see *Appendix 10*). Participants were required to give both verbal and written consent. If participants were illiterate, they gave verbal consent and drew a cross on the signature line. For all adolescents participating in the study, consent was required from legal guardians. Adolescents or adults who were deemed incapable of giving informed consent (for example due to severe mental impairment) were not considered eligible for participation in the study.

Confidentiality

All data collected was and will be treated as confidential. Research assistants were trained to ensure that interviews were held in a private and confidential environment. If this was impossible in participants' homes, interviews were held outside, in a nearby community location, or in the project car. To ensure anonymity, responses were not linked to participants' names. Highly confidential data such as the respondent's HIV status was stored in sealed envelopes, separately from the rest of the questionnaire.

However, the guiding principle of confidentiality became problematic in cases where participants disclosed an acute and serious risk of harm. This sometimes presented an ethical trade-off between the moral obligation of beneficence – specifying that intervening to protect research participants is “[...] *the just thing to do*” (Fisher et al., 2009) – and the promise of confidentiality and participants' autonomy. The dilemma was reinforced in a context where the adequacy of protection measures and social service structure cannot be ensured (Devries et al., 2015). However, with regards to the research project in question, young people who disclosed violence victimisation or other serious risks, did actively ask for help. The research team therefore undertook a “duty of care” and “duty of rescue” (see Devries et al., 2015; Merritt, Taylor & Mullany, 2010) by putting a referral system into place. In so doing, we also followed the mandatory reporting guidelines of South Africa (Strode & Slack, 2012).

Referrals and Protection

If research assistants identified an urgent need for a participant to access more extensive support, such as consulting a counsellor or attending a clinic, referrals were made by the project with the participant's consent. Instances were discussed on a case-by-case basis with the project managers (including the DPhil candidate) and also the principal investigator. The research team had initially identified 33 adolescents at risk with need for follow-up through a pre-programmed algorithm based on questionnaire items. Cases included (1) adolescents who had been raped within the past few days and had to be referred immediately to a health facility in order to receive post-exposure prophylaxis for prevention of HIV infection, (2) adolescents who disclosed severe physical, emotional or sexual abuse by a household member or

someone in their community (in two cases, perpetrators were older children in school), and (3) adolescents who reported recent suicide attempts or acute suicidality. The research team followed-up with all 33 adolescents, 21 adolescents were then referred to social services or clinics. For the remaining 12 adolescents, the research team judged after a first visit that a referral was not required.

Compensation

The study did not provide financial rewards for participation. Monetary incentives are considered as potentially problematic when targeting highly impoverished and deprived populations as they can exert a coercive appeal (Singer & Bossarte 2006). Instead, participants received a small participant pack for baseline interviews (including snacks, toiletries, stationary, washing powder, and a printed 'selfie' photo of the teenager) in appreciation of their participation. At both post-test data collection points, each participating family was given a food parcel worth 200.00 ZAR²⁸ for control villages and 150.00 ZAR²⁹ for intervention villages. In focus group discussions, food parcels were also distributed in addition to a warm shared meal prior to the discussion.

10. Fieldwork Challenges

Infrastructure

Some of the study clusters were located in remote areas which were difficult to access due to informal construction and poor road quality. Project vehicles were purposefully chosen for their robustness to off-road travel. Cars were further equipped with toeing ropes after two incidents of project cars stuck in mud.

In 2015, South Africa experienced high levels of interruptions in electricity supply. At the height of this "load shedding" phase, electricity was cut off for two hours per day and up to eight hours on weekends. The team was equipped with wireless adapters that could secure access to internet during cut-off times. However, bandwidth of these dongles was not sufficient for submitting completed questionnaires to the online

²⁸ Approx. 15 USD.

²⁹ Approx. 11 USD.

server, which required daily manual backups of data. Despite an official schedule, load shedding often occurred at random times, thus making it difficult for the team to plan accordingly. Paper-based questionnaires were kept as backups in case the tablets could not be charged sufficiently due to constrained electricity access but were only very rarely used to ensure consistency of data and to safeguard confidentiality.

Violence and Crime

The research project was located in a setting severely affected by crime and high levels of community violence. The Eastern Cape is the province with the highest homicide rates of the country: 55.9 people are killed per 100,000 a year, compared to 0.92 per 100,000 in the United Kingdom (Statistics South Africa, 2017a). For example, more than 50% of study participants (both adults and adolescents) indicated having witnessed a physical fight in their neighbourhood in the previous month, 20% of adults and 5% of adolescents reported having been mugged in the previous month, and 30% of adults and 10% of adolescents listed experiences of physical or emotional harm in the previous month. Several precautions were taken to ensure the safety of research staff. Data collection was only carried out during daylight, and working hours were adapted so that all staff could return to their homes before sunset. While driving, project cars were locked at all times and the team ensured that valuables and electronic devices such as mobile tablets were never visibly displayed. Furthermore, data collection was paused on every weekend following 'grant day'³⁰, considering that these were usually marked by elevated levels of crime and violence, often in result of increased drug and alcohol consumption. Local research assistants were consulted to help identify locations, neighbourhoods, and working hours that were deemed too unsafe. The candidate attended a fieldwork safety training course offered through the University of Oxford prior to her first field visit. She was then responsible for facilitating and leading in-field safety consultations with incoming fieldwork coordinators and issuing a warning letter and incident report in one occasion where an obligatory safety agreement had been breached.

³⁰'Grant day' is referred to as the day on which monthly welfare grants are paid out to beneficiaries. The day is typically marked by long queues in front of banks, post offices, and supermarkets.

Despite the above precautions, local research staff were at very high risk of violence victimisation in their homes and communities. Several violent incidents were reported to the project managers (including the candidate) who then provided support following consultation with the principal investigator and an Oxford-based research officer. In one case of severe and life-threatening domestic abuse of a female staff member, the candidate organised a police escort and emergency shelter for the woman and her children. In another case, a person from within the close social network of research staff had been burnt alive in a homophobically motivated murder. In response, the research team brought in a trained psychologist to facilitate a group counselling session and trauma debriefing with the research team. The candidate was also directly exposed to a non-violent criminal incident in which six project tablets and personal belongings were stolen from the project vehicle while stopping to drop off the research team at a bus stop, resulting in partial loss of data collected in that week.

In addition to crime-related violence, there was significant politically-motivated violence in the run-up to provincial elections during post-test data collection. Some study locations could not be accessed due to violent riots and roadblocks (see *Figure 14*). To protect research staff during data collection, project managers and research assistants communicated closely with community leaders and ward counsellors to access reliable and timely information on planned protests. When warnings were received, all data collection was immediately paused until community contacts and local research staff assessed that it was safe to resume fieldwork.

Figure 14. Protests in Study Site



Source: local research assistant (King William's Town, 2015)

Road Safety

South Africa has one of the world's highest rates of road deaths and accidents. In 2010-11 (most recent data), 13,800 road fatalities were registered, a rate of 25 per 100,000 residents (World Health Organisation, 2015). The research team was impacted by this elevated risk as all fieldwork activities involved extensive driving between the research office and study locations. The following safety measures were therefore adopted:

- (1) All vehicles and drivers were insured, including medical insurances for drivers.
- (2) Project vehicles were painted to make them easily identifiable and decrease potential resell value, thus making them less desirable for hijacking (see *Figure 15*).
- (3) Incoming international research staff received several obligatory driving lessons before transporting team members.
- (4) Drivers were trained in defensive driving techniques.

The research team experienced one major car accident, caused by another driver who was under the influence of alcohol and collided at full speed with a project car transporting five team members. The candidate was present at the accident site, reported the incident to the police, and helped refer all five concerned staff members to receive immediate medical examination. The accident resulted in no fatalities, but one severe head injury that required an emergency MRI due to suspected internal bleedings. In addition, there was concern over HIV exposure through open wounds, and all research staff who had been present at the accident site (including the candidate) received HIV/AIDS counselling and (optional) testing and when relevant, post-exposure prophylaxis treatment.

Figure 15. Data Collection Vehicles and Study Team



Source: Lucie Cluver

Mental Health

Exposure to emotional distress and trauma was an inherent part of fieldwork. The research team followed a protocol which specified the provision of support to study participants who were at immediate risk of serious harm, for instance those disclosing cases of sexual abuse, severe neglect, or acute suicidality. However, social services in the study setting were highly under-resourced and it therefore often proved difficult to identify services and case workers that were able to provide appropriate and timely support to children at risk. The limited capacity to help often put a considerable emotional burden on the research team, particularly onto the person who had

personally interviewed the respective participant (see also Devries et al., 2015). Research assistants had been recruited based on character skills such as empathy, compassion, and sensitivity. Building on these skills, our interviewers excelled in gaining participants' trust and encouraging disclosures of experienced harm and abuse. However, the same character skills also made our interviewers particularly susceptible to experiencing vicarious trauma, secondary traumatic stress, and compassion fatigue (Knight, 2013; Newell, Nelson-Gardell & MacNeil, 2010; Beck, 2011).

In response, project managers (including the candidate) organised bimonthly group counselling sessions with a trained psychologist. The management team also introduced monthly one-to-one debriefings with all team members. During these meetings, each team member was offered individual counselling sessions with psychologists specialising in trauma. These could be attended during working hours and were accommodated by the project budget. Information leaflets on mental health challenges, principles of health care, and accessing professional help were visibly displayed in the office with the intention to normalise and de-stigmatise psychological distress (see *Figure 16*).

Upon return to Oxford, I attended two counselling sessions offered through the University's Counselling Service and participated in a vicarious trauma workshop. I also actively reached out to colleagues who had shared similar experiences and could therefore provide emotional support and give advice on self-care and mindfulness practices.

Figure 16. Mental Health Information



Some of the research limitations and challenges flagged here will be re-visited in *Chapter IX* of this thesis.

VII. Paper 2: Household Economic Strengthening through Financial and Psychosocial Programming: Evidence from a Field Experiment in South Africa

This is the first empirical paper of the DPhil thesis. It reports the key findings from a randomised controlled trial of a combined parenting and financial literacy programme with regards to financial behaviour and financial welfare. This paper has been published in the *Journal of Development Economics*.

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Statement of Authorship

I confirm that I completed the majority of the work in this study. I conceptualised and led the assessment of the economic component of the Sinovuyo Teen study, designed its measures, and planned the analysis. I conducted all analyses reported in here and drafted the first version of this article. Sebastian Vollmer contributed to the interpretation of quantitative findings and suggested some analysis refinements. Jenny Doubt led the qualitative data collection and contributed to the interpretation of the qualitative data presented. Lucie Cluver is the Principal Investigator of the study and Franziska Meinck the Senior fieldwork manager. They have contributed to both the planning and evaluation of the economic intervention component and interpretation of findings.

Abstract

Using data from a randomised 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. Based on self-report measures, we document significant improvements in financial behaviours, including higher saving and lower borrowing rates. We also see wider implications for household economic welfare, demonstrated by reduced self-reported financial distress, better resilience to economic shocks, and a greater capacity to securing basic needs. We argue that programme impact may run through three effect channels, namely improved self-efficacy, higher family and community social support, and greater optimism. Overall, our findings suggest that “hybrid” programme curricula that offer combinations of financial and psychosocial components can add value to stand-alone financial literacy training.

1. Introduction

Living in poverty is characterised by 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. Therefore, saving and careful financial planning become important means for smoothing consumption, increasing resilience to income shocks, and increasing long-term household economic welfare (Hulme et al., 2015; Dupas & Robinson, 2013; Rutherford & Arora, 2009; Collins et al., 2009).

Consequently, saving promotion and financial literacy programmes have gained popularity in international development. A growing body of literature has been dedicated to evaluating their effectiveness. A range of randomised controlled trials (RCTs) have documented promising findings, particularly on realised savings rates but also on broader economic welfare (Steinert et al., 2018). This success, however, has mainly been observed for product-based interventions that give participants access to formal bank accounts or provide sophisticated commitment devices (e.g. Brune et al., 2015; Dupas & Robinson, 2013; Prina, 2013; Pande et al., 2012; Ashraf

et al., 2006). In contrast, pure financial literacy programmes have generally proven far less beneficial, with null effects across several meta-analyses and particularly in low-income populations (Steinert et al., 2018; Kaiser & Menkhoff, 2017; Fernandes et al., 2014; O'Prey & Shephard, 2014). Yet, these programmes might be the most feasible to implement in resource-limited environments with poor financial infrastructure.

We therefore set out to examine how innovations in programme design may increase the effectiveness of financial literacy programmes. Research to date has largely focused on external barriers to programme effectiveness, including alienation from formal banking through prohibitive fees and regulations, lack of safe storage, and unreliability of (semi-) formal financial institutions. By contrast, we shift the focus to an integrative psychosocial perspective, echoing more recent research. We contend that programme effectiveness may be partly driven by psychological factors such as future aspirations, self-esteem, and self-efficacy as well as social factors such as family support and inter-personal trust (see Heller et al., 2017; Blattman et al., 2017; Bernard, Dercon, Orkin & Taffesse, 2014; Kautz et al., 2014; Doi, McKenzie & Zia, 2014; Alan, Boneva & Ertac, 2016; Mani et al., 2013). Based on these considerations, we hypothesised that programmes may benefit from 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 programme that was incorporated into a wider parenting intervention. The cluster randomised control trial enrolled 40 villages with 552 families in rural South Africa. 20 villages were randomly selected to participate in a 14-week-long financial literacy and parenting programme (treatment group). Families in the remaining twenty villages received a one-day hygiene intervention and served as the control group. Our analysis utilises 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 behaviours among participants in the treatment group, including significant increases in self-reported past-month saving and reductions in self-reported borrowing. We also find substantially higher levels of financial self-efficacy, but pro-

savings attitudes, which were already high at the study's outset, are not notably altered post-intervention.

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

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

Our study contributes to a growing body of behavioural literature that explores linkages between psychological factors and poverty alleviation strategies (Ghosal et al., 2015; Glewwe, Ross & Wydick, 2014; Bertrand et al., 2004; Bénabou & Tirole, 2003). The design of our intervention has parallels to some previous programmes with integrative curricula. Among these are (1) the New Generation project in Burundi, which augments a parenting programme with the establishment of village-based savings groups (see Annan et al., 2013), (2) the Suubi-Maka ("Family Hope") programme in Uganda, which combines therapeutic counselling with asset-based economic empowerment (Ssewamala, Han & Neilands, 2009); (3) the Sustainable Transformation of Youth in Liberia (STYL) programme which offers a combination of cognitive behavioural therapy (CBT) and unconditional cash grants (Blattman et al., 2017); and programmes in high-income countries such as (4) the Becoming a Man (BAM) programme for economically disadvantaged youth in Chicago that

features standard CBT elements, skills building for anger control and cognitive thought replacement, and financial literacy training (Heller et al., 2017). Similar to our intervention, these four programmes have adopted a holistic approach by delivering ‘packages’ of psychosocial and economic training components. Echoing evidence presented in our paper, they also document significant improvements across a range of economically relevant outcomes, including increases in income (Blattman et al., 2017), household savings and school attendance rates (Ssewamala et al., 2009), and high school graduation rates (Heller et al., 2017).

The remainder of this paper proceeds as follows: The next section describes the sample, experimental design, and data. The main results are presented and discussed in Section 3. Section 4 elucidates possible mechanisms of change by drawing on insights from additional quantitative as well as qualitative data, before the conclusions set out in Section 5.

2. Experimental Design and Data Collection

2.1 Study Setting

The study took place in rural and peri-urban settlements within a two-hour driving radius of King William’s Town in the Eastern Cape of South Africa, the province with the lowest GDP of the country. According to the latest census (2011), the average annual household income in the province is \$362³¹ – the lowest in the country – and unemployment rates are second highest at 37% (Statistics South Africa, 2012). Deprivation in the province still reflects spatial policies of the Apartheid era: deficient infrastructural and economic development as well as poor service delivery persist in the former “homeland” areas of the Transkei and Ciskei (Noble & Wrights, 2013; Klasen, 1997). Given this persisting social inequality, the South African government issued the Social Assistance Act in 2004, mandating the South African Social Security Agency (SASSA) to administer seven different welfare grants for families most in need. The coverage of social assistance has increased considerably

³¹ Equal to 4300.00 ZAR.

over the past decade and now reaches almost a third of South Africa's population (SASSA, 2016). Previous studies have highlighted beneficial impacts of South Africa's cash transfers, including reductions in HIV risk (Cluver et al., 2013), increases in school enrolment (Case, Hosegood & Lund, 2005), and improved nutritional intake (Duflo, 2000). However, poverty remains high, with almost 50% of South Africans falling below the national inflation-adjusted poverty line and 13% reporting acute risk of hunger (Statistics South Africa, 2017a).

Despite the country's sophisticated and privatised banking system, the low-income population of the country is still largely dependent on informal financial instruments such as savings groups (Collins & Morduch, 2008; Ardington et al., 2005). Although mobile banking technology has the potential to overcome cost and access barriers, as demonstrated in Kenya (Suri & Jack, 2016), uptake has been very low in South Africa, mainly due to high levels of mistrust (Brown, Cajee, Davies & Stroebel, 2003). Further, access to formal credit markets is largely constrained for poor segments of the population who, instead, commonly resort to informal moneylenders ("loansharks").

2.2 Sampling

The sample of this study consists of adolescents (aged between 10-18 years) and the adult household member identified as their primary caregiver.³² The final sample size was 552 households.³³ Recruitment was done through purposive sampling, aiming to enrol designated at-risk families who had experienced intra-household conflict and economic hardship. Families were mainly identified through door-to-door risk screenings conducted by a trained local research team. Some families were recruited through referrals from local Departments of Social

³²Adults and teens had to spend a minimum of four nights per week in the same dwelling to be eligible for this study. Primary caregivers were defined as the person primarily responsible for the day-to-day care and support of the children in the house and could include one of the biological parents of the child, another family member such as an aunt/grandparent, or a non-relative.

³³The sample size was based on power calculations implemented in Optimal Design Software (Raudenbush et al., 2011), indicating that 40 equal clusters with an average of 12 families per cluster were needed for a minimum detectable effect size of a standardised mean difference of 0.36 and desired power of 0.80 with two-tailed $p < 0.05$. An intra-cluster correlation coefficient (ICC) of 0.08 was assumed for the power calculation, informed by ICC values ranging from 0.00 to 0.15 in the pilot study. To account for the potential attrition rate, the trial oversampled by 10% of required participants.

Development and Education, local community-based social workers, schools, and village chieftains. Informed consent to participate in the study was sought during home visits when both the primary caregiver and the adolescent were enrolled into the study. If potential participants had severe learning disabilities and therefore were unable to give informed consent, they were not included in the study for ethical reasons. The study did not provide any monetary incentives for participation but provided small food parcels.

2.3 The Intervention: The Sinovuyo Teen Program

The programme, named *Sinovuyo Teen* (translated as ‘we have happiness’ in vernacular isiXhosa), was developed and implemented in collaboration with *UNICEF South Africa* and the *World Health Organization*. The programme design was iteratively tested and adapted over three years to ensure cultural and contextual adequacy (Cluver et al. 2016a, 2016b, 2016c). The programme curriculum was delivered over 14 consecutive weeks and has been designed to include a range of components to address psychological and social factors (delivered in 12 sessions), in addition to conventional budgeting and saving training (delivered in two sessions). Hence, session content was more holistic than in a standard financial literacy programme. The programme manuals are freely accessible via the World Health Organization under the Creative Commons License.³⁴

Psychosocial programme component

Key components of the 12 psychosocial sessions were focused on improving parent-child relationships, family cohesion and harmony, including the promotion of non-violent discipline, spending time together, socio-emotional learning, and practicing specifically labelled praise. Further session components comprised anger and aggression management, coping with stress, practicing joint problem solving, and integrating rules and routines in the household and day-to-day family life.

³⁴ http://www.who.int/violence_injury_prevention/violence/child/PLH-manuals/en/

Apart from leveraging family reinforcement, the programme was delivered in a group setting, with the intention of capitalising on the role of peers and their influence on a person's financial and other behaviours (Duflo & Saez, 2000). At the programme's outset, participants were paired up with a programme partner from the same village (a "buddy") and encouraged to meet regularly during the week and discuss their challenges at home. Consequently, peer pressure and social learning cascades could potentially increase saving discipline and prioritisation of essential expenditures (Fiorill, Potok & Wright, 2014; World Development Report, 2015).

Economic Component

Economic content was comprised of the following three core components:

- (1) *Motivating participants to save* through a short play revolving around common challenges such as "making it through the month" with grant money, coping with unforeseen emergencies, and preparing for major life cycle events (e.g. circumcision school³⁵ or high school graduation). Characters in the plays were intentionally placed into settings and conditions similar to those of participants in order to ensure that participants could relate easily with the presented narratives of economic success.
- (2) *Teaching skills on budgeting and saving* through a visual budgeting exercise designed to prompt participants on how to most effectively use available resources and to carefully consider possible income shocks.³⁶ Further, the programme 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, and in a formal bank account.
- (3) *Encouraging mental commitments to saving* by defining saving goals for their families and make saving plans based on explicit commitments. Plans were

³⁵ Circumcision or initiation school refers to an initiation rite that is practiced in Xhosa culture, with the intention to prepare boys for the responsibilities of manhood. Initiation schools often last for several weeks during which a group of male initiates go to a forest or a camp for the circumcision ceremony, followed by a phase of seclusion.

³⁶For the purpose of this exercise, participants were given a fictional monthly budget with which they had to allocate key areas of monthly expenses, decide which expense categories to prioritize over others, and practice re-arranging the budget in response to an economic shock scenario. The exercise was designed to be visual and tactile and reduce cognitive load rather than rely on higher order numeracy and literacy (Mason, Cooper & Wilks, 2015; Paas, Renkl & Sweller, 2003).

written down and presented to the whole group. In the following weeks of the programme, homework practice discussions gave participants room for sharing successes and challenges in realising their saving goals.

The programme was held in community locations such as town halls or schools. Sessions were delivered by trained community members, auxiliary social workers, and local lay workers who had taken a one-week training course and attended weekly supervision meetings during implementation. Sessions were held once a week for 12-16 caregiver-adolescent pairs per study cluster. In four sessions, teens and caregivers were split into separate groups to allow for improved confidentiality and sensitive discussions. The remaining ten sessions were jointly attended. If participants were unable to attend sessions—for example, due to illness or social obligations like funerals or care duties—facilitators delivered a condensed version of the session in participants' homes. Therefore, programme compliance was very high: Overall, caregivers received an average of 12.6 out of 14 sessions (90%) and adolescents 12.8 out of 14 (91%). A third of these sessions had been delivered in home visits (see Shenderovich et al., forthcoming).

2.4 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* programme (treatment group) or a one-day hygiene intervention focused on skills-building for safe water conservation and handwashing (control group). Randomisation was done for clusters within the two strata rural vs. peri-urban location in a 1:1 ratio. The trial is registered in the American Economic Association's registry for randomised controlled trials (ID AEARCTR-0002138) and in the Pan-African Clinical Trial Registry (ID PACTR201507001119966) (see *Appendix 5* for the pre-analysis plan).³⁷

³⁷A detailed trial protocol has further been published under the title 'A parenting programme to prevent abuse of adolescents in South Africa: study protocol for a randomised controlled trial' in *Trials* (see Cluver et al. 2016b).

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

Lastly, qualitative data was collected in collaboration with UNICEF with the intention of complementing our quantitative findings and elucidating possible mechanisms of change. For this purpose, focus group discussions were held in November 2015 in eight treatment locations, with two discussion rounds for adults and adolescents, separately. Each discussion thus included the same group that participated in the weekly programme sessions, ranging from between 12-16 adults and adolescents, respectively. In addition, between January and May 2016, we conducted in-depth semi-structured follow-up interviews with 42 programme recipients (50% adults and 50% adolescents) who were purposefully selected to achieve a balance of rurality, gender, age and session attendance and engagement. Interview and discussion guides included open-ended questions probing participants to reflect upon any changes (positive or negative) that they and their families had experienced as a result of the intervention and to identify the key factors underlying these changes (e.g. new skills, more optimism, etc.). Interviews and discussions were transcribed and translated to English.

2.5 Data

Baseline and post-test data were collected via standardised questionnaires administered on tablets. Surveys were designed as audio- and mobile-assisted self-interviews in order to maximise privacy and confidentiality of the interview and reduce possible social desirability bias. Questionnaires were available in both

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

The questionnaire captured basic sociodemographic information, including household composition, education, employment, food security, and asset wealth. Further, we collected information on self-reported financial behaviours, including actual *saving* and *borrowing*, both from moneylenders and family members or 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").³⁸ *Financial self-efficacy* was assessed via two items drawn from Lown (2011) and adapted to the context of this study. Items asked respondents about participants' confidence level of smoothing consumption over the month and effectively planning a monthly budget. Response options ranged from 1 ("not confident at all") to 10 ("very confident").

Additional outcomes were broader indicators of household economic wellbeing. Arguably, these outcomes can capture more distal consequences of changes in financial behavior and management. First, we included a composite measure of self-reported *financial distress* to capture cash and consumption shortfalls in the

³⁸Piloting of the 10-point Likert scales suggested that respondents had difficulty understanding the conceptualization of the rating scale. In response, the scale was visualized in the form of a color scheme whereby red was used to reflect negative and green to reflect positive ratings. A second piloting phase showed clear improvements in participants' understanding and use of the scale.

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

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

2.6 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 favourably to previous studies. To test whether attrition was differential, we first regressed the attrition dummy on the treatment dummy, showing that attrition was not

significantly associated with treatment status for both adults ($p=0.46$) and adolescents ($p=0.54$) (see *Table A2*).

2.7 Estimation Strategy

Randomisation of the treatment assignment allows us to establish a credible counterfactual condition and therefore allows for a causal estimate of the programme's 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:

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

where T_i is an indicator variable for treatment arm equal to 1 if individual i has been assigned to receive the programme, $Y_{i(t-1)}$ is the lagged outcome (at baseline), S_i is 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 present three different estimation strategies for equation (1), namely (i) excluding the baseline control of the outcome $Y_{i(t-1)}$, (ii) including $Y_{i(t-1)}$, and (iii) including additional individual controls. We consider the ANCOVA specifications (ii and iii) as superior, given that baseline-adjusted analysis of covariance is robust to possible baseline imbalances between study arms that may occur by chance (see Vickers & Altman, 2001). Furthermore, by conditioning on the baseline level of outcomes, we can also increase statistical power (see McKenzie, 2012). For binary and ordinal outcomes, we estimate linear probability models in the main analyses and report probit models (or ordered probit models) in supplementary analyses (see *Table A7*). Standard errors are clustered by the unit of randomisation: the village. Our coefficient of interest is β , the intent to treat (ITT) effect.

Given that we are testing nine different outcomes, the probability of falsely rejecting at least one null hypothesis is increased (see Camfield, Duvendack & Palmer-Jones, 2014; Anderson, 2008). Therefore, we control for the potential false discovery rate

by correcting standard errors for multiple testing (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). We present sharpened q-values in addition to naïve p-values for all main results.

Lastly, we explore heterogeneity in treatment effects using the following specification:

$$Y_i = \alpha + \beta T_i + \theta \text{TRAIT}'_i \times T_i + \gamma Y_{i(t-1)} + \delta S_i + \lambda X'_i + \omega_{ij}, \quad (2)$$

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 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 cluster standard errors in this type of specification at the village level and apply multiple testing corrections. We estimate equation (2) for all traits specified in our pre-analysis plan (see *Appendix 5*). Below, we focus on traits that were associated with suggestive differential treatment effects.

3. Results

3.1 Summary Statistics and Orthogonality Verification of Randomisation

We document baseline characteristics of adults and adolescents in *Table 9*. Since our recruitment was conditioned on primary caregiving for children living in the household, our sample is heavily female, representing over 90% of adult study participants. Only about a third of these participants were married. There was more variation in gender for adolescent participants, 42% of whom were female. At the time of programme implementation, 95% of adolescents were attending school. The HIV status of participants was determined using a combination of self-report and

the verbal autopsy checklist,³⁹ and findings suggested a high HIV prevalence of 25% among both adolescents and adults.

The study sample is characterised by high poverty levels, unemployment rates, and dependency on social assistance, thus reflecting the prevailing economic state of the Eastern Cape. Accordingly, 72% of households in our study sample have no income from formal full- or part-time employment.

The median monthly per capita income from welfare grants amounted to 350.00 ZAR (equivalent to \$29), and approximately 10% of households had received a government-subsidised housing assistance.⁴⁰ Most families had access to electricity, but only roughly one third had water taps inside their homes. Similarly, about one third of the sample lived in informal settlements such as shacks. Families were fairly food-insecure: on average, adults reported 2.9 “hungry” days per week, and adolescents reported 1.8 “hungry” days, suggesting that caregivers prioritised children’s nutrition over their own (see Blackden, Canagarajah, Klasen & Lawson, 2007; Klasen, 1996).

³⁹ This approach classifies an individual as HIV-positive (or AIDS-ill) if (i) they self-identify as HIV-positive, or (ii) they display three or more AIDS-related symptoms from the adapted verbal autopsy (VA) checklist, including weight loss, wasting, jaundice, shingles or rash, abscesses or sores, oral candidiasis, respiratory tract infections, persistent diarrhoea, vaginal tumours, and tuberculosis in the last two years (see Lopman et al. 2006).

⁴⁰ Housing assistance is part of the Reconstruction and Development Programme (RDP) that was adopted by the African National Congress in 1994 with the intention of addressing shortages in social service and infrastructure provision, including state subsidies for housing, clean water, and electrification.

Table 9. Sample Characteristics and Balance Checks

	<u>Adult Report</u>				<u>Adolescent Report</u>			
	Sample	Control	Treatment	Equality of means p-value	Sample	Control	Treatment	Equality of Means p-value
Observations	552	282	270		558	278	270	
Panel A: Sociodemographic Characteristics								
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 (formal & informal)/ Attending school	0.06 (0.01)	0.07 (0.02)	0.05 (0.02)	0.48	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
Panel B: Household Characteristics								
Household size	5.17 (0.10)	4.99 (0.14)	5.36 (0.13)	0.06*	/		/	
House made of bricks/concrete	0.72 (0.03)	0.74 (0.04)	0.71 (0.04)	0.67	/		/	
Water tap inside the 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/capita	422.49 (15.19)	428.81 (24.85)	415.92 (17.59)	0.67	/			/
Panel C: Household Financial Management								
Any Savings past month	0.18 (0.02)	0.17 (0.03)	0.18 (0.02)	0.82	/			/
... in bank account	0.28 (0.05)	0.27 (0.08)	0.29 (0.06)	0.83	/			/
... in savings group	0.34 (0.05)	0.33 (0.07)	0.35 (0.08)	0.85	/			/
... 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 friend/family past month	0.61 (0.02)	0.56 (0.03)	0.67 (0.03)	0.01***	/			/
Borrowed from moneylender past month	0.44 (0.02)	0.46 (0.03)	0.42 (0.03)	0.38	/			/
Resilient to economic shock	0.20 (0.02)	0.17 (0.02)	0.23 (0.02)	0.15	/			/
Financial self-efficacy index	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 index	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
Joint orthogonality F-test				6.82***	3.44***			

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

With regards to household financial management, we observe low baseline saving rates. Only 18% of individuals reported any saving activities in the previous month. Out of these, only 29% (5% of the full sample) had access to a formal bank account. The majority saved through informal devices, namely in savings groups or by storing money at home. Study participants qualitatively noted that main reasons for not holding a bank account included mistrust based on anticipations of fraud and theft as well as inflexible account regulations. However, our qualitative evidence also highlights the risks of saving through informal mechanisms, as money stored at home was considered to be insecure, given the risk of robberies, fires,⁴¹ and theft by other household members. Similarly, savings groups were portrayed as potentially dysfunctional and unreliable because pay-outs sometimes failed to materialise. Rates of past-month borrowing were high, with 67% of individuals reporting taking loans within their closer social circles and 42% from a moneylender. While more than half of the sample paid into a form of funeral insurance, only 20% reported being able to cope with potential income shocks and emergencies, most often related to illness or death in this population.

We used a joint orthogonality F-test to assess baseline balance across arms and found randomisation to be effective. For both adult and adolescent household members, the treatment and control group were balanced along most characteristics (see *Table 9*, Columns (4) and (8)). For the adult sample, there was a higher percentage of female participants in the treatment arm. Our analyses therefore controlled for participant sex. Similarly, the rate of borrowing from family members or friends was significantly higher for adult participants in the treatment arm ($p=0.01$). There was somewhat more concern in the adolescent sample, both the teen-reported financial distress index and the basic necessities index pointed to lower levels of poverty in treatment group households. To account for imbalance at baseline, all analyses controlled for the baseline value of the respective outcome.

⁴¹ Fiery incidents (also often referred to as ‘shack fires’) are caused by reliance on solid fuels and flammable hydrocarbons (e.g. paraffin) for energy. These incidents are highly prevalent in South African informal and under-resourced settlements (Kimemia & Niekerk, 2017).

3.2 Impacts on Financial Planning and Management

Results for the intermediate outcomes on household financial planning are reported in *Table 10*, columns (1)-(6). For all outcomes, magnitude and significance of the programme effects are robust to all three regression specifications. Therefore, we focus on the full ANCOVA specification in the following paragraphs. For outcomes based on indices, we additionally present disaggregated regression results for individual items in the Supplemental *Tables A3-A5*. For outcomes measured on a binary or ordinal scale, we additionally report probit models in *Table A7*.

Column (1) in *Table 10* shows the estimates of the programme effect on self-reported saving rates. In the control group, 23% of respondents indicated having managed to save some money in the previous month, compared to 38% in the treatment group. The treatment effect corresponds to an increase in saving rates 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 saving 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, suggesting that these effects are not simply a crowd-out from private to (quasi-) institutionalised savings.

Table 10. ITT Estimates of Intermediate Outcomes: Financial Planning and Financial Management

	(1) Holds any Savings			(2) Borrowed from moneylender			(3) Borrowed from family/friend			(4) Financial Attitudes			(5) Financial Self Efficacy		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
Panel I: Adults															
ITT: Received Programme	0.15*** (0.04) [0.00]	0.15*** (0.04) [0.00]	0.15*** (0.04) [0.00]	-0.23*** (0.06) [0.00]	-0.22*** (0.06) [0.00]	-0.21*** (0.06) [0.00]	-0.08 (0.05) [0.15]	-0.08 (0.05) [0.15]	-0.09 (0.06) [0.14]	-0.02 (0.13) [0.91]	-0.01 (0.13) [0.96]	-0.02 (0.14) [0.87]	1.32*** (0.27) [0.00]	1.32*** (0.26) [0.00]	1.31*** (0.27) [0.00]
Lagged Outcome	/	0.05 (0.05)	0.03 (0.05)	/	0.10*** (0.03)	0.09*** (0.03)	/	0.01 (0.04)	0.01 (0.04)	/	-0.06 (0.04)	-0.07* (0.04)	\	0.10* (0.05)	0.08 (0.05)
Strata	-0.06 (0.06)	-0.06 (0.06)	-0.08 (0.06)	0.04 (0.09)	0.05 (0.09)	0.08 (0.09)	-0.04 (0.08)	-0.04 (0.08)	-0.04 (0.08)	0.17 (0.15)	0.18 (0.15)	0.07 (0.16)	0.36 (0.32)	0.36 (0.32)	0.21 (0.35)
Controls	no	no	yes	no	no	yes	no	no	yes	no	no	yes	no	no	yes
Observations	540	539	534	540	539	534	540	539	534	540	539	534	540	539	534
ICC		0.00			0.00			0.01			0.03			0.05	
Mean Control		0.23			0.47			0.70			7.34			2.10	
Panel II: Adolescents															
ITT: Received Programme										-0.19 (0.16) [0.29]	-0.19 (0.17) [0.30]	-0.18 (0.17) [0.33]	1.03*** (0.25) [0.00]	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										0.25 (0.20)	0.24 (0.20)	0.18 (0.20)	-0.50 (0.29)	-0.51* (0.27)	-0.59** (0.27)
Controls										no	no	yes	no	no	yes
Observations										530	526	522	530	526	522
ICC											0.01			0.06	
Mean Control											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): Ordered variables denoting frequency of past-month borrowing from moneylenders or family/friend as “never”, “rarely”, “sometimes”, “often”. 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, for ordered variables denoting prevalence of any borrowing. All outcome variables are based on self-report.

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

Further, we find indication of a significant and positive programme impact on participants' financial self-efficacy (see *Table 10*, Column (4)). On average, adult programme recipients reported 49% greater self-efficacy to conduct careful and sustainable financial management than the adult control arm. Similarly, adolescents in the treatment arm reported on average 29% higher self-efficacy scores for their families. By contrast, the programme showed no impact on financial attitudes, possibly because attitudes endorsing saving and careful financial management were already relatively high at baseline (see *Table 10*, Column (5)). All significant effects reported above were robust to the false discovery rate adjustment.

3.3 Impacts on Household Economic Welfare

In the next step, we examine whether the programme had positive distal effects on wider aspects of household economic welfare. First, as shown in *Table 11*, Column (1), we observe substantial decreases in self-reported financial distress among adult programme participants, significant at $p < 1\%$. To translate this into more meaningful terms, 52% of adult respondents in the control arm reported having run out of money for meat sometimes or often during the past month, compared to only 40% in the treatment arm. The same trend holds for money for electricity (37%

versus 23%), transportation (44% versus 28%), and tentatively for mobile communication (56% versus 52%). These trends were corroborated by the adolescent-report. However, results based on adolescent-report need to be considered as less robust in view of substantial imbalance at baseline in favour of the treatment arm.

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

We further examined participants' self-rated resilience to hypothetical income shocks (see Column (3) in *Table 11*). At post-test, we found significant improvement in coping capacity among participants in the treatment arm: with 37% indicating that they would be able to find ways of coping with a hypothetical financial shock scenario, compared to 26% in the control arm. In these counts, we excluded respondents who reported high-risk coping strategies such as borrowing at high interest rates and cutting down expenses on food, education or health.

Table 11. Estimates of Distal Outcomes: Economic Welfare

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

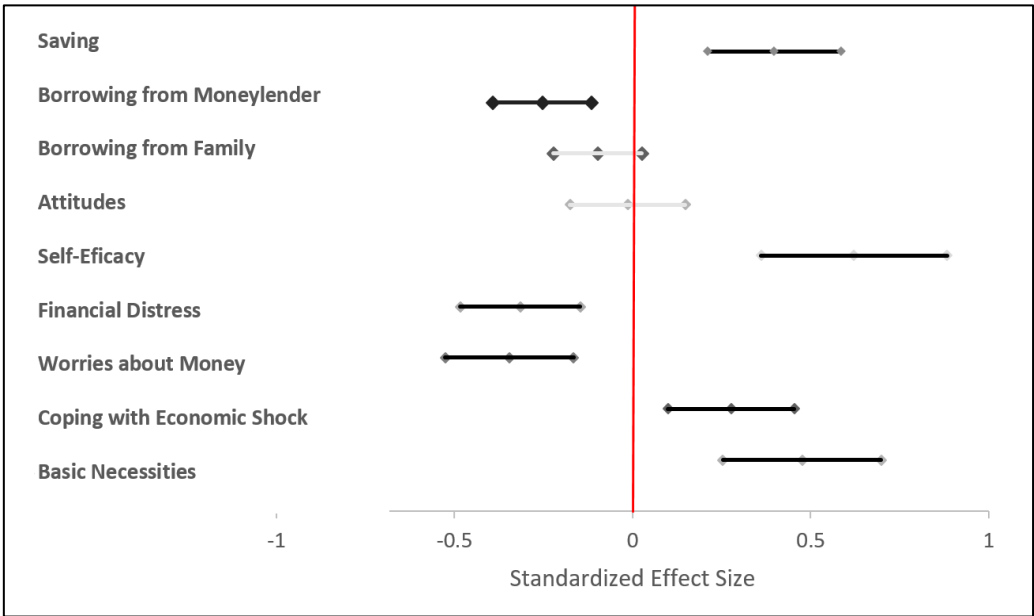
Notes: See also Table 10. Columns (1): Continuous scale aggregated via principal component analysis. Column (2): ordinal variable measuring frequency of monetary concerns over the past month (1-4 Likert scale, denoting never, rarely, sometimes, often), Column (3): binary variable coded 1 for access to 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. Control mean at post-test, for ordered variable denoting prevalence of any worries about money. All outcome variables are based on self-report. All outcome variables are based on self-report.

In *Table 11*, Column (4), we examined the self-reported capacity of households to secure a range of designated basic needs in the past month. Our results revealed a 29% increase on a basic necessities index according to adult report. The difference was significant at the 1% level. After disaggregating these findings, the effect was most pronounced for securing schooling costs of children (see *Table A6* in Supplement). At follow-up, 63% of programme recipients reported being able to cover the costs for children's schooling in the previous month, compared to only 38% of their control group counterparts. Similarly, treatment arm participants compared favourably to the control with regards to affording medical treatment (35% versus 27%), warm clothes (49% versus 34%), two pairs of shoes (47% versus 32%), and toiletries (67% versus 56%). The adolescent sample reflected similar trends, namely significant improvements in access to the top-eight endorsed basic necessities. However, these trends should again be interpreted with caution, given significant differences between study arms at baseline. Similar to the outcomes on household financial management, the above effects held after applying the multiple testing correction.

The intra-cluster correlation (ICC) for the present sample was low across all outcomes, ranging from 0.00 (see Columns (1)-(2) in *Table 10*) to 0.09 at maximum (see Column (4) in *Table 11*). These low ICCs explain why standard errors remained relatively small despite the nested structure of the data (see [Duflo, Glennster & Kremer, 2008](#)). ICC values in our analyses were lower than those found in previous cluster RCTs in comparable low-income settings in Sub-Saharan Africa. A first explanation may lie in the fact that our clusters were villages or townships rather than schools (e.g. Karlan & Linden, 2014), savings groups (e.g. Ksoll et al., 2016) or youth clubs (Jamison et al., 2014). Social interactions in our clusters were presumably less institutionalised; therefore, social ties were likely less cohesive, resulting in fewer similarities among subjects within a cluster. Further to this, it might be assumed that social cohesion, neighborhood ties, and social trust in South Africa are particularly low in view of high prevalence of crime and violence, particularly in townships (Roberts & Gordon, 2016; Emmett, 2002).

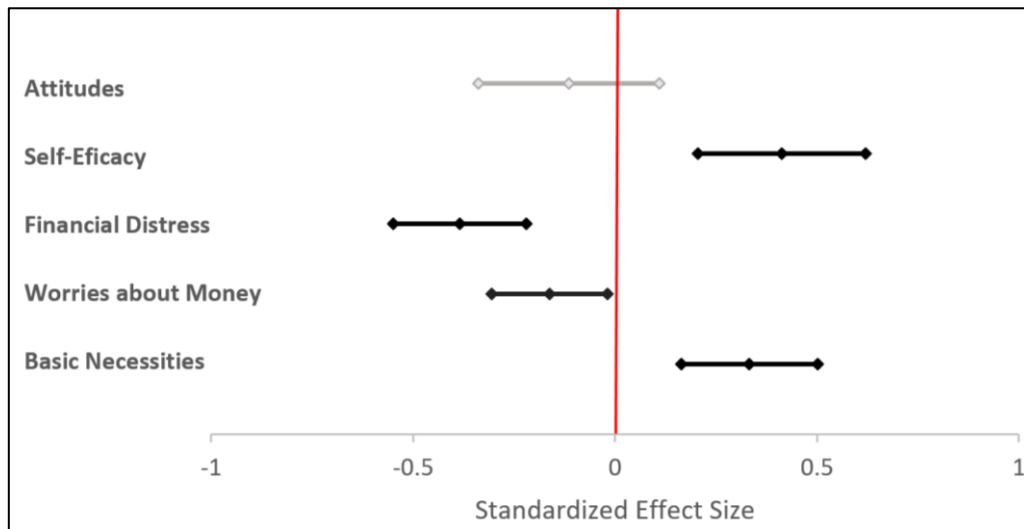
Lastly, we display standardised effect sizes⁴² in *Figures 17-18*. Among adult participants, effect sizes were most substantial for financial self-efficacy, self-reported savings, and access to basic necessities. However, confidence intervals for these effects were quite large and estimates therefore less precise compared to other outcomes (see *Figure 17*). Similarly, the standardised effect was largest for self-efficacy among adolescent participants, likely reflecting the specific financial skills and increased confidence levels that families had acquired through the programme.

Figure 17. Adult Standardised ITT Effect Sizes at Post-Test



⁴²Standardised effect sizes were calculated as δ_w following the approach recommended in Hedges (2007) for intervention effects in clustered trials.

Figure 18. Adolescent Standardised ITT Effect Sizes at Post-Test



3.4 Heterogeneity in Treatment Effects

This section examines heterogeneity in treatment effects based on pre-specified observable characteristics. We found suggestive evidence for heterogeneity along three traits in the adult sample, but none were robust to our FDR adjustment, possibly because of low statistical power. Thus, findings need to be interpreted with caution. First, the results suggested heterogeneity in impacts for married women and women cohabiting with male partners.⁴³ We found significant interactions between marital status and treatment assignment for the outcomes of borrowing from moneylenders (Column (2) in *Table A8*) and financial distress (Column (1) in *Table A9*), indicating that married women benefitted *less* from the programme. These findings might be indicative of intra-household distributional dynamics whereby married women have less control over household financial management than 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

⁴³The variable was coded to also include women who were not married but cohabiting with male partners. Throughout this paragraph, we refer to this sub-sample as ‘married’ for simplicity but also include women cohabiting with male partners.

prevailing patriarchal structures and gender norms in a household and, in consequence, increase partner-perpetrated violence (Bott, Morrison & Ellsberg, 2005; Jewkes, 2002). However, we did not find any iatrogenic effects on exposure to intimate partner violence among female programme recipients (see *Table A10*).

The second set of regressions examined the non-inferiority of effects for the particularly poor (also referred to as the “ultra poor”, see Banerjee et al. 2015).⁴⁴ This is crucial when considering that some scholars have argued that promoting saving among the very poor may have the potential to decrease consumption to the point of harm (Sherraden et al., 2003). Reassuringly, our heterogeneity analyses revealed that treatment effects were not inferior for the ultra poor group across almost all outcomes (with the exception of financial attitudes, see Column (4) in *Table A8*). More importantly, we found a significant treatment-trait interaction for the outcome of access to basic necessities (see Column (4) in *Table A9*), pointing to *higher* programme impact for the poorest programme participants.

Lastly, we observed larger programme impact in rural communities than in urban townships. Reductions in borrowing rates were more substantial (see Columns (2)-(3) in *Table A8*) and effects on financial self-efficacy were only significantly positive for participants in rural areas (see Column (5) in *Table A9*). We speculate that these findings may stem from the fact that general service delivery, including financial services, was likely more available in urban (or peri-urban) locations. Therefore, demand for alternative services and programmes was possibly lower in these locations. Similarly, a study in Malawi found that programme impact varied by distance, with adoption rates for formal bank accounts more than three times higher for communities that were several kilometres away from the nearest bank branch (see Flory, 2016).

⁴⁴ To be considered as *ultra poor* in the present sample, individuals had to report being food-insecure for more than five days per week and lack all of the following: electricity, livestock, water source inside the house, brick/concrete dwelling.

3.5 Robustness Check

A possible threat to the validity of our findings is that positive effects – especially those on behavioural outcomes (such as saving or borrowing) – might be strong and substantial immediately post-intervention but then diminish over time (see Steinert et al., 2018). We exploit the time span of our endline survey to explore possible heterogeneity in treatment effects between participants who were interviewed temporally closer to programme delivery and those with longer follow-up periods (see *Table A11* in Supplement). We found no indication of any fading-out effect. We revealed significant differences in two outcomes for which longer follow-up was associated with greater impact, thus pointing in the counter-intuitive direction. Namely, we reported significantly higher financial attitude values (see Column (4), adult report) and somewhat higher access to basic necessities (see Column (9), adolescent report) with a longer follow-up timeframe. However, these differences could also be the result of multiple testing and should therefore be seen with caution.

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

4. Discussion of Potential Mechanisms

Overall, our results show that the combined financial literacy and parenting programme was effective in improving financial behaviours as well as household economic welfare. In view of the limited success of previous financial literacy programmes, our results are particularly compelling. To inform future programme designs, it is pertinent to unpack the causal mechanisms at play. We therefore first

present additional findings from quantitative data and further draw on qualitative evidence to make conjectures about the underlying causal pathways.

The unique feature of our programme was the large share of psychological and social elements in the curriculum. Below, we show that these had significant impact on a range of psychosocial outcomes (also presented elsewhere in Cluver et al., 2018). First, we documented improved socio-emotional support within participants' homes and families. This was emphasised by lower levels of intra-household violence (in adult-report only) (see *Table 12*, Column (1)) and improved parenting behaviour (see *Table 12*, Column (2)). Likewise, we observed significantly higher levels of social support from outside the home, provided by other community members (see *Table 12*, Column (3)). We also find reductions in depression levels (in adult-report only) (see *Table 12*, Column (4)), which could reflect increased optimism and generally a more positive future outlook. Findings on psychosocial treatment effects were not fully replicated for the adolescent sample. However, assuming that adults are mainly responsible for household financial management, we largely focus the above interpretations on this sample.

Based on previous research, we hypothesise that psychological factors such as self-efficacy, optimism, and self-esteem as well as social factors such as emotional support and peer pressure are important determinants of financial choices and behaviours. These quantitative findings evidence the existence of both psychological and social channels, suggesting validity of our initial hypothesis.

Table 12. ITT Estimates of Psychosocial Programme Impact

	Intra-household physical and emotional violence			Positive and involved parenting			Community Social Support			Depression		
	I	II	III	I	II	III	I	II	III	I	II	III
Panel I: Adults												
ITT: Received Programme	-2.24*** (0.63)	-2.30*** (0.04)	-2.14*** (0.65)	4.83*** (0.55)	4.56*** (0.52)	4.49*** (0.55)	3.02*** (0.76)	3.02*** (0.76)	3.03*** (0.78)	-5.46*** (1.00)	-5.24*** (1.05)	-5.13*** (1.09)
Lagged Outcome	/	0.12*** (0.03)	0.13*** (0.04)	/	0.22*** (0.05)	0.18*** (0.05)	/	0.06** (0.03)	0.06* (0.03)	/	0.13*** (0.05)	0.12** (0.05)
Strata	1.28* (0.68)	1.48*** (0.66)	1.75*** (0.69)	0.32 (0.58)	0.34 (0.59)	0.35 (0.62)	-0.97 (0.99)	-0.84 (0.99)	-1.07 (1.08)	-1.43 (1.28)	-1.22 (1.35)	-0.62 (1.43)
Controls	no	no	yes	no	no	yes	No	no	yes	no	no	yes
Observations	506	506	497	506	506	497	540	539	531	540	539	531
ICC		0.06			0.00			0.00			0.08	
Mean Control		5.96			16.67			27.23			16.82	
Panel II: Adolescents												
ITT: Received Programme	0.07 (0.76)	0.08 (0.71)	0.02 (0.70)	1.32* (0.69)	1.32** (0.61)	1.31** (0.62)	/	/	/	0.14 (0.20)	0.13 (0.20)	0.14 (0.21)
Lagged Outcome	/	0.18*** (0.06)	0.18*** (0.06)	/	0.30*** (0.04)	0.28*** (0.05)				/	0.09** (0.04)	0.07* (0.04)
Strata	-2.01* (0.10)	-1.59 (1.08)	-1.14 (1.13)	1.57** (0.77)	2.02*** (0.64)	1.99*** (0.67)				0.10 (0.25)	0.10 (0.27)	0.10 (0.27)
Controls	no	no	yes	no	no	yes					no	yes
Observations	529	529	521	529	529	521				530	526	522
ICC		0.01			0.00						0.04	
Mean Control		4.69			18.55						1.73	

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. All outcome variables are based on self-report. Column (1): Continuous previously validated scale based on ISPCAN Child Abuse Screening Tool. Column (2): Continuous previously validated scale based on Alabama Parenting Questionnaire. Column (3) Continuous previously validated scale based on Medical Outcomes Study Social Support Survey, only captured in adult-report. Column (4): Continuous previously validated scales based on Center for Epidemiological Studies Depression (CES-D) instrument for adults and Children's Depression Inventory (CDI) for adolescents. Sample size in Columns (1)-(2) is reduced given that these questions were not asked to respondents who moved to another household from baseline to post-test. 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.

To shed further light on the link between these factors and financial outcomes, we draw on insights from qualitative data. For this purpose, transcripts from focus group discussions and in-depth interviews were coded using thematic analysis. Qualitative statements that were conceptually similar and frequently mentioned across participants and locations were summarised into overall themes and discussed and validated with a second coder (JD). Based on this analysis, we generate evidence on three distinct channels of programme impact that were closely in line with the quantitative findings presented above.

Financial Self-Efficacy

Empirical evidence has highlighted a substantial gap between behavioural intentions and realised actions. For instance, our study population reports high intentions to save more and borrow less. However, the majority were unable to translate these behavioural intentions into realised actions – with only 18% of the sample holding any form of savings at baseline (for similar findings see Banerjee & Duflo 2007). The concept of self-efficacy has a long-standing tradition in social cognitive theory and is depicted as an essential ingredient for behavioural 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 programme curriculum focused on fostering self-efficacy through building skills for financial planning and management. Our quantitative analyses reveal a striking impact on participants' self-efficacy levels for both adult and adolescent programme recipients (see *Table 10*). The qualitative data adds further nuance to these findings. Several participants described how skills acquired in the sessions have helped them make better financial decisions and manage limited financial resources (*"You cannot go to town without preparing your budget"*, *"I am still using the skills acquired from Sinovuyo, such as budgeting, because I need to pay for my teen's initiation school"*, see Panel (1), *Table 13*). Similarly, participant accounts document improved awareness of the risks associated with certain saving strategies and improved knowledge on how to effectively save money (*"I have learned how to bank my money, because if you think you will hide your money in your home, there is*

something that can happen [...]”, see Panel (1), Table 13). Therefore, the specific financial skills acquired in the sessions, for instance through the integrated visual budgeting exercise, have likely helped materialise pre-existing saving intentions.

Furthermore, a stream of behavioural research has identified close links between low self-esteem and a lack of agency, both of which are key constraints to healthy financial behaviour (Ghosal et al., 2015; World Development Report, 2015). Thus, our programme curriculum sought to capitalise on promoting praise between caregivers and adolescents, and thereby foster participants’ self-esteem and self-worth (Bernard et al., 2014; Darolia & Wydick, 2011, Glewwe et al., 2014, Boudet et al., 2016). In turn, this may have nurtured participants’ feelings of agency and control over their (financial) lives⁴⁵ and turned into a motor for action (*“[Y]ou can learn important things and become somebody who is educated tomorrow [...]”, “Now that I have learned how to save, I think I am able to build a house”, see Panel (1), Table 13).*

Peer Effects and Social Norms

The curriculum was situated in a group setting and participants had their assigned programme “buddy” from within the group, which has likely activated peer effects. Accordingly, a number of previous studies have demonstrated how peers mutually influence their financial behaviour and decision making through information sharing, moral support, and shaping of social norms (see Breza & Chandrasekhar, 2015; Kast et al., 2012; Hong, Kubik & Setin, 2004; Duflo & Saez, 2000). This can then cause multiplier effects for an endorsed financial behaviour such as saving (World Development Report, 2015; Baird & Özler, 2010; Fernald et al., 2008). Our qualitative data reflects similar peer effects, whereby programme 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 (2), Table 13).* Saving and careful financial

⁴⁵ Note that agency and financial control may in some cases strongly be shaped by more general aspects of household role distribution and power dynamics between women and men. Some female program participants may therefore face constraints with regards to financial decision making and agency vis-a-vis their male partners or spouses.

management likely become a “virtuous act” that is shared socially (Hardcastle, 2012).

In the same vein, our programme appears to have benefited from involving both adolescents and adults from within the same households. Since participants were encouraged to revise, practice, and share programme content at home, other household members were likely exposed to some of the programme’s lessons (*“We talked about the sessions when we got home. Everyone at home wanted us to come back and share the stories from the sessions”, “ We did the homework practice as a family and all participated, especially when we did the budget”,* see Panel (2), Table 13). This has the potential to reinforce programme content, integrate it in the day-to-day family life, encourage mutual support between household members, and thus make programme impact more sustainable (*“I sit with my family and budget and buy things for my children in turns, all has to be agreed on by everyone”,* see Panel (2), Table 13). We also record numerous accounts of adult caregivers engaging their adolescents in household financial planning, likely in consequence of improved parenting behaviour (see Table 12) (*“We now [...] advise on the things to buy and prepare a shopping list together”,* see Panel (2), Table 13). Through regular feedback and social incentives within the family and household, participants likely hold each other accountable and consequently increase compliance with their financial plans (see also Kast et al., 2012).

Optimism and Future Outlook

A final possible channel through which programme impact may have occurred were improvements in participants’ optimism and future orientation (see Blattman et al., 2017; Bernard et al., 2014). Parallel to previous interventions, the short plays and stories in our sessions may have helped to shift participants’ perceptions of their own lives in the form of a “vicarious experience” (see Bernard et al., 2014; Berg & Zia, 2013; Chong et al., 2012). Story characters that are easy to identify with (because they are situated in environments and contexts similar to those of participants) may turn into role models and help participants visualise their “best possible selves” (Layous et al., 2013; Sheldon & Lyubomirsky, 2006). This has the potential to challenge individuals’ broader beliefs about their economic situation,

instil a more positive future outlook, and help avoid procrastination and hopelessness (World Development Report, 2015; Bernard et al., 2014; Appadurai, 2004). Concurrently, participants described how participation in the sessions has made them realise that future goals may 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 13*). Quotes also suggested that the role plays may have had an enabling function by making abstract future goals such as “*build[ing] a house*” or “*further[ing] [children’s] education*” (see Panel (3), *Table 13*) more concrete and viable.

Table 13. Qualitative Survey Evidence on Programme Mechanisms – Thematic Coding

Thematic Area	N of related Quotes	Example Quotes
1. Financial Self-Efficacy & Self Esteem This comprises all statements in which programme participants describe skills related to financial planning or saving learned from the programme and higher self-esteem and agency.	44/62	<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 participant, 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 participant, 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 participant, FGD, rural cluster) <i>"You cannot go to town without preparing your budget. Try to prepare one so that you do not spend all your money."</i> (Adult participant, 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 school. I am saving money from the child care grant and continue to avoid going to loansharks."</i> (Adult participant, QI, 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 participant, 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 participant, FGD, rural cluster)
2. Peer Effects and Social Norms This comprises all statements in which programme participants describe how programme content is enabled and reinforced through social interactions (within or outside of the family) as well as how the programme itself has shaped social support and social norms.	36/62	<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 participant, 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 participant, 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." (Adult participant, QI, rural cluster)</i>
		<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." (Adolescent participant, QI, rural cluster)</i>
3. Optimism & Future Outlook		<i>"I have learned from Sinovuyo that one does not have to have a lot of money to start saving." (Adult participant, QI, rural cluster)</i>
This comprises all statements in which programme participants communicate how they have gained optimism and hope and how their future outlook may influence financial decision making. It also includes the goals that motivate their saving.	20/62	<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 am gone." (Adult participant, FGD, rural cluster)</i> <i>"I learned that I cannot rush things, I learned this from the woman in the role play when she had to take her child to school and initiation. I learned that I also must save money and praise my child." (Adult participant, FGD, rural cluster)</i> <i>"Sinovuyo gave me and my family an open mind of doing budgeting and saving with my children so that if there is a problem at home we should go and take money at the bank and not go to a loan shark." (Adult participant, QI,, rural cluster)</i> <i>"First, I used to use all my money, but now I think of 'needs' and not 'wants' before I use my money." (Adult participant, FGD, rural cluster)</i> <i>"I am strict with my money now. I save my money." (Adult participant, FGD, urban cluster)</i> <i>"The programme helped me to know what you need when you have money and pay what is very important in the house so that you can save the rest of the money." (Adolescent participant, FGD, rural cluster)</i> <i>"Now we do not spend all of the money any more, because we know that there can be emergencies." (Adolescent participant, FGD, rural cluster)</i>

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

5. Conclusion

We set out to test the effectiveness of an integrated financial literacy and parenting programme 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 programme effects on self-reported saving and borrowing from moneylenders as well as increases in financial self-efficacy. Similarly, we find substantial effects on household economic welfare, namely reductions in financial and poverty-related emotional distress, increases in self-reported access to a range of basic necessities, and improved resilience to economic shocks.

While a previous meta-analysis of 115 financial education programmes found limited effectiveness for low-income clients (see Kaiser & Menkhoff, 2017), our findings hold true in a particularly deprived, largely female, and vulnerable population. We thereby contradict an almost stylised fact in the literature that contends that economic strengthening programmes are less effective when targeting the “poorest of the poor” (Burlando & Canidio 2017; Banerjee et al., 2015; Barrientos & Scott, 2008; de Mel, McKenzie & Woodruff, 2008; Halder & Mosley, 2004; Hulme, 2000). Our results also provide an antidote to the prevalent misconception that poor people are “too poor to save” and to sustainably manage the resources they have.

Our programme is different to more standard financial literacy programmes in a number of aspects. First, while a recent meta-analysis of financial literacy programmes reported an average duration of seven weeks (with 3.5 hours per session) (Kaiser & Menkhoff, 2017), financial training in this programme was only delivered in two weeks but accompanied by 12 weeks of more holistic, psychosocial training. In addition, we maximised exposure to programme content with home visits to participants who had missed a session, suggesting that a high ‘dosage’ might partly explain the programme’s effectiveness vis-à-vis other programmes with relatively low take-up (see Dupas et al., 2016). A further difference is the targeting of our programme. Previous interventions are typically targeted at either adults or youth, with the latter often implemented in school settings (see Karlan & Linden,

2014). By contrast, our programme enrolled both adults and adolescents in a community setting and further tried to impact additional family members through integration of homework practices.

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

Some caveats are in order. A first is the reliance on self-report data. Zwane and colleagues (2011) document comprehensive empirical evidence on “interview effects”, arguing that surveys could serve as a reminder for certain endorsed behaviours and thereby increase social desirability bias. Following this, our participants may be inclined to overstate their saving practices, for instance. In light of these concerns, a number of previous studies on saving promotion have combined self-reports of financial behaviour with administrative data (see Dupas et al., 2016; Karlan & Linden, 2014). Validation exercises in public health literature have repeatedly suggested accuracy of self-report results, particularly when self-administered survey methods were used and when recall periods were relatively short, such as the four-week window used here (Longobardi et al., 2011; Short et al., 2009; Garber et al., 2004). Dupas and colleagues (2016) directly compare administrative bank records and survey self-report data on the frequency and amount of deposits. Interestingly, the authors found respondents to under-report their saving balances in Uganda and Malawi. If we assumed a similar tendency in our

study sample, the findings presented here could even be a lower-bound estimate. Unfortunately, we do not have administrative records on any financial transactions to supplement information from self-report, largely because participants in our study typically rely on informal and undocumented ways of saving and borrowing money. However, we gain confidence from observing similar patterns of results in the adult and adolescent sample for financial behaviours and financial welfare, while they diverge for other outcomes such as those on family violence (see *Table 12*).

Apart from this, programme 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 programme described here was disseminated in conjunction with one of Africa's most elaborate social security systems. The programme is therefore likely to have strengthened beneficiaries' capacity to make most effective use of cash grants, prioritise essential and future-oriented spending, and smoothen consumption between monthly pay-outs. Thus, from a policy perspective, budgeting and saving training can be conceptualised as a complement to more structural and far-reaching poverty alleviation strategies such as cash transfers or microloans. Yet, the latter strategies likely remain crucial for lifting individuals out of poverty.

Overall, our results show a range of positive programme effects on financial behaviours 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 programmes for poor populations. While our focused financial training curriculum is brief compared to more common financial education programmes, we provide new evidence on the possible value of embedding these within a wider psychosocial intervention. Beyond some first attempts presented in this paper, future work may usefully explore how psychological, social, and financial programme components interact with each other and are mutually reinforcing in more complex trial designs.

Supplementary Tables

Table A2. Differential Attrition

	Adults not completed post-test	Adolescents not completed post-test
ITT: Received 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
Degree: High School & higher	-0.12 (0.65)	NA
Currently employed	1.50** (0.71)	NA
Currently 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)
House made of bricks/concrete	0.32 (0.67)	-0.34 (0.44)
Water tap inside the house	-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)
Monetary Grant Value	-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

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. 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)		(2)		(3)	
	Savings held at home		Savings held in savings group		Savings held in bank account	
	I	II	I	II	I	II
ITT: Program	-0.01	-0.02	0.08***	0.09***	0.11***	0.11***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)
Outcome _{T-1}	0.04	0.03	0.00	-0.03	0.05	0.04
	(0.06)	(0.06)	(0.07)	(0.07)	(0.06)	(0.06)
Strata	0.02	0.01	-0.02	-0.03	-0.03	-0.03
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Controls	no	yes	no	yes	no	yes
Constant	0.10***	0.06	0.09***	-0.07	0.07	0.16
	(0.04)	(0.08)	(0.03)	(0.10)	(0.05)	(0.10)
Observations	539	534	539	534	539	534
R-squared	0.00	0.02	0.02	0.04	0.04	0.05
Mean Control	0.12		0.08		0.04	

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

Table 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
Panel I: Adults										
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)	/	/
Outcome _{T-1}	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	/	/
Panel II: Teens										
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)
Outcome _{T-1}	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

Notes: *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. Mean Control at post-test.

Table A5. ITT Estimates for Disaggregated Financial Distress Index

	Run out of money for meat		Run out of money for transport		Run out of money for electricity		Run out of money for airtime	
	I	II	I	II	I	II	I	II
Panel I: Adults								
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)
Outcome _{T-1}	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
Panel I: Adolescents								
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)
Outcome _{T-1}	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

Notes: *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 Necessities

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

Notes: *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.

Table A6 ctd.

	<u>Toiletries</u>		<u>School Equipment</u>		<u>One pair of shoes</u>		<u>Enough warm clothes</u>	
	I	II	I	II	I	II	I	II
Panel I: Adults								
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)
Outcome _{T-1}	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
Mean Control	0.56		0.54		0.32		0.34	
Observations	539	534	539	534	539	543	539	534
R-squared	0.02	0.03	0.05	0.09	0.04	0.05	0.03	0.06
Panel I: Adolescents								
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)
Outcome _{T-1}	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
Mean Control	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 Programme Effects - Probit Models

	(1) Holds any Savings		(2) Borrowed from moneylender		(3) Borrowed from family/friend		(4) Worries about Money		(5) Coping with Economic Shock	
	I	II	I	II	I	II	I	II	I	II
Panel I: 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 Strata	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)
Controls	-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)
Observations	539	534	539	534	539	534	539	534	539	534
Panel II: Teens										
ITT: Received Program		/	/		/		-0.17* (0.09)	-0.19** (0.09)	/	
Lagged Outcome Strata							0.09** (0.04)	0.06 (0.04)		
Controls							0.22** (0.09)	0.23** (0.09)		
Observations							no 526	yes 522		

Notes: *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. Heterogeneity in Treatment Effects: Financial Planning and Financial Management

	(1)		(2)		(3)		(4)		(5)	
	Holds any Savings		Borrowed from moneylender		Borrowed from kin		Financial Attitudes		Financial Self Efficacy	
	Main & Inter-action Effect	Total Effect	Main & Inter-action Effect	Total Effect	Main & Inter-action Effect	Total Effect	Main & Inter-action Effect	Total Effect	Main & Inter-action Effect	Total Effect
Panel I: Adults										
ITT:	0.17***		-0.29***		-0.11		0.06		1.27***	
Program	(0.04)		(0.06)		(0.07)		(0.18)		(0.29)	
x TRAIT	-0.02	0.15*	0.25*	-0.05	0.04	-0.04	-0.42	-0.48	0.22	1.50***
Married	(0.09)	(0.08)	(0.12)	(0.10)	(0.14)	(0.12)	(0.24)	(0.30)	(0.50)	(0.47)
	[0.83]		[0.26]		[0.74]		[0.37]		[0.74]	
ITT:	0.15***		-0.24***		-0.10		0.09		1.31***	
Program	(0.04)		(0.06)		(0.06)		(0.16)		(0.29)	
x TRAIT	0.01	0.16*	0.12	-0.12	0.07	-0.02	-0.65*	-0.56*	0.09	1.39**
Ultra poor	(0.10)	(0.08)	(0.16)	(0.15)	(0.20)	(0.18)	(0.38)	(0.32)	(0.73)	(0.66)
	[0.98]		[0.98]		[0.98]		[0.68]		[0.98]	
ITT:	0.13		-0.06		0.18		-0.27		-0.07	
Program	(0.11)		(0.16)		(0.12)		(0.23)		(0.33)	
x TRAIT	0.02		-0.19	-	-0.33**	-0.15**	0.33	0.06	1.72***	1.65***
Rural	(0.11)	0.15***	(0.17)	0.25***	(0.13)	(0.06)	(0.27)	(0.15)	(0.44)	(0.29)
	[0.90]	(0.04)	[0.74]	(0.05)	[0.12]		[0.74]		[0.00]	
Panel II: Adolescents										
ITT:							-0.19		1.08***	
Program							(0.17)		(0.29)	
x TRAIT							-0.00	-0.19	-0.39	0.68
Ultra poor							(0.44)	(0.43)	(0.92)	(0.82)
							[1.00]		[0.98]	
ITT:							-0.07		1.30***	
Program							(0.31)		(0.47)	
x TRAIT							-0.15	-0.22	-0.35	0.95***
Rural							(0.37)	(0.20)	(0.55)	(0.29)
							[0.90]		[0.90]	

Notes: 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 the village level in parentheses. Total effect is taken from the sum of the main effect and the interaction effect as estimated in the previous column, including corresponding significance levels. The first set of regressions is run on a restricted sample of female respondents ($n=511$), that is, 95% of the sample. In our definition of married, we exclude women who are not cohabiting with their husbands but include women cohabiting with male partners who are not their spouses. A person is classified as ultra poor if he/she indicates more than five hungry days per week and is not holding any of the following assets: livestock, 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 A9: Heterogeneity in Treatment Effects: Economic Welfare

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

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

Table A10. ITT Effects for Intimate Partner Violence

	Intimate Partner Violence	
	I	II
ITT: Program	-0.28 (0.19)	-0.29 (0.19)
Lagged Outcome	0.20 (0.16)	0.20 (0.16)
Strata	0.01 (0.17)	0.08 (0.21)
Controls	no	yes
R ²	0.05	0.07
Mean Control	-0.09	
Observations	504	499

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.

Table A11: Heterogeneity in Treatment Effects by Follow-up Time

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

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

VIII. Paper 3: Opening the Black Box: A Mixed-Methods Investigation of Social and Psychological Mechanisms Underlying Changes in Financial Behaviour

This is the second empirical paper of the DPhil thesis. The paper employs a mixed-methods research design to investigate the potential mechanisms that explain the positive impact of the intervention as documented in the previous chapter.

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Statement of Authorship

I confirm that I completed the majority of the work in this study, including conceptualisation of the methodological approach, and execution of both qualitative and quantitative analyses. Lucie Cluver is the Principal Investigator of the study and contributed to the write-up and interpretation of results. Franziska Meinck contributed to the refinement of the structural equation model and interpretation of results. Divane Nzima collected the qualitative data and helped with validating generated codes. Jenny Doubt led the qualitative data collection and contributed to the interpretation and third author arbitration of the qualitative data presented in here.

Abstract

Planned and future-oriented financial behaviour is of vital importance to the economic wellbeing of the poor. This paper aims to explain changes in financial behaviour among participants of a financial literacy and parenting programme implemented in the Eastern Cape province of South Africa. We use a novel mixed-methods approach to open the “black box” of the intervention and elucidate the key mechanisms through which its impact is generated. Drawing on qualitative data from eight focus group discussions and 42 in-depth interviews, we find evidence for three causal pathways of change. Higher confidence in financial management skills, a more optimistic future outlook, and emotional support from peers and family members are described as key facilitators of improved financial behaviour. These mechanisms are then cross-validated in subsequent quantitative data analyses, based on standardised interviews with 552 households. In a causal mediation analysis, we find that the programme’s effect on planned financial behaviour is significantly mediated by financial self-efficacy (24% of total effect) and optimism (22% of total effect). We further show that the psychological factors are reinforced by increased levels of social support in the family and in the wider community. Mediating variables remain robust in sensitivity analyses and are confirmed as significant paths when entered simultaneously into a structural equation model. Our findings highlight possible target points for financial literacy interventions and motivate the inclusion of psychosocial programme components.

1. Introduction

Living in poverty in low- and middle-income countries is characterised by volatile and often seasonal incomes as well as a high vulnerability to adverse events and emergencies (Collins et al., 2009; Dercon, 2005). Careful financial management, therefore, constitutes an essential survival skill for the poor. Deaton (1989) describes how deliberate saving and dissaving can help to inter-temporally smooth consumption and provide a buffer stock for overcoming income shocks. However, the poor’s financial behaviour is often characterised by chronic under-saving and borrowing at high interest – with negative consequences for their economic welfare (Kaiser & Menkhoff, 2016).

Deficient financial infrastructure as well as prohibitive institutional fees and regulations can make financial management particularly difficult for the poor (Karlan et al., 2014). Apart from these external barriers, planned financial behaviour is further constrained by bounded rationality and cognitive biases (Karlan & Linden, 2014; Bryan et al., 2010; Banerjee & Mullainathan, 2010). These are broadly exhibited across different economic groups but are more consequential for the poor who lack resources to absorb them (Mullainathan & Shafir, 2009; Bertrand et al., 2004). More importantly, research has found that scarcity increases 'cognitive load' and thus likely exacerbates behavioural biases among the poor by decreasing their attention, memory, and impulse control (Lichand & Mani, 2016; Schilbach et al., 2016; Shah et al., 2015; Mani et al., 2013). Consequently, poverty can perpetuate itself.

Considering these challenges, a range of development programmes have put focus on facilitating financial planning and behaviour. Financial literacy programmes have been used as the standard approach to promote financial planning skills, increase financial knowledge, and improve financial management (Karlan et al., 2014; Sherraden et al., 2011). However, several recent meta-analyses have found that the economic impact of financial literacy programmes has remained small at best, with null results across many outcomes and studies, particularly for low-income populations (Steinert et al., 2018; Kaiser & Menkhoff, 2017; Fernandes et al., 2014).

Accordingly, a growing body of literature has argued that financial behaviour is not only a function of economic scarcity and financial knowledge but also is shaped by a range of psychological factors. Consequently, patience, perceptions about the future, willpower, self-esteem, and self-efficacy are viewed as important determinants of financial choices and behaviour (Blattman et al., 2017; Mani et al., 2013; Borghans, Duckworth, Heckman & Weel, 2008). Indeed, empirical research has shown positive correlations between such psychological traits and achievements in economic domains, including investments, loan repayments, educational attainment, and productivity (Heller et al., 2017; Blattman et al., 2017; Heckman, Stixrud & Urzua, 2006). In addition, literature emphasises the role of social factors. These may impact financial behaviour via two channels: A first 'network channel' can reinforce positive financial behaviours through information

sharing, modeling behaviour of peers and role models, and provision of moral support (Kast et al., 2012). A second ‘peer pressure channel’ penalises behaviour that deviates from an endorsed social norm via a reputation tax (Battaglini, Díaz & Patacchini, 2017; Breza & Chandrasekhar, 2015). Empirical work has established strong links between social skills or peer reinforcement and increases in savings (Breza & Chandrasekhar, 2015; Doi, McKenzie & Zia, 2014; Duflo & Saez, 2000), uptake of insurance schemes (Cai, De Janvry & Sadoulet, 2015), and participation in stock markets (Hong, Kubik & Stein, 2004).

In light of this, the present paper aims to understand the impact of an intervention that was purposefully designed to capitalise on psychological and social factors. Specifically, we look at the impact of a holistic group-based parenting and financial literacy programme, named the *Sinovuyo Teen* project, that was delivered to poor families in the Eastern Cape province of South Africa. The curriculum of the programme, in addition to conventional budgeting and saving training, was geared towards forming supportive and nurturing relationships, promoting optimism and confidence, and fostering participants’ self-worth and self-esteem. In previous studies, we demonstrated a large behavioural impact of the programme, reflected in improved financial management and wellbeing (see Cluver et al., 2018; Steinert et al., 2018). In the present paper, we further the analysis by investigating the core mechanisms underlying changes in participants’ financial behaviours.

We apply an innovative methodological approach to shed light on the causal mechanisms through which programme effects are generated. To date, quantitative experimental research in economics has largely focused on establishing causal estimates of a programme’s impact, such as the average treatment effect. However, critics argue that this “black box view” cannot answer the important questions of *why* and *how* a programme works (Deaton, 2010a, 2010b; Brady & Collier, 2004; Harrison, 2011). Yet, a deeper understanding of why change occurs can inform future programme designs and point to the key “ingredients” of a successful curriculum (Nguyen et al., 2015; MacKinnon, Fairchild & Fritz, 2009). To elucidate such mechanisms of change, we apply a mixed-methods framework in which we sequentially analyse qualitative and quantitative data. Hence, insights from the qualitative data analysis are used to indicate potential pathways that are then

statistically tested as mediating variables. In our quantitative analysis, we utilise causal mediation analysis coupled with detailed sensitivity analyses to determine how robust mediation effects are to violations in the identification assumptions (Imai, Keele & Tingley, 2010). Finally, we introduce a structural equation model that allows us to estimate all hypothesised mechanisms simultaneously (Kline, 2010). Our findings reveal that changes in financial behaviour are related to a multi-faceted process of psychological and social dynamics.

The paper proceeds as follows: the next section introduces the trial design and the methodology used for the identification and testing of causal mechanisms. The third section provides some background on the study sample and then presents findings from the qualitative and subsequent quantitative analyses. The last section situates the findings within the wider research literature, discusses limitations, and concludes.

2. Methods

2.1 Setting

This study was conducted in the Eastern Cape province of South Africa in 32 rural and 8 urban township locations. The Eastern Cape is characterised by high poverty rates (with the lowest GDP nationally), unemployment rates around 35%, poor infrastructural development, and an HIV/AIDS prevalence of almost 30% (Statistics South Africa, 2016). To improve standards of living, the South African government has established a comprehensive social security system by introducing needs-based welfare grants. Coverage of these non-contributory social grants is larger than in any other country on the continent, with 17 million current beneficiaries, making up almost a third of South Africa's population (SASSA, 2016; Hagen-Zanker et al., 2011). However, in many families, small grant amounts⁴⁶ are the only income source and shared among a large number of household members. Families may thus run out of

⁴⁶For instance, the child support grant that is most widely received amounts up to 380.00 ZAR (equal to 32 USD).

money before the month's end, sometimes even fail to secure their subsistence levels.

2.2 Participants and Procedures

A total of 552 caregiver-adolescent (10-18 years) pairs were enrolled in a cluster randomised controlled trial of a parenting and financial literacy programme, described in more detail in thesis *Chapters V & VII*. The intervention was evaluated quantitatively by the University of Oxford and qualitatively by the UNICEF Office of Research (see Cluver et al., 2018; Doubt et al., 2017; Steinert et al., 2017; Cluver et al., 2016). Recruitment was based on a purposive sampling strategy to identify families at high risk of conflict and deprivation by carrying out door-to-door risk screenings. Quantitative data were collected at baseline and 5-9 months post-intervention.

Qualitative data were triangulated. First, focus group discussions were held in eight treatment locations in the week consecutive to the programme's last implementation. For these, caregivers and adolescents were split, with each round lasting around 90 minutes. Discussion guides were designed to elucidate participants' reflections on session content, and relationships formed in the group as well as the general impact of the programme on their family and community lives. Each focus group was attended by three 'note takers' responsible for capturing and translating discussion content. Notes and observations were then further discussed and recorded in daily debriefing sessions with the lead author and another senior researcher. Second, semi-structured interviews were carried out with a subset of 42 participants from the treatment arm of the trial (50% adolescents and 50% adults). For these, participants were selected purposefully to achieve a balance of urban/rural location, gender, and age as well as session attendance and engagement. Interview guides included open-ended questions probing participants to reflect upon any changes (positive or negative) that they and their families had experienced as a result of the intervention. Further probes were used to elicit underlying causes and processes of changes. All interviews were conducted in isiXhosa by a trained qualitative researcher and lasted around 45 minutes each.

Interview recordings were then transcribed into English (see also Doubt et al., 2017).

All participants gave verbal and written consent to participate in the study. No monetary incentives were given, but small food parcels were distributed in appreciation of participants' time. Ethical approval was obtained from the Universities of Oxford (SSD/CUREC2/11-40) and Cape Town (PSY2013-46) and the South African Eastern Cape Provincial Departments of Social Development and Education.

Although the research team collected information on both adults and adolescents from within 552 targeted households, the quantitative analyses in this paper are focused on the adult sample only, given that the outcome of interest is financial behaviour. However, for qualitative data, we also considered adolescent accounts pointing to changes experienced in their households and families.

2.3 Qualitative Analysis

Qualitative data analysis preceded quantitative data analysis and was primarily used to identify and uncover the potential pathways underlying changes in participants' financial behaviours. Transcripts from in-depth interviews and focus group discussions were coded using thematic analysis (Braun & Clarke, 2006). This methodology generates codes as they emerge from a given dataset rather than relying on an *a priori* checklist (Guest, Macqueen & Namey, 2011). Codes were generated for distinct pathways of change and considered relevant if a similar narrative emerged across study locations and was repeatedly mentioned by different programme participants. Illustrative quotations were selected for each separate theme. Data were coded by the lead author (JIS) and codes were reviewed by a second author (DN). Disagreements were resolved through discussion and third author arbitration (JD). Mechanisms identified in this first stage of our mixed-methods strategy were then tested in the subsequent quantitative analysis.

2.4 Quantitative Analysis

The goal of our quantitative analysis was to disentangle the average treatment effect (ATE) of the *Sinovuyo Teen* programme into a) the *indirect effects* running through several observed intermediate variables and b) the *direct effect* running through other (unobserved) channels. For this purpose, we used mediation analysis which has a long tradition in the social sciences and is most prominently associated with the work of Baron and Kenny (1986). More recently, mediation analysis has been popularised in the field of economics, largely motivated by the work of Imai and colleagues (2010a, 2010b, 2011) on “causal mediation analysis”. Here, the causal mediation effect represents the *indirect effect* of the treatment (the *Sinovuyo Teen* project) on the outcome (financial behaviour) via the mediating variable. It is defined as follows:

$$\delta_i(t) = Y_i(t, M_i(1)) - Y_i(t, M_i(0)) \quad (1)$$

whereby δ_i denotes the change in the outcome variable, dependent on changes in the mediator from values realised under the control condition $M_i(0)$ to those realised under the treatment condition ($M_i(1)$), fixing the treatment status at t .

All other (unobserved) mechanisms are then summarised in the *direct effect* of the treatment as:

$$\zeta_i(t) = Y_i(1, M_i(t)) - Y_i(0, M_i(t)) \quad (2)$$

In the present example, this would represent the difference in financial behaviour when comparing the treatment and control group, holding all hypothesised mediators constant.

Imai and colleagues (2010a, 2010b) suggest that mediation effects are nonparametrically identified and allow for causal interpretations if two “sequential ignorability” assumptions are satisfied. First, it is assumed that the treatment assignment is statistically independent (“ignorable”) of the outcome and the mediator (i.e. there is no bias from omitted variables). Second, it is required that the mediator is statistically independent of the outcome, conditional on the treatment and observed baseline variables.

How likely it is that these assumptions are satisfied? The first assumption is guaranteed to be satisfied in our case, as the treatment is randomised. The second assumption, however, is problematic as mediating variables are not randomised. We therefore cannot rule out whether unobserved variables – that were somehow affected by the treatment – confound the relationship between mediator and outcome (Heckman & Pinto, 2015; Nguyen et al., 2015). In response to this challenge, Imai and colleagues (2010b) have developed a sensitivity analysis to quantify the extent to which findings are robust to violations in the sequential ignorability assumption. The sensitivity model is given by:

$$M_i = \alpha_1 + \beta_1 T_i + \delta_1 'X_i + \varepsilon_{i1} \quad (4)$$

$$Y_i = \alpha_2 + \beta_2 T_i + \gamma M_i + \delta_2 'X_i + \varepsilon_{i2} \quad (5)$$

where the sensitivity parameter ρ denotes correlation between the error terms ε_{i1} and ε_{i2} from the mediator and outcome models above. If the sequential ignorability assumption holds true, ρ is equal to zero. Although we cannot know the true value of ρ , sensitivity analysis computes the indirect effect for different hypothetical values of ρ . Accordingly, if the indirect effect turns zero for small values of the sensitivity parameter, we conclude that small violations of our ignorability assumption would reverse the inferences that we draw. Given that there is no general cutoff for values of ρ , Imai and colleagues (2010b) also introduce an alternative interpretation based on R^2 parameters. These denote the proportion of the total variance in both the mediator (R^2_M) and outcome (R^2_Y) that is possibly explained by an unknown confounder. Hence, we can establish how small this proportion would have to be for our mediation results to hold.

We used this approach to test the potential mediating mechanisms identified by our qualitative analysis. In these analyses, the predictor variable consisted of the binary dummy for treatment status, i.e. assignment to either control or intervention arm. The outcome was an aggregated index of financial behaviour, reflecting self-reported past-month saving, borrowing, and consumption shortfalls (see *Table A12*). We then used a nonparametric bootstrap procedure with 1000 repetitions to calculate the average causal mediation effect for each pathway highlighted by the

qualitative analysis. Subsequent sensitivity analyses were then ran for each respective mediator, inspecting both values of ρ and $R^2_M R^2_Y$.

In a final step, significant mediating variables were entered simultaneously into a structural equation model (SEM). Structural equation modelling is a powerful technique for estimating complex path models. Goodness of fit for the final model was assessed using the Comparative Fit Index (CFI; Bentler, 1990), the Root Mean Standard Error of Approximation (RMSEA), and the Standardised Root Mean Square Residual (SRMR; Bentler, 2007). Conventional cut-offs indicating a good model fit require CFI values to be over 0.95 (over 0.90 for an acceptable model fit) and lower than 0.05 for RMSEA and SRMR (lower than 0.08 for a reasonable fit) (Hu & Bentler, 1999). Following Brown (2015), the model was refined for improved goodness of fit by taking modification indices into account and correlating respective item residuals in case this appeared conceptually justified.

In all analyses described above, we controlled for rural/urban location and baseline financial behaviour. Analyses were conducted in R Studio using the 'mediation' (Tingley et al., 2014) and 'lavaan' packages (Rosseel, 2012).

3. Results

3.1 Demographics

Table 14 summarises baseline demographic information of the study sample.⁴⁷ The adult sample was largely female as a result of the recruitment focus on primary caregivers. The age range for adults was 18-92 years old, with many primary caregivers being grandmothers, often replacing a deceased biological mother. The sample was further characterised by high poverty rates: less than 10% of study participants were formally or informally employed, around one third lived in informal housing (“shacks”), and around two thirds relied on water sources outside the house. Further, respondents reported shortages of food for an average of almost three out of seven week days. At baseline, less than 20% of participants were able to save some money in the past month and reliance on borrowing from friends, neighbours, and moneylenders was high. Monthly governmental welfare grants typically served as the primary source of income for participating families.

⁴⁷ For detailed description of the subsample of respondents who participated in qualitative data collection see Doubt et al. (2017).

Table 14. Sample Description

	Full Sample	Control Group	Treatment Group
Observations	552	282	270
Age	49.37 (14.69)	49.94 (14.20)	48.79 (15.20)
Female	0.95 (0.22)	0.93 (0.26)	0.97 (0.17)
HIV-positive	0.27 (0.44)	0.28 (0.45)	0.26 (0.44)
High school degree & higher	0.37 (0.48)	0.36 (0.48)	0.38 (0.49)
Currently employed (formal & informal)	0.06 (0.24)	0.07 (0.25)	0.05 (0.22)
Informal housing	0.72 (0.45)	0.74 (0.44)	0.71 (0.45)
Water tap inside the house	0.37 (0.48)	0.31 (0.46)	0.42 (0.49)
Hungry days/week	2.85 (2.23)	2.88 (2.18)	2.82 (2.29)
Receipt of any welfare grant	0.96 (0.19)	0.96 (0.20)	0.96 (0.19)
Any Savings past month	0.18 (0.38)	0.17 (0.38)	0.18 (0.39)
Borrowed from friend/family past month	0.61 (0.49)	0.56 (0.50)	0.67 (0.47)
Borrowed from moneylender past month	0.44 (0.50)	0.46 (0.50)	0.42 (0.49)

Notes: Standard deviations are in parantheses.

3.2 Qualitative Analysis Results: Pathways of Change

Three salient pathways of positive change emerged from the qualitative interviews and discussions with programme participants. It is also important to note that a minority of participants reported no change while none reported harm or any negative effects of the programme on their economic capacities.

Pathway 1: Financial planning confidence

A first pathway emerged from participants' narratives of newly acquired financial skills and resulting changes in financial management practices. Accordingly, many interviewees referenced specific content covered in the two economic sessions (*see Table 7*) and described how participation in the programme had raised their awareness of suitable strategies to save money. Similarly, participants felt encouraged to take up new saving practices (*"Now I know how to save"* [female adult, urban cluster]), thus corroborating our quantitative findings that revealed

significant increases in saving rates at post-test (see Steinert et al., 2018). In some cases, participants attributed workshop attendance with substituting previous informal – and less effective – saving strategies. These were mainly motivated by considerations of protection from loss, increased safety, and reliability:

"I was doing a stokvel [saving group] with my friends. Two of them passed away so I had a loss but I learned if I had taken my money to the bank it would not have happened." [female adult, urban cluster]

"I have learned how to bank my money because if you think you will hide your money at home, there is something that can happen in the house and will make you lose your money." [female adult, urban cluster]

However, although the majority of participants seemed to favour saving in a bank account after participation in the programme, some still reported preference for alternative saving methods, noting for instance: *"It is better when you keep your money at home rather than at the bank, because at the bank they will steal it."* [female adult, rural cluster]. This may suggest that some families perceived high bank fees and transaction costs as substantial barriers which made saving of very little amounts economically unattractive. The non-didactic approach of the programme aimed at empowering participants to base their decisions on their individual needs and circumstances rather than endorsing one specific strategy. The variation in preferences for different saving strategy is likely reflective of this.

Further, participants described how newly acquired skills helped them budget their monthly grant income:

"I learned that budgeting is about not using more money than you have, basically to live within your means." [female adult, rural cluster]

"A skill I learned at Sinovuyo is the budgeting which is important as my teen is about to go to initiation school [circumcision preparation]." [female adult, rural cluster]

These gains in financial skills were also tied to more deliberate financial planning in general. Most commonly, interviewees listed itemising anticipated expenses prior to actual spending, as expressed in multiple references to *"shopping lists,"* and having learned to prioritise certain expense areas over others: *"It taught me the difference between needs and wants"* [male adult, rural cluster] or *"I'm strict with my money now"* [female adult, urban cluster].

The above evidence implies a close link between financial skills and financial behaviour that may stem from increases in financial self-efficacy, as also documented in our quantitative analyses (see Steinert et al., 2018). Self-efficacy refers to a person's confidence in his or her ability to perform a certain behaviour (e.g. prioritising "needs" over "wants"), considered necessary for a desired performance attainment (e.g. saving money) (Bandura, 1986, 1982). In line with this argument, the new planning and saving skills appear to have increased participants' confidence levels and trust in themselves, commonly framed by expressions such as: "*now I know*" or "*now I can*". Consequently, these positive cognitive self-evaluations may have become psychological motors of action, driving the uptake of saving and more deliberate budgeting.

Pathway 2: Optimistic future outlook

A second potential pathway was based on participants' accounts of a more positive and optimistic future outlook, motivated by the saving goals formulated and discussed in programme sessions. Common saving goals included "*building a house*" and "*fostering children's education*". Further, saving goals consisted of participation in cultural events such as "*initiation ceremonies*," celebrated to signal a boy's transition into manhood after circumcision, or the "*matric dance*" at high school completion. A number of participants suggested that these goals were motivated by the inspirational stories featured in the intervention curriculum:

"I learned from the story of Mama Nontlantla [story character], because it helped me to save and have a purpose for saving, knowing what I am saving for." [female adult, rural cluster]

Accordingly, in some instances, participants may have turned these story characters into role models, who animated them to deconstruct perceived constraints and envision their future in a more optimistic, positive way. The resulting optimism may have challenged feelings of resignation and hopelessness, thus mobilising action and changes in financial behaviour. This was most evidently expressed in narratives such as "*one does not have to have lots of money to start saving*" [female adult, rural cluster] or "*you can budget no matter how small the amount*" [female adult, rural cluster].

The more optimistic future outlook can also be viewed as a facilitator of prospective planning. Accordingly, participants perceived that they had become more aware of the need for and purpose of saving. In relation to this, a powerful theme throughout the qualitative data was the shift from present-biased planning and cognition to increased orientation towards the future and building of security buffers in anticipation of possible future risks. This was repeatedly emphasised as saving and preparing for economic shocks, referred to as *“emergencies”*, *“something bad happening”* or *“a crisis”*. Similarly, several participants reported prevention of future indebtedness through *“avoiding loan sharks”*. These changes in financial behaviour were also supported by quantitative findings showing reductions in past-month borrowing rates (see Steinert et al., 2018).

Pathway 3: Social support within and outside the home

Finally, participants identified improved social support as an important driver of financial change. Social support was articulated as occurring either *within* a household or *outside*, provided by neighbours or friends. Within participants' homes, social support was explicitly strengthened through programme content on the formation of supportive caregiver-child interactions, promotion of positive parenting behaviour, and practices of mutual praise and spending time together. Tied to this, adult and adolescent participants respectively provided detailed descriptions suggesting that they had started spending more time with each other, both through budgeting together and advising each other on financial plans. Participants noted how budgeting became a shared activity in their homes that served as a regular reminder of endorsed financial management tools, helped consolidate acquired skills, and integrated careful financial planning into families' day-to-day lives. Thus, changes in financial behaviour were likely reinforced through increased social encouragement and mutual support within the household:

“The relationship with my teen changed after Sinovuyo. Now we can sit and spend time talking, advise on things to buy and prepare a shopping list together.” [female adult, rural cluster]

“A lot has changed at home once attending Sinovuyo. There was no communication between us, now there is. My Mum never praised me when I did something good,

now she does. We never had a budget before, now we budget together." [female adolescent, rural cluster]

"Sinovuyo gave me and my family an open mind of doing budgeting and saving with my children so that if there is a problem at home we should go and take money at the bank and not go to a loan shark." [female adult, rural cluster]

Shared financial planning occurred not only between the parent-child pair enrolled in the programme but also spilled over to other family members. This likely helped embed programme content such as monthly saving practices into household decision making practices. It also provided an opportunity for the intentional wider impact of the programme from the participating pair to the rest of the family.

"We budget with the family and sometimes the kids do the budgeting. We discuss things that affect us together as a family." [female adult, urban cluster]

"Everyone at home wanted us to come back and share the stories from sessions and the children will recite everything we say [...] We did home practice as a family. All participated, especially when we did the budget." [male adolescent, rural cluster]

Likewise, the group-based and socially adhesive nature of the programme may have fostered social support *outside* the home. The pilot study already found evidence that participants continued to meet individually (with their assigned village "buddies") and in small groups after the programme implementation. This, in turn, may have helped to consolidate planned financial management through the salience of new social norms as well as through positive peer pressure (*"We remind one another about Sinovuyo and advise one another on budgeting"* [female adult, rural cluster]).

3.3 Quantitative Analysis Results

The potential pathways highlighted by qualitative evidence were subsequently tested quantitatively. Variables for the quantitative model were selected to closely match the social and psychological factors that emerged from the qualitative analysis. For *Pathway 1*, standardised questionnaires included two items capturing participants' confidence to deliberately budget their monthly resources and smooth

consumption over a grant cycle. Here, we refer to this behaviour as **financial self-efficacy** (see also Dietz, Carrozza & Ritchey, 2003). For *Pathway 2*, to capture **optimism**, we used the reversed CES-D depression scale (as in Radloff, 1977). *Pathway 3* was divided into two aspects of **social support**: support *within* a household and support from *outside* the family. For within-household support, we used 10 items denoting a positive caregiver-child relationship drawn from the Alabama Parenting Questionnaire (Frick, 1991). The measure for extra-familial support was drawn from the Medical Outcome Study's Social Support Survey and included 14 items on emotional and affectional support from a person outside the family (Sherbourne & Stewart, 1991). All measures are summarised in *Table A12* and had been piloted and culturally adapted for the study sample.

Mediation Analysis

First, we tested each individual factor from above in a separate mediation model. Results from these models are summarised in *Table 15*. The average causal mediation effect (ACME) was only significant for the psychological factors, namely 0.12 (95% CI [0.07, 0.19], $p < 0.01$) for optimism and 0.13 (95% CI [0.07, 0.21], $p < 0.01$) for self-efficacy. Accordingly, 22% of the total effect of the programme on financial behaviour was mediated through the optimism pathway and 24% through the self-efficacy pathway. While both social factors of community social support and caregiver-child relationship showed significant improvements in the treatment group at post-test (see first column of *Table 15*), the ACME was non-significant for both putative mediators.

Table 15. Mediation Analysis Results for Outcome of Financial Behaviour

Mediating Measure	Effect of Programme Participation on Mediator	Average Causal Mediation Effect	Direct Effect	Total Effect	% of Total Effect Mediated	Sensitivity	
						ρ at which ACME=0	$R^2_M R^2_Y$ at which ACME=0
Psychological Factors							
Optimism	0.70*** (0.13)	0.12*** [0.07, 0.19]	0.43*** [0.23, 0.66]	0.55*** [0.35, 0.77]	22% [0.11, 0.41]	0.25	0.049
Financial Self-Efficacy	1.31** (0.22)	0.13*** [0.07, 0.21]	0.42*** [0.21, 0.63]	0.55*** [0.36, 0.76]	24% [0.11, 0.45]	0.20	0.030
Social Factors							
Social support outside the home	0.96*** (0.24)	0.02 [-0.01, 0.06]	0.53*** [0.33, 0.74]	0.55*** [0.35, 0.75]	4% [-0.02, 0.12]	0.05	0.00
Social support inside the home	1.58* (0.17)	0.05 [-0.04, 0.15]	0.52*** [0.30, 0.76]	0.56*** [0.37, 0.77]	8% [-0.08, 0.29]	0.05	0.00
Sample Size	534						

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Clustered standard errors in brackets. 95% CIs in square brackets, based on a nonparametric bootstrap procedure with 1000 simulations. Financial behaviour is composed of past-month saving and past-month borrowing from moneylenders and/or friends/family members, and four items on past-month monetary shortfalls.

However, given the salience of the social support pathway in our qualitative data analysis and the suggested importance for households' financial behaviour, we also tested whether these factors could be associated with our outcome *via* other variables, namely the psychological factors. Hence, we defined optimism and self-efficacy as outcomes in a subsequent mediation analysis. Then, we tested whether the two social support factors were potential mediating variables explaining the link between treatment exposure and improvements in psychological factors. Indeed, as shown in Table 16, the effect of the treatment on optimism was significantly mediated by community social support (ACME=0.13, 95% CI [0.06, 0.21], $p < 0.01$) as well as family social support (ACME=0.27, 95% CI [0.15, 0.43], $p < 0.01$). More precisely, 19% of the programme's total effect on optimism was mediated through community social support and 39% through a positive and nurturing caregiver-child relationship. Table 17 provides mediation effects for the outcome of financial self-efficacy. Here, community social support was a significant but rather weak mediator (mediating only 6% of the total effect). It was also sensitive to small violations in the sequential ignorability assumption (see below). However, family social support emerged again as a strong mediating factor, with ACME=0.44 (95% CI [0.25, 0.67], $p < 0.01$), mediating 35% of the total effect on financial self-efficacy.

Table 16. Mediation Analysis Results for Outcome of Optimism

Mediating Measure	ACME	Direct Effect	Total Effect	% of Total Effect Mediated	Sensitivity	
					ρ at which ACME=0	$R^2_M R^2_Y$ at which ACME=0
Social Factors						
Social support outside the home	0.13*** [0.06, 0.21]	0.57*** [0.33, 0.86]	0.70*** [0.46, 0.99]	19% [0.08, 0.34]	0.25	0.052
Social support inside the home	0.27** [0.15, 0.43]	0.44*** [0.17,0.73]	0.71*** [0.45, 0.98]	39% [0.19, 0.67]	0.20	0.027
Sample Size	534					

Notes: See Table 15.

Table 17. Mediation Analysis Results for Outcome of Financial Self Efficacy

Mediating Measure	ACME	Direct Effect	Total Effect	% of Total Effect Mediated	Sensitivity	
					ρ at which ACME=0	$R^2_M R^2_Y$ at which ACME=0
Social Factors						
Social support outside the home	0.08** [0.01, 0.17]	1.23*** [0.79, 0.63]	1.31*** [0.86, 1.74]	6% [0.01, 0.14]	0.10	0.008
Social support inside the home	0.44*** [0.25, 0.67]	0.79*** [0.33, 1.22]	1.23*** [0.81, 1.67]	35% [0.19, 0.62]	0.20	0.027
Sample Size	534					

Notes: See Table 15.

Sensitivity Analysis

As outlined above, it is important to determine how robust significant ACMEs are to violations in the sequential ignorability assumption. Therefore, in the last two columns of *Tables 15-17*, we also reported values for the sensitivity parameters ρ and $R^2_M R^2_Y$ for which mediation effects would turn zero and reverse direction. If the sequential ignorability assumption holds, ρ would equal zero and the ACME correspond exactly to the values presented in *Tables 15-17*.

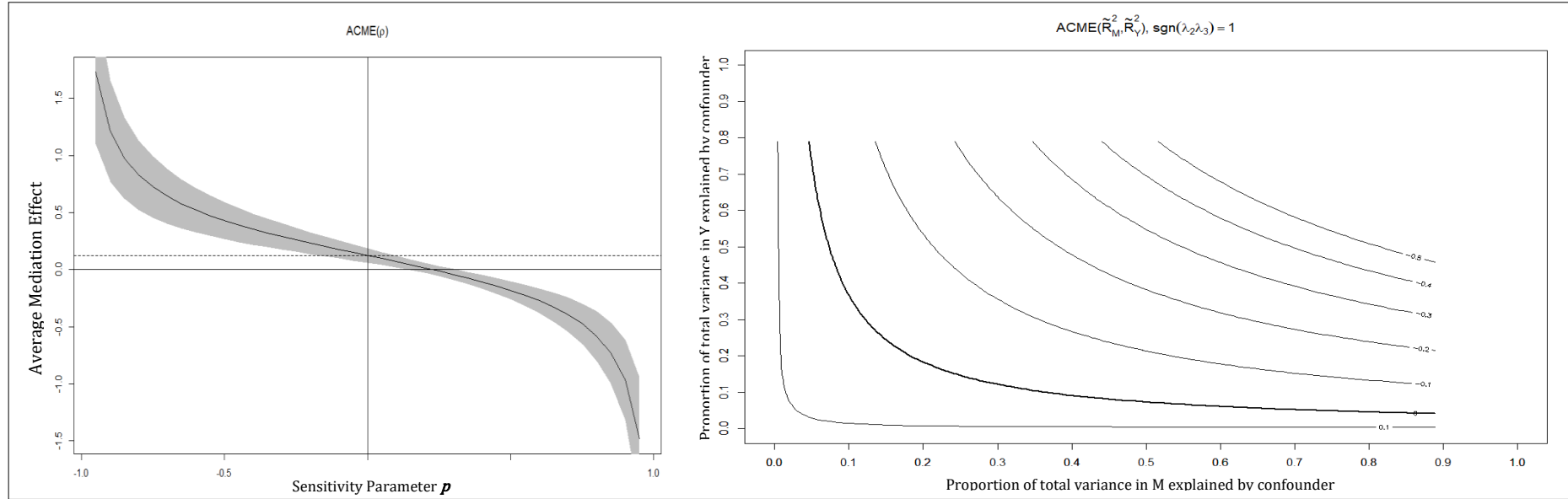
For the mediating variable optimism (*Table 15*), we show that the ACME would turn to zero for $\rho=0.25$ (for illustration purposes, see left panel of *Figure 19*). For ease of interpretation, we also computed the ACME as a function of the proportion of total variance in the mediator and outcome variables that is explained by a common confounding factor. Here, we show that the ACME for optimism would turn non-significant or negative if the product for these proportions was greater than the critical value of 0.05 (see right panel of *Figure 19*). Effectively, our results would

thus not hold if there was a common confounder explaining $>22\%$ ⁴⁸ of the variance in the mediator and outcome. As this is quite a demanding requirement, the positive mediation effect for optimism can be considered as relatively robust to possible unobserved confounding. The mediation effect for financial self-efficacy was slightly less robust, suggesting that the ACME would not hold if a confounding variable explained $>17\%$ of the variance in self-efficacy and financial behaviour.

Tables 16-17 present the results from subsequent mediation models with psychological variables as outcomes and the social support variables as mediators. First, as shown in *Table 16*, the ACME of community social support for the effect of the *Sinovuyo Teen* project on participants' levels of optimism was quite robust to the possible unobserved pre-treatment confounding, holding if $<23\%$ of variance was explained by a common confounder in both mediator and outcome. Similarly, the ACME of family social support was fairly robust, holding if $<16\%$ of variance was explained. For the effect of the treatment on participants' levels of self-efficacy (see *Table 17*), family social support was again confirmed as a relatively robust mediating variable, holding if $<16\%$ of variance was explained. By contrast, community social support was sensitive to even small violations in the ignorability assumption and would turn undistinguishable from zero if an unknown confounder explained only 9% of the variation in the mediator and outcome.

⁴⁸ The percentage of variance to be accounted for is given by the critical value of 0.05, i.e. $0.22 \times 0.22 = 0.049$. The same would be true for a higher percentage explained in the mediator or the outcome and a lower percentage in the other, respectively. This is visualised in the right hand panel of *Figure 19*.

Figure 19. Sensitivity Analysis: Optimism

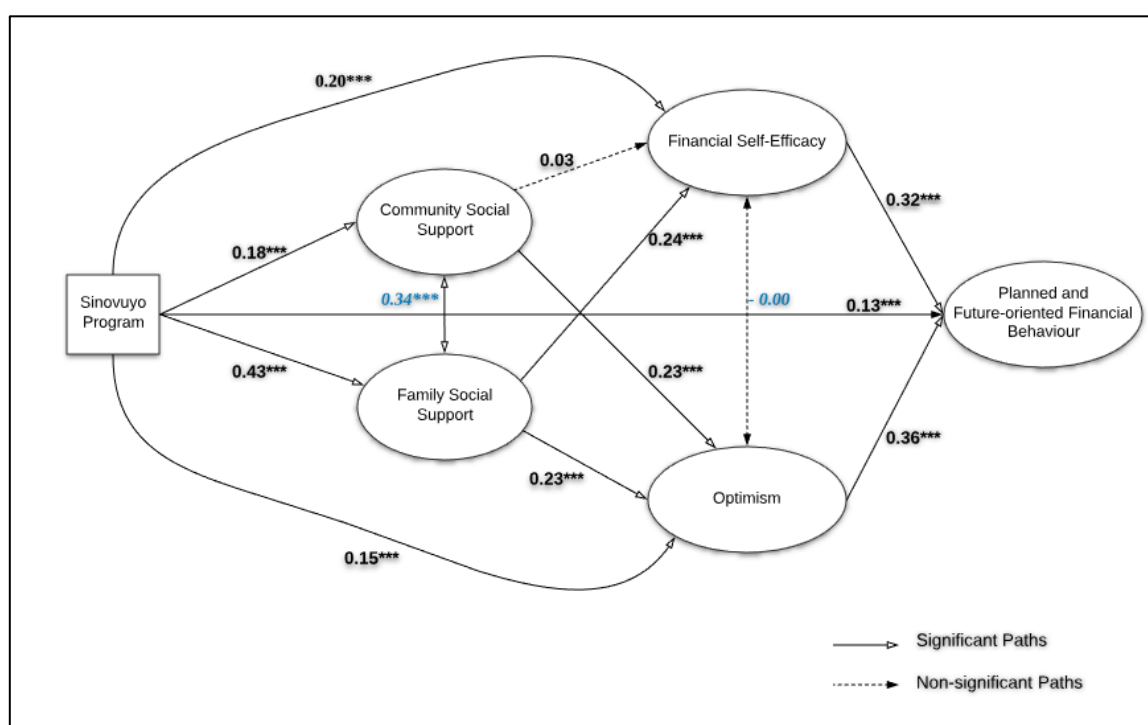


Notes: Plots are shown for illustration purposes and correspond to the sensitivity analysis for the mediator “optimism” linking programme participation to changes in financial behaviour. In the left panel, we plot the sensitivity parameter ρ (i.e. the correlation between error terms in the mediation and outcome regression models) against the average causal mediation effect (ACME). The dashed line presents the ACME under the sequential ignorability assumption. The shaded area represents point estimates and 95% confidence intervals for different values of ρ . In the right panel, the contour lines represent the ACME as a function of the proportion of total variance in M (optimism) and Y (financial behaviour) that is explained by a common unobserved confounder, assuming that the confounder impacts both M and Y in the same direction. The contour line in bold shows all possible values of the product $R_M^2 R_Y^2$ for which the ACME is 0.

Structural Equation Model

In the final analysis step, all mediating factors from above were entered into a structural equation model, allowing us to simultaneously estimate all putative mechanisms of change. Corroborating findings from the mediation analysis above, self-efficacy and optimism remained significant mediating pathways in the final model. Both social support variables (family and community social support) were not directly linked to the outcome variable. However, they had a subordinate indirect impact on financial behaviour *via* the two psychological pathways of optimism and self-efficacy. Finally, three modifications were made to correlate error terms of related item pairs for improved model fit. The final path model is summarised in *Table 18* and visualised in *Figure 20*.

Figure 20. Path Diagram on Pathways of Change



Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All coefficients are standardised estimates. Covariances in blue.

As reported in *Figure 20*, the programme effect on financial behaviour was mediated by financial self-efficacy and optimism, with significant paths linking both treatment and mediators, and mediators and outcome. Further, programme participation increased levels of family social support ($\beta=0.43$, $p<0.001$) and community social support ($\beta=0.18$, $p<0.001$). These variables then further reinforced financial self-efficacy ($\beta=0.20$, $p<0.01$, $\beta=0.03$, $p>0.10$, respectively) and optimism ($\beta=0.23$, $p<0.001$, $\beta=0.23$, $p<0.001$, respectively), and were thus indirectly linked with the outcome of planned financial behaviour. Notably, social support from *inside* and *outside* the home were positively and significantly correlated with each other ($\tau=0.34$, $p<0.001$). However, participants' level of optimism and perceived financial self-efficacy were not statistically associated, thus contrasting with previous empirical findings (e.g. Conradie & Robeyns, 2013).

Goodness of fits for the individual measurement models were satisfactory and strongest for the outcome variable of financial behaviour and the mediating variable of parent-child relationship. The goodness of fit of the final model was good according to a CFI value of 0.98 and RMSEA 0.079, but only decent according to the SRMR (0.103) (see *Table 18*). However, Brown (2105) advises against applying model fit cut-offs unequivocally, and thus we refrained from further post-hoc – and largely a-theoretical – modifications to our model.

Table 18. Final Structural Equation Model

Structural Model					
	Positive Caregiver-Child Relationship	Emotional/Affectionate Social Support	Financial Self-Efficacy	Optimism	Financial Behaviour
Trial Arm	0.43*** (0.04)	0.18*** (0.04)	0.20*** (0.05)	0.15*** (0.05)	0.13* (0.07)
Positive Caregiver-Child Relationship			0.24*** (0.07)	0.23*** (0.06)	
Emotional/Affectionate Social Support	0.34*** (0.04)		0.03 (0.05)	0.23*** (0.05)	
Financial Self-Efficacy					0.32*** (0.09)
Optimism			-0.00 (0.07)		0.36*** (0.08)
Correlated Item Residuals					
Hopeful about future & As good as others	0.40*** (0.12)				
Focused mind & Enough energy	0.46*** (0.05)				
Helps you understand & Gives you advice	0.60*** (0.06)				
Goodness of Fit					
<i>Financial Behaviour</i>					
CFI	0.984				
RMSEA	0.051				
SRMR	0.060				
<i>Caregiver-Child Relationship</i>					
CFI	0.992				
RMSEA	0.059				
SRMR	0.049				
<i>Emo./Affect. Support</i>					
CFI	0.983				
RMSEA	0.290				
SRMR	0.208				
<i>Financial Self-Efficacy</i>					
CFI	0.828				
RMSEA	0.140				
SRMR	0.155				
<i>Positive Aspirations</i>					
CFI	0.923				
RMSEA	0.153				
SRMR	0.123				
<i>Full Model</i>					
χ^2	3157.064*** (df = 804)				
CFI	0.976				
RMSEA	0.073				
SRMR	0.103				
N	552				

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standardised estimates shown, SE in parentheses. Coefficients are based on a DWLS estimator. The table shows results with the best model fit. In a previous model, we have additionally controlled for baseline value of financial behaviour and rural/urban strata. Coefficients of interest remained virtually unchanged, but model fit was poorer for parsimony reasons and baseline controls thus removed for the final model presented in here. Similarly, another model was run with clustered standard errors and coefficients of interest remained similar in magnitude and significance. However, model fit was generally lower (CFI 0.72, RMSEA 0.08, SRMR 0.09) due to the small number of clusters and relatively high number of parameters estimated, which is why the unclustered version is presented in here. Non-directional covariances in the structural model in italics. Item residuals were correlated as informed by inspection of modification indices. Goodness of fit presented for the final full path model.

4. Discussion

The present paper set out to examine changes in financial behaviour that resulted from participation in a combined parenting and financial literacy delivered to low-income families in South Africa. Our analysis moves beyond conceptualisations of financial behaviour that rely largely on financial literacy and knowledge. Instead, we shed light on the additional relevance of psychological and social factors. We adopt a mixed-methods framework that allows for a better understanding of *how* the intervention works. Qualitative data can thereby help contextualise and complement quantitative findings, with the intention to open the “black box” of a programme’s “active ingredients” that drive change (Astbury & Leeuw, 2010; Harachi, Abbott, Catalano, Haggerty & Fleming, 1999).

Based on our analyses of data from standardised surveys, qualitative interviews, and focus group discussions, we demonstrate that a group-based parenting and financial literacy intervention helped to strengthen emotional ties between caregivers, their children, and other household members. This benefit was likely achieved through enhanced communication, spending time together, and joint problem solving, for instance by budgeting together. Additionally, the programme fostered social support within the community. Post-intervention, participants showed increased levels of confidence and self-efficacy. This change was possibly a result of mutual support and positive encouragement between programme participants with their peers and family members. It may further reflect the pooled competence in budgeting and saving practices that contributed to the consolidation of knowledge.

Similarly, the programme helped to instil a more positive outlook on the future in participants. This outcome might be partly driven by a “role model effect”, whereby the financial achievements of a peer group member (such as reaching a saving goal) may help other participants aspire to similar outcomes and thus motivate them to save. Further, the future may become more salient if family members remind each other about their saving goals and plans. Together, these mechanisms could then materialise in optimisations of saving and borrowing behaviour.

Our results support an emerging body of literature that discusses the role of psychological factors in shaping financial behaviour as well as more general economic welfare. The relevance of self-efficacy in defining human behaviour has already been established in seminal theoretical work (e.g. Fishbein & Yzer, 2003). For instance, Bandura (1982) described that “[p]eople’s beliefs in their efficacy influence the choices they make, [...] how much effort they mobilise in a given endeavor, how long they persevere in the face of difficulties and setbacks” (p. 123). Likewise, empirical work has revealed that confidence in the ability to perform a certain behaviour predicts actual behaviour (Redding, Rossi, Rossi, Velicer & Prochaska, 2000). Yet, when looking specifically at low-income populations, research has shown a strong correlation between material deprivation and low levels of self-efficacy (Dercon & Kirshnan, 2009). Living in poverty can instil a sense of poor control over one’s life, lack of agency, and a distorted self-image. These may then become major barriers to adaptations and changes in financial behaviour that could help reduce financial hardship. In response, similar to the intervention discussed here, some recent development programmes have tried to specifically address low levels of self-efficacy. For example, Ghosal and colleagues (2015) report on an intervention targeting sex workers in India who experienced social marginalisation and exhibited negative self-images and a poor sense of agency. The intervention aimed to improve psychological factors via interactive discussions and reshaping of self-defeating narratives. Post-intervention, the researchers documented substantial improvements in future-oriented savings choices at a 15-month follow-up.

Poverty can also induce low optimism, a pessimistic notion of the future, and feelings of hopelessness and fatalism (Karimli & Ssewamala, 2015). Consequently, the poor may become less able to make choices with regards to education, health, or financial planning that would best serve their interests. Scholars have referred to this as a “psychological poverty trap” whereby poverty and deprivation reduce “*the aspirational resources to contest and alter the conditions of their [the poor’s] own poverty*” (Appadurai, 2004, p.59; Flechtner, 2017; Dalton, Ghosal & Mani, 2016). At the same time, scholars note that hope, optimism, and aspirations are largely shaped by a person’s social environment and background (Genicot & Ray, 2017; Ray, 2006).

Taking this argument a step further, we could hypothesise that positive behaviour and decisions as well as successful life outcomes of peers may help mobilise an individual's level of optimism and mitigate internalised constraints. A recent study by Bernard and colleagues (2014) set out to test this method in the form of a controlled field experiment in rural Ethiopia. The programme tried to contest the low aspirations of programme participants with a series of movies featuring characters that were placed in similar settings and contexts as participants themselves, but that presented accounts of successful business endeavours. The authors document significantly higher levels of aspirations as well as savings rates and educational investments in communities exposed to the movie screening. The researchers argue that the success stories of movie characters (who were perceived as peers) were linked to a 'vicarious experience' that helped participants shift their mental models from fatalistic ideation to a more optimistic view of the future. A similar peer effect can be seen in our study, wherein programme participants ascribe their decision to plan for the future and formulate future goals to the stories of success that were acted out and discussed in the sessions.

Several limitations of this analysis are noteworthy. First, measures relied exclusively on self-reported information that was not triangulated with observational data or administrative records on financial flows. Therefore, it is possible that participants overstated the changes resulting from the programme due to social desirability bias or a "Hawthorne effect" (see also Cluver et al., 2017). Second, full post-test data was only collected during one wave, five to nine months after delivery of the intervention. Given that it is not possible to establish temporal sequence between mediating and outcome variables, our quantitative analyses are not adequately equipped to claim causality of the suggested pathways. Yet, our use of a mixed-methods framework and examination of rich qualitative data can shed light on the directionality of effects and the causal mechanisms at play. It can thus help to partly overcome some of the inherent limitations of RCT data.

Third, generalisability and transportability of the results reported here is not known. Most importantly, the majority of programme participants were women, and all were caregivers. It is therefore unclear whether men's financial behaviour is

subject to the same psychosocial dynamics. Multiple previous studies have pointed to reduced programme impact for female recipients, identifying constrained bargaining and financial decision making power vis-à-vis male household heads as major barriers (Steinert et al., 2018; Kim et al., 2006). In this context, it may be particularly important to expose male household members to programme content and practices. As emphasised in some of the qualitative statements presented above, the homework practices and discussions featured in the programme curriculum could have helped sensitise the wider family and thus increased the likelihood of changes in saving and budgeting behaviour. However, more research is needed to establish how support of male household members can be most effectively secured.

Furthermore, financial behaviour of the families enrolled in this study needs to be assessed in the context of widespread reliance on social security. That is, although levels of poverty in participating households were high, most poor families in South Africa receive monthly unconditional cash transfers. This regular small income flow might be crucial for the observed improvements in saving and budgeting practices. Therefore, it is possible that effects would differ in Sub-Saharan African countries with less developed social security provision.

Despite these limitations, our findings have important implications for the design of programmes that seek to improve the financial lives of the poor. Most prominently, they suggest that impact may be increased by integrating psychosocial components in a curriculum. In a corresponding theory of change, financial decision making would be defined as a complex interplay of psychological and relational factors. Causal evidence for our argument is presented in a recent study enrolling small-scale entrepreneurs from Togo (Campos et al., 2017). The study tests standard business training against personal initiative training, whereby the latter training directly targets participants' psychology by fostering a proactive and future-oriented mindset. Over the course of two years, the authors show that the psychological training increased firms' profits by 30% whereas standard business training was only associated with an insignificant 11% increase. Similarly, acknowledging the central relevance of psychological properties, Dalton and Ghosal (2011) propose the use of psychological therapies that "*modify thoughts, beliefs,*

behaviour, and environments to improve people's psychological states" (p. 573) for the promotion of individual welfare. Therefore, these programming implications are not only relevant for financial literacy programmes, as has been suggested in this study, but also could boost the effectiveness of related poverty reduction programmes, including microcredit, cash transfer, and schooling programmes.

Supplementary Tables

Table A12. Definition of Constructs

Construct	Items	Source
Outcome Variable		
Financial Behaviour	• Have you managed to save money in the past 4 weeks? (<i>binary</i>) • In the past 4 weeks, how often did you have to borrow money from a loan shark or money lender? (<i>ordinal, ranging from never to very often</i>) [reverse coded] • In the past 4 weeks, how often did you have to borrow money from a family member or friend? (<i>ordinal, ranging from never to very often</i>) [reverse coded] • In the past 4 weeks, how often did you run out of money for buying meat? (<i>ordinal, ranging from never to very often</i>) [reverse coded] • In the past 4 weeks, how often did you run out of money for airtime? (<i>ordinal, ranging from never to very often</i>) [reverse coded] • In the past 4 weeks, how often did you run out of money for transport? (<i>ordinal, ranging from never to very often</i>) [reverse coded] • In the past 4 weeks, how often did you run out of money for electricity? (<i>ordinal, ranging from never to very often</i>) [reverse coded]	Various, e.g. Berg & Zia (2013)
Psychological Pathway Variables		
Optimism	• I felt I was just as good as other people • I had trouble keeping my mind on what I was doing [reverse coded] • I felt hopeful about the future • I thought my life had been a failure [reverse coded] • I could not get going [reverse coded] • I was happy • I enjoyed life (<i>all binary</i>)	Short version of Centre for Epidemiologic Studies Depression Scale (Radloff, 1977)
Financial Self-Efficacy	• How confident are you that your family will not run out of money before the next grant day? • How confident are you that you can plan carefully in advance how to use the money for the month? (<i>both on 1-10 Likert scale</i>)	Adapted from Lown (2011)
Social Pathway Variables		
Emotional & Affectionate Social Support	• Thinking about your friends or family, do you have...someone you can count on to listen to you? • ... someone to give you information to help you understand a situation • ...someone to give you good advice about crisis • ...someone to confide in or talk to about yourself or your problems • ...someone to share your most private worries and fears with • ...someone to turn to for suggestions about how to deal with a personal problem • ...someone who understands your problems • ...someone who shows you love and affection • ...someone to love and make you feel wanted • ...someone who hugs you • ...someone to have a good time with • ...someone to get together with for relaxation • ...someone to do something enjoyable with • ...someone to do things with to help you get your mind off things. (<i>all ordinal, ranging from never to often</i>)	Medical Outcomes Study (MOS) Social Support Survey (Sherbourne & Stewart, 1991)
Positive Caregiver Teen Relationship	• You have a friendly talk with your teen • You volunteer to help with special activities your teen is involved in • You play games or do other fun things with your teen • You ask your teen about his/her day at school • You help your teen with his/her homework	Alabama Parenting Questionnaire – Positive Involvement

	• You ask your teen what your teen 's plans are for the coming days • You drive or walk your teen to a special activity • You talk to your teen about their friends • Your teen helps plan family activities • You attend parent's meetings, parent/teacher conferences, or other meetings at school <i>(all ordinal, ranging from never to always)</i>	subscale (Frick, 1991)
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IX. Discussion

1. Overview of DPhil Findings

The main objective of this DPhil thesis was to analyse the effectiveness and viability of a type of programme that seeks to promote financial resilience among the poor. Three specific aims were addressed, resulting in three stand-alone papers:

- 1) Summarising experimental evidence on the impact of existing saving and budgeting promotion programmes in Sub-Saharan Africa (*DPhil Paper 1*, published in *World Development*).
- 2) Assessing the economic impact of a combined parenting and financial literacy programme for poor families in South Africa (*DPhil Paper 2*, published in *Journal of Development Economics*).
- 3) Unpacking the mechanisms of change explaining the impact of the above programme (*DPhil Paper 3*).

The empirical findings reported in this thesis suggest that the poor are indeed able to save their money, make careful financial plans, and develop financial resilience in contexts of scarcity and adverse events. Evidence from this thesis thereby deconstructs the commonly voiced criticism that the poor are simply “too poor” to save and that their financial lives are constituted of mere hand-to-mouth management. Rather, recent empirical evidence shows that the poor – and even the extremely poor – appear to have some flexibility in their budgets, which enables them to make complex financial choices (Karlan et al., 2017; Collins et al., 2009; Rutherford & Arora, 2009; Banerjee & Duflo, 2007).

In this DPhil thesis, I first demonstrate in a meta-analysis of existing studies that removing *external and institutional barriers* can help the poor to save, invest, and consume more (see *DPhil Paper 1*). Subsequently, I shift focus from the external to *internal barriers* of positive financial management and show that a stronger emphasis on beneficiaries’ psychological and social wellbeing can bolster their financial resilience. While financial literacy programmes to date have had a rather poor track record, I demonstrate in a large field experiment how their effectiveness

may be improved by enriching the training curriculum with psychosocial components (see *DPhil Paper 2*). Lastly, I shed light on the mechanisms explaining the effectiveness of this holistic curriculum. Utilising a mixed-methods approach, I find suggestive evidence that changes in financial behaviour are associated with improvements in self-efficacy, higher optimism with regards to the future, and socio-emotional support provided by family members and peers (see *DPhil Paper 3*).

In the following section, I discuss the overarching findings from my thesis, categorised into three themes: 1) the intention-action gap, 2) alleviating external barriers, and 3) promoting psychosocial wellbeing. In the subsequent section, I reflect on the strengths and limitations of this DPhil research. The penultimate section discusses implications for policy and future research, and in the final section of this chapter, I provide a summary of dissemination strategies employed as part of this DPhil project.

The Intention-Action Gap

Pertinent behavioural theories are built on the conventional assumption that attitudes and motivations play a central role in determining human behaviour (Bandura, 1986; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). However, evidence highlighted in this DPhil thesis as well as in numerous previous studies questions this assumption (Steinmetz et al., 2016). For instance, at the study's outset, most participants in our trial had low saving rates and were borrowing frequently and at high interest – despite holding high financial attitude scores endorsing saving and careful financial planning. At the same time, programme impact on financial behaviour and welfare was achieved without notable changes in participants' financial attitudes (see *DPhil Paper 2*). Similarly, a study in India tested variations in programme designs of a financial literacy training, finding that monetary incentives (often used to compensate for a lack of intrinsic motivation) had no significant effect on budgeting and saving behaviours and were outperformed by financial goalsetting and counselling components (Carpena et al., 2017). The authors conclude that participants' financial motivations and attitudes were not critical barriers to improvements in financial decision making and

behaviour. Providing further supporting evidence, Banerjee and Duflo (2007) document comprehensive survey evidence suggesting that the poor intend to budget their money more carefully and resist temptation-based spending on alcohol, tobacco, sugar, festivals, and entertainment. However, most households do not seem to be able to put these intentions into practice, which is illustrated by 4-8% of their overall budget being spent on tobacco and alcohol, and 10% of the annual budget spent on traditional ceremonies (such as initiation ceremonies in South Africa, see *DPhil Paper 2*). Lastly, previous meta-analytical evidence has cast doubts on the intention-behaviour nexus, revealing that attitudes and intentions explained little of the variance in actual behaviour (e.g. Steinmetz et al., 2016; Sutton, 2006).

Hence, the poor's financial behaviour is likely not significantly improved by interventions that only seek to alter their financial motivations and attitudes. In the following, I therefore aim to identify factors that can facilitate bridging this intention-action divide and thus inform a programme's logic model. Throughout this chapter, I demonstrate that the key target points for positive and planned financial management link back to the poverty-related adversities discussed in *Chapter II,3* of this thesis. This underlines an important fact: Poor financial management is not caused by inherent characteristics of the poor – they are not less capable, less disciplined, or less willing. Instead, the circumstances and conditions characteristic of their lives make careful and future-oriented financial planning particularly difficult. Successful intervention strategies must take this into account.

Alleviating the External Barriers that Constrain Financial Behaviour (*DPhil Paper 1*)

The systematic review conducted as part of this DPhil project helps advance research knowledge on how to bridge the intention-action gap in financial behaviour and decision making. The paper synthesises evidence from 27 randomised controlled trials on the effectiveness of saving and budgeting promotion programmes in Sub-Saharan Africa. Outcomes assessed in the meta-analysis include indicators of forward-looking and planned financial behaviour such as saving and business investments—as well as possible consequences thereof, namely financial, food, and entrepreneurial security. Programmes identified by the

review sought to promote these factors largely by adopting one of three key strategies: (1) building reliable and accessible financial infrastructure, (2) imposing psychological or external constraints to increase self-control, and (3) promoting financial literacy and knowledge. The aggregated findings from my meta-analysis suggest that the first programme type was particularly effective in increasing savings rates, business profits, household incomes and expenditures, and food security. By contrast, the strategy of financial literacy training showed little impact, suggesting that addressing shortcomings in financial knowledge and awareness is insufficient for helping the poor bridge the intention-action gap.

While significant development policy focus has been placed on microcredit and entrepreneurship for many years, banking and saving have long remained “the forgotten half of rural finance” (Vogel, 1981). Therefore, findings from my review have important theoretical and practical implications. The observed changes in financial behaviours seem to be realised by removal of the institutional and infrastructural barriers that make saving and financial management particularly difficult for the poor (see *Chapter II, 3*). That is, providing them with a safe place to store their money and giving them access to adequate financial tools can effectively help them navigate their complex financial needs and build financial resilience. Hence, the evidence discussed in this systematic review can motivate a strong policy message: expanding banking services to poor and underserved populations can help improve their economic situation, for instance through mobile money schemes (Suri & Jack, 2017), “banks on wheels” (Flory, 2016) or carefully monitored and regulated savings groups (Karlan et al., 2017; Ksoll et al., 2016). Thereby, comprehensive financial institutions not only protect money from theft or loss (Wright & Mutesasira, 2001) but also can facilitate resistance to temptations and impulses by making money less easily accessible (Mullainathan & Shafir, 2009). Financial institutions are further able to protect against what Kast and Pomeranz (2014) refer to as “other control problems”, denoting the pressure to respond to social requests and share fungible money with family members and friends.

Yet, despite these promises, financial institutions and saving vehicles alone are not a silver bullet, as demonstrated by findings from a recent experiment across Chile, Malawi, and Uganda. In this study, Dupas and colleagues (2017) offer free saving

accounts (and assistance in opening these) to unbanked poor individuals and found that take-up rates were strikingly low. In Uganda, 42% of those offered an account used it at least once, 41% in Malawi, and only 6% in Chile. Active usage (> 5 deposits per year) was even lower: 17% in Uganda, 10% in Malawi, and only 3% in Chile. Hence, while the *treatment effect on the treated* (i.e. those who took up saving) pointed to substantial welfare gains, the *intent-to-treat effect* (considering the whole study population) was negligible. The authors largely ascribe this limited effectiveness to high levels of mistrust in institutions and additionally incurred costs such as waiting time and travel to the bank branch. Yet, we may also assume that low usage is indicative of some behavioural and psychological biases such as procrastination, myopia, and hopelessness (World Development Report, 2015). Thus, changes on these dimensions may be another necessary condition for realising improvements in financial behaviour among at least some programme recipients. This further supports my guiding hypothesis that psychological and social programming might boost the effectiveness of economic strengthening programmes.

Addressing Psychological and Social Aspects that Constrain Financial Behaviour *(DPhil Papers 2 & 3)*

A life in poverty and scarcity can evoke a quasi-depressive mindset (Quidt & Haushofer, 2016). Feelings of hopelessness, a distorted vision of the future, resistance to change, risk adversity, and procrastination are symptomatic of this mindset (Mani, 2013; Appadurai, 2004; Karimili & Ssewamala, 2015; Leahy, 2002). Negative emotions can further drive cognitive processes such as overgeneralisation, use of negative filters, and confirmation bias by suppressing any information that undermines a prevailing negative belief or mental model (World Development Report, 2015). Together, these psychological constraints may play an essential role in perpetuating poverty traps (Shah et al., 2012).

To date, the most frequently implemented financial literacy programmes have largely relied on technical training curricula focused on numeracy skills and financial accounting (Fernandes et al., 2014; Carpena et al., 2017). Focus is thereby placed on addressing the *symptoms* of constrained financial behaviour by

alleviating suboptimal financial decision making. Instead, building on previous research (Blattman et al., 2017; Heller et al., 2017; Bernard et al., 2014), I address the role of psychological and emotional capacities of participants, thus shifting the focus from the *symptoms* to the *causes* of constrained financial behaviour. In line with this idea, we integrate a brief financial literacy training component into the wider psychosocial curriculum of a group-based parenting intervention. The financial literacy training primarily aims to promote financial skills and knowledge and increase the salience of some endorsed financial behaviours such as saving. The psychosocial curriculum capitalises on promoting participants' levels of hope, optimism, self-esteem, and self-efficacy as well as on instilling socio-emotional support between them and fostering positive family relationships. In *DPhil Paper 2*, I then demonstrate that this intervention had significant impact on participants' financial behaviours, illustrated by both higher saving and lower borrowing rates. In addition, I record reductions in monetary shortfalls, better coping with income shocks, and greater access to basic needs. In response to previous research that has revealed a high prevalence of poverty-related anxiety and worry (Collins et al., 2009; Haushofer, de Laat & Chemin, 2012), I also document reductions in financial concerns among study participants (similar to Kast & Pomeranz, 2014).

In *DPhil Paper 3*, I shed light on possible mechanisms explaining the programme's impact on the above economic dimensions. Corroborating my initial hypothesis, I find that psychological factors play a central role in helping participants act upon their intentions. Specifically, I show that increased levels of self-efficacy and a more optimistic outlook appear to drive the changes in financial behaviour and decision making. This relates to previous empirical evidence that has emphasised the role of optimism, hope, and confidence in promoting economic outcomes. For instance, Riley (2018) showed that exposure to a movie featuring a female role model ("Queen of Katwe") significantly increased the total exam scores of Ugandan upper secondary school students by 0.13 standard deviations – and most strongly for girls. Another experiment with 600 indigenous women in Mexico tested the impact of a 4-week "hope curriculum", emphasising development of goals and aspirations, promoting self-efficacy, and visualising pathways out of poverty. The authors found that the curriculum significantly raised levels of hope and aspiration and also

increased microenterprise revenues and profits (Lybbert & Wydick, 2017). Likewise, Ghosal and colleagues (2015) documented significant increases in savings rates following a “dream-building intervention” to promote hope, agency, and self-worth among female sex workers in India. Reflecting these research findings, a recent New York Times (2018) article concluded: “[...] *it is welcome news that poverty-alleviation programmes can amplify the good they do just by making a better life seem — and actually be — within reach*” (Jayachandran, 2018).

Furthermore, in *DPhil Paper 3*, I find evidence that social factors seem to have an emotional and psychological resonance (see also Hardcastle, 2012). This reflects previous research arguing that a person’s psychology, beliefs, expectations, and behaviour are formed under the influence of his or her social environment such as family members and peers (World Development Report, 2017; Bernard et al., 2014). The association between psychological and social factors is also closely in line with the ecological financial resilience framework introduced in *Chapter II, 4*. Accordingly, a person is responsive to microsystem and exosystem influences. Therefore, positive changes in family and peer relationships can set off “cascades” that generate protective processes on the psychological and individual level (Masten & Cicchetti, 2010; Luthar, 2006). In the *Sinovuyo Teen* intervention tested in this thesis, positive social influence is activated by the group-based design of the programme and its focus on promoting a supportive and encouraging atmosphere among participants and community members, and within families. In conjunction with this, I show in my empirical analysis that social and emotional support help to further reinforce optimism and confidence – and thus indirectly improve financial behaviour.

2. Strengths and Limitations

This DPhil thesis presents the first known study⁴⁹ examining the impact of a combined parenting and financial literacy programme on financial behaviour as well as economic welfare. The resulting findings add important new evidence to a rather pessimistic body of literature, suggesting that the limited effectiveness of financial literacy programmes might be overcome by enhancing curricula with psychosocial components. A randomised controlled trial with particularly poor and vulnerable families provides a valuable first proof of concept for this hypothesis. Further strengths of the experiment presented in this DPhil thesis were pre-registration, data sharing for increased transparency, very low attrition rates, and high-quality implementation, including home visits to participants who had failed to attend a programme session. Another methodological contribution of this DPhil project is its innovative mixed-methods approach, which was used to look beyond programme impact and elucidate the mechanisms underlying changes in financial behaviour. While the use of qualitative data is less common in economics research, it can provide a more nuanced and richer understanding of participants' experiences (see Orkin, 2012; 2011). Nonetheless, several important limitations should be taken into consideration when drawing inferences and policy lessons (see *Chapter IX, 3*) from this DPhil research.

Limitations of the Systematic Review and Meta-Analysis (*DPhil Paper 1*)

Review Scope

The primary goal of a systematic review is to collate a large body of literature into a comprehensive, easily accessible, and succinct summary of the state-of-the-art evidence. From a policy perspective, a review is most pertinent if it has a rather broad scope, summarising evidence across different populations, settings, and study designs. However, given the amount of time, resources, and effort required for carrying out a rigorous and high-quality review (Mallett, Hagen-Zanker, Slater &

⁴⁹Note that the “*New Generation*” intervention in Burundi evaluated by Annan et al. (2013) did also combine saving promotion with parenting training. However, the “*New Generation*” economic component consisted of more focused entrepreneurship training and was therefore different to the focus on elementary family budgeting and saving used in the *Sinovuyo Teen* project.

Duvendack, 2012), researchers often opt for a rather narrow focus and research question, thus pointing to an important trade-off between feasibility and relevance. Similarly, the systematic review presented in this DPhil thesis was defined by relatively restrictive inclusion criteria, focusing exclusively on randomised controlled trials (excluding high-quality quasi-experimental studies) and putting geographic focus on Sub-Saharan Africa only. These eligibility constraints can be justified with the scientific advantages of reduced heterogeneity (in research designs, cultural norms, large-scale policy frameworks, and historical setups) and avoidance of a meta-analytical synthesis that combines “apples and oranges” (Duvendack et al., 2012; 2011; Moayyedi, 2004; Sharpe, 1997). However, the review could arguably become more relevant for policy makers – and in fact even for the scientific community – if it was extended to include saving promotion interventions from other low- and middle-income regions such as Asia and South America. In addition, power of the meta-regression could have been increased by including quasi-experimental study designs. Although this would have increased heterogeneity, meta-analytic methods are now well equipped for drawing inferences from these – as long as sources of potential biases are accounted for (Becker et al., 2017).

Non-Standardised Reporting in Primary Studies

Medical journals typically request study authors to adhere to the *Consolidated Standards of Reporting Trials (CONSORT)* guidelines when publishing findings from randomised controlled trials (Schulz, Altman & Moher, 2010). As opposed to this, reporting on field experiments of development interventions has not been harmonised to the same extent (Hagen-Zanker, Duvendack, Mallett & Slater, 2012; Mallett et al., 2012). This has posed a challenge for the extraction of relevant study information, and particularly the risk of bias assessment of primary studies included in the systematic review. For instance, very few studies did provide sufficient information on randomisation procedures, allocation methods, and attempts of blinding outcome assessors. For 13 out of 27 included studies, these details were obtained upon email requests to study authors. For seven studies, I received no information. Similarly, reporting on the implementation and delivery of tested interventions was absent in most studies (see *Appendix 3*) – even though this

contextual information is crucial for interpreting effect sizes (Oakley et al., 2006; Steckler & Linnan, 2002). For three eligible studies, I was also not able to retrieve sufficient statistical information for calculating standardised mean differences. This has not only reduced our sample size for conducting meta-analysis but might even have introduced some sort of systematic bias.

There is now a growing number of (development) economic journals that mandate authors to share both data and code for replication and transparency purposes (Duvendack et al., 2017; Duvendack, Palmer-Jones & Reed, 2015; Camfield & Duvendack, 2014). This could also be an important step towards improvements in general reporting quality. In addition, it can be assumed that this trend will help facilitate accessibility of information that is needed in future systematic reviews and meta-analyses.

Up-to-Datedness

Another limitation of the systematic review is linked to the topicality of saving promotion in international development. While I was able to identify 27 completed randomised controlled trials on saving and budgeting programmes in Sub-Saharan Africa, more studies are currently ongoing or have been very recently completed. This suggests that the present paper might soon be considered outdated. Hence, it might be worth updating the review in two to three years to include more recent eligible studies. This could also help increase the statistical power for meta-regressions and allow for more conclusive inferences on the effectiveness of different programme components. For instance, a larger sample of primary studies could enable a more comprehensive evaluation of institutionalised commitment schemes, which were only used in 3 of 27 studies in the review. It may also include new evidence on psychological elements that were entirely absent in the current sample (see a recent study by Avdeenko and colleagues (2018) testing the impact of individual feedback and praise on the realisation of saving goals).

Limitations of the Empirical Papers (*DPhil Papers 2 & 3*)

Trial Design

Most importantly, as already discussed in *Chapters VII and VIII*, causal and robust inferences on the centrality of psychosocial programme components would necessitate a more complex research design. Hence, a randomised controlled trial featuring multiple treatment arms could have helped to isolate the effects of the psychosocial parenting component from the financial literacy component. This would have allowed for a stronger causal test on whether the psychosocial “ingredients” alone did really matter for promoting changes in economic behaviour and wellbeing (Craig et al., 2008; Oakley et al., 2006). Further to this, a factorial design would have enabled us to determine whether there was an interaction effect between the psychosocial and financial component, and whether future versions of *Sinovuyo Teen* should thus strictly adhere to an identical multi-component curriculum (Collins, Dziak, Kugler & Trail, 2014; Montgomery, Peters & Little, 2003). Similarly, a longer-term follow-up, in addition to the more immediate post-test, could have helped establish more credible evidence on the key mediators driving changes in financial behaviour. Multiple follow-ups might have also given further indication on the core programme components that impact both these mediators and (indirectly) the outcomes of interest over time.

Reliance on Self-Reported Data

Another limitation of both empirical papers presented in this thesis is the reliance on self-reported data. Thus, we may assume that respondents are inclined to underreport potentially stigmatised behaviours (i.e. borrowing) and to overreport positively connoted behaviours (i.e. saving or careful financial management), particularly in the context of a face-to-face interview. If reporting biases are on average similar across treatment and control groups this is not a concern. However, if there is reason to assume that misreporting and social desirability may be correlated with treatment status due to experimenter demand effects, the validity of RCT findings is put into question (Baird & Özler, 2012; Zwane et al., 2011). Placebo treatments are one possible measure to alleviate the risk of such demand effects. While placebos are commonly used in medical trials (i.e. participants are blinded to whether they receive the putative cure or a placebo pill), they are more

difficult to realise when testing development interventions. Some financial literacy evaluations have used innovative strategies, for instance by screening placebo movies without educational messages (see Bernard et al., 2015, 2014). However, such a placebo was not implemented in the field experiment presented here. Another way to reduce possible demand effects is to strictly disassociate enumerators from a programme and its implementation (Baird & Özler, 2012). This could neither be fully ascertained in our field experiment. Some of our research assistants were involved in the process evaluation of the programme and were therefore required to observe and be present in all weekly sessions. This may have somewhat undermined a strict separation between the research and implementation team and prompted some participants to believe that interviewers were tied to the *Sinovuyo Teen* intervention.

This being said, we can still gain confidence from (a) observing null results on some outcomes that should be equally susceptible to possible demand effects, including financial attitudes (see *DPhil Paper 2*) or use of abusive parenting strategies (see Cluver et al., 2018), (b) using self-administered survey methodology, and (c) having put considerable training emphasis on protecting anonymity and confidentiality of interviews. More importantly, several recent studies have suggested that demand effects might not impair the validity of findings to a large extent. For instance, de Quidt and colleagues (2018) conducted a series of online experiments with 19,000 participants in which they manipulated information that was given on the researcher hypothesis (weak treatment: “*we expect that participants do X*”; strong treatment: “*you would do us a favour if you did X*”) and found very limited evidence for demand effects. Likewise, Mummolo and colleagues (2018) showed in another experiment that revealing the purpose of the experiment as well as the key hypotheses did not change the outcomes. Related to this, Jayachandran (2018) integrated a social desirability measure in baseline surveys but did not find heterogeneous treatment effects on gender attitudes for respondents with lower versus higher social desirability ratings.

Power

Another important caveat of this DPhil's field experiment is linked to its reliance on only 40 study clusters. Thus, due to funding constraints, statistical power was *ex ante* quite low (Snijders, 2005). Given that the intra-cluster correlation for all economic outcome variables was smaller than initially anticipated (ranging from 0.00-0.09), the minimum detectable effect size was still sufficiently small, and I was able to pick up programme intent-to-treat effects. However, similar to many other trials, our RCT was not sufficiently powered to detect heterogeneity in treatment effects (see Porter, 2018; Karlan & Appel, 2016). While I found some indication of potentially differential treatment effects for married women, very poor respondents, and rural dwellers, these results were not maintained after adjustment for false discovery rate (see *DPhil Paper 2*). For other characteristics such as respondents' age, gender, level of education, psychological wellbeing and household receipt of welfare grants (see pre-analysis plan in *Appendix 5*), I did not find any significant treatment-trait interactions. However, it would be erroneous to simply interpret this as evidence of no differential treatment effects. As Karlan and Appel (2016) emphasise, confidence intervals are too large to "*say anything at all about heterogeneity*" (p. 38), thus preventing us from drawing valuable policy guidance on possible targeting strategies or profiling candidates who benefit the most (Frölich & Huber, 2015; Ravallion, 2009).

Trade-Off between Internal and External Validity

Randomised controlled trials have long been positioned at the top of the evidence pyramid and are still conventionally considered the "gold standard" design for generating evidence on impact (Camfield, Duvendack & Palmer-Jones, 2014; Oakley, 2006; Weisburd et al., 2001). Highlighting their importance for policy making, Esther Duflo claims: "*Creating a culture in which rigorous randomised evaluations are promoted, encouraged, and financed has the potential to revolutionise social policy during the 21st century, just as randomised trials revolutionised medicine during the 20th.*" (p. 731) (Lancet, 2004). However, they have also been fiercely criticised by some development economists, including Deaton (2010) and the former Director of the World Bank's research department Martin Ravallion (2009). A central point of criticism is thereby the suggested tendency of "randomistas" to prioritise internal over external validity

(see also Mallett et al., 2012). Ravallion (2009) contests that “[...] *it is hard to argue that external validity is less important than internal validity when trying to enhance development effectiveness against poverty; nor is external validity any less legitimate as a topic for scientific inquiry*” (p. 3). Linked to this, it is pointed out that evidence generated from a test population and trial setting is not easily transported to the actual target population and to real-world conditions (Deaton, 2010a, 2010b; Cartwright & Munro, 2010; Cartwright, 2007).

Some of these concerns may also apply to the trial presented in this thesis. It is important to note that the trial setting might have been somewhat removed from a real-world scenario, as the research team influenced the delivery and implementation of the intervention to some extent. While offices and management of the evaluation and implementation team were intentionally kept apart, the research team closely monitored implementation of the programme via an ongoing process evaluation. Notably, weekly programme sessions were observed by trained research assistants who were granted full information on any possible challenges in the programme’s delivery. In some study locations, the research team had flagged very low attendance rates in the first three weeks of implementation. Poor attendance appeared to be linked to facilitators not engaging well with participants and skipping the core lessons of the intervention curriculum. The concerned facilitators were identified as lay social workers who had been assigned by the Eastern Cape’s Department of Social Development to assist the programme, but without any additional compensation. The research team therefore lobbied for replacing these facilitators and recruited three new, adequately trained and motivated facilitators. In light of this, it remains questionable how well trial results would be replicated if the intervention was delivered by a similar lay organisation in a less controlled, lower-resourced context. In addition, delivery and implementation of the programme in this RCT were of high quality and in fact quite costly. In a retrospective costing analysis, the research team estimates the delivery costs of the *Sinovuyo Teen* programme at \$504 dollars per family. It is further assumed that economies of scale could almost halve the costs to \$264 dollars if reaching 1000 families a year (see Redfern & Cluver, 2018). Although purposefully designed as a non-commercialised programme, it still remains to be seen how suitable the programme is for delivery in particularly poorly resourced settings, or, relatedly, how well a potential trimmed-down version could work.

Countering some of the criticism around RCTs, impact evaluation research has made some important advances over the last years. Accordingly, it has moved from a rather narrow focus on the guiding question of “what works (in development)?” towards also looking at who benefits the most and least, understanding mechanisms underlying success and failure, and integrating theoretical considerations for defining a programme’s theory of change (Leigh, 2018; Ogden, 2017; Karlan & Appel, 2016). In a similar vein, this DPhil thesis has not only looked at average treatment effects but also included heterogeneity analyses and analysis of rich, qualitative data to construct hypotheses around change mechanisms.

Ethical Challenges: Doing No Harm to the Researchers?

This field experiment had over 40 local research staff, often recruited from highly poor and deprived backgrounds, working in the research office in King William’s Town, South Africa. Taking their experiences into account is crucial when evaluating the success of a research project (Casale et al., 2013). As described in the methods chapter of this thesis (see *Chapter VI*), the project team had put a comprehensive protocol in place outlining a range of measures to protect vulnerable children who participated in this study. Through this procedure, we flagged 33 adolescents who were at severe risk and needed urgent support. While referrals were made to social workers and counsellors, the public service system in the Eastern Cape proved heavily under-resourced and under-staffed. Consequently, adequate protection for respective participants could often not be guaranteed (see also Devries et al., 2015). Therefore, in a few instances, our research assistants remained involved in a case post-referral, following-up with adolescents via home visits and regular phone calls. This presented a “moral practice dilemma” (Fried & Fisher, 2016), blurring the lines between their roles as researchers – for which the trial management had provided training and support – and their unprompted roles as counsellors or social workers. Exposure to participants’ experiences of trauma as well as the void of institutionalised support structures made our local researcher assistants also susceptible to experiencing forms of vicarious trauma and job burnout (Loyle & Simoni, 2017; Fried & Fisher, 2016). The project management reacted to this by hiring a trained psychologist to provide group and individual counselling, covered by the PI’s emergency fund.

The ethical complexities that affected fieldwork in this trial are likely characteristic of many research projects of this kind. When carrying out research in the context of developing countries, numerous ethical issues can arise – in addition to the emotional and psychological burden described above. Research is often conducted in high-crime settings and enumerators can be exposed to considerable security risks that are potentially exacerbated by carrying valuable items such as electronic devices for data collection. In addition, research projects are often implemented in contexts that are encumbered by a legacy of colonialism – or a history of apartheid in our trial. This may give rise to intricate racial and cultural frictions within international research teams, particularly if the project management is composed of largely white, western, and young staff (Henderson, 2009; Thapar-Björkert & Henry, 2004). The short-lived nature of research projects also obstructs opportunities for secured long-term employment and economic security and can cause further tensions linked to socioeconomic inequality within international research teams (Oelberger, Fechter & McWha-Hermann, 2017). In this study, we strictly renounced a “parachute approach” to field research (see *Lancet Global Health*, 2018; Reeves, 2006) and engaged in capacity building endeavours, for instance by co-authoring local staff, providing training in computer skills and CV writing, and offering personal development funds to be used for CV-building training purposes. Yet, I am cognisant that impact of this likely remained limited in a constrained economic climate like that of the Eastern Cape.

The above discussion points to some serious gaps in many current research ethics frameworks. It stresses the need for constructing adequate ethical guidelines and procedures when conducting research projects in developing countries and complex, under-resourced settings. Comprehensive safety measures, capacity building tools, and staff wellbeing programmes (e.g. counselling and mindfulness training) need to be carefully devised at the planning stage of a research project. Ethical review boards and funding bodies should endorse such measures as basic prerequisites to ensure that no harm is inflicted – neither on research participants nor on the researchers themselves.

3. Implications for Policy and Programming

Based on the key findings of this DPhil thesis, there is a reasonable amount of evidence to motivate some policy and programming implications for the design of future interventions. These include (1) enhancing financial literacy curricula with psychosocial elements, (2) introducing “nudges” to facilitate positive financial choices, (3) delivering booster sessions for impact sustainability, and lastly (4) targeting all household members (male and female) for improved effectiveness and reduced conflict. While these recommendations are built on the best available evidence to date, future rigorous evaluations are warranted to confirm effectiveness and applicability of the suggested strategies (Fraser et al., 2009).

Enriching Financial Training Curricula with Psychosocial Components

The most prominent finding of this DPhil project is the importance of psychological and social factors in determining and changing financial behaviour. Recent evidence has repeatedly shown that these factors are not static and “given” but are *malleable* and can thus be turned into important target points when designing development interventions (Blattman et al., 2017; Heller et al., 2017; Campos et al., 2017; Kautz et al., 2014). This motivates my key recommendation to enrich economic strengthening programmes (e.g. financial education, banking, microfinance or cash transfer programmes) with psychosocial “ingredients”. The following specific components showed promising results across previous studies with low-income populations and are therefore put forth as potential evidence-based strategies:

1. Reducing impulsivity, presence bias, and procrastination as well as a negative self-image through **integrating psychotherapeutical elements** such as cognitive behavioural therapy, motivational interviewing, anger and aggression management, and mindfulness practices (similar to Blattman et al., 2017; Heller et al., 2017).
2. Promoting hope, optimism, and future aspirations through showing of movies or plays **featuring role models** and narratives of success and achievements (similar to Riley, 2018; Bernard et al., 2014; Beaman et al., 2012; La Ferrara, Chong & Duryea, 2012; Nguyen, 2008).

3. Increasing socio-emotional support within families by **drawing on parenting training components** such as teaching communication skills, building trust and respect within families, and establishing rules and routines in a household (see Cluver et al., 2018; Annan et al., 2013; Fernandez et al., 2012).
4. Fostering social cohesion and support within the community by **integrating peer-based elements** such as group sessions, peer monitoring, and assigning programme “buddies” (see Cluver et al., 2018; Kast et al., 2012; Duflo & Saez, 2000).

While the above strategies have been associated with programme success, future research is required to determine which dosage and combination of components can achieve the most beneficial and sustainable effects – and for which beneficiaries.

Making it Easy: Using Nudges to Promote Positive Financial Choices

In high-income contexts, many financial transactions are automated. Salary is transferred to savings accounts, contributions for health insurances and retirement plans are deducted by default, and outstanding debts are written off from credit card accounts. In stark contrast to this, the poor (particularly those living in low-income countries) are faced with numerous and complex day-to-day financial decisions (Sunstein, 2012). They face the double burden of depending on limited financial resources in the first place, and then lacking institutional mechanisms to support and help them sustainably and effectively manage their resources. Duflo (2011) summarises this challenge as follows: *“If we [the “better-off”] do nothing, we are on the right track. For most of the poor, if they do nothing, they are on the wrong track”*. This issue prompts another key policy lesson: the poor could benefit from programme designs that aim to make their financial choices easier.

In light of this, “nudging” could be a first-choice policy response. Nobel Prize winner Richard Thaler (2015, 2009) has popularised nudging as a subtle and low-cost strategy to manipulate aspects of the choice architecture that determines human behaviour. As outlined in *Chapter II, 3.5*, scarcity tends to limit attention and directs focus to current pressing needs, thus putting considerable constraints on forward-looking financial decision making (see Mani, 2013). To counteract this tendency, nudges could help to make “the right” financial choices (e.g. saving) more salient by

“putting them to the top of mind” (Karlan et al., 2010). For instance, programmes could issue reminders for saving (e.g. SMS reminders) or visualise financial goals and plans, display these in communities, close to banks and markets, or in participants’ homes (Bettinger et al., 2018; World Development Report, 2015; Kahneman, 2011; Karlan et al., 2010). Another form of nudging could capitalise on social influences, for instance by introducing social comparison or peer monitoring modules. In this vein, an experimental study has shown that individuals substantially decreased their energy consumption after having received information comparing their own use to their neighbours’ use (Allcott, 2011). Similarly, another experiment found that sharing information on savings balances with peer monitors could increase total savings amounts by 35% (Breza & Chandrasekhar, 2015). Nudging strategies could entail some more macro-level structural arrangements such as the provision of opt-out default options. In this regard, a viable large-scale policy strategy to promote financial resilience among poor South African households could consist of paying a fraction of monthly grant amounts into no-frills savings accounts. This would require substantial reorganisation of the system currently in place for grant recipients (see *Chapter IV*).

Delivering Booster Sessions to Promote Sustainability of Programme Impact

The systematic review presented as part of this DPhil thesis (*DPhil Paper 1*) has highlighted an important limitation: programme effects tend to fade out over time. For instance, Kast and Pomeranz (2014) observe in a field experiment in Chile that both the frequency of meetings between programme “buddies” as well as deposit amounts declined over time. Thus, it also remains questionable whether the strong and positive programme impact highlighted in the empirical thesis papers (*DPhil Papers 2 & 3*) can be sustained over the long term, beyond the 9-month post-test measure. Theoretical behavioural theory corroborates these concerns. Accordingly, behaviour change is viewed as a sequence of steps, starting with contemplation, and followed by preparation, action, and maintenance stages. However, scholars argue that transitions between stages are not linear and that individuals often “relapse” from the maintenance stage back to a previous stage. These “relapses” arise when salience of an endorsed behaviour decreases and temptation and impulsiveness gain mastery (see Redding et al., 2000). An important programming implication from this could be

the integration of brief “booster sessions” into intervention curricula (see Blattman et al., 2017). These could be delivered for example in six-month intervals after a programme’s implementation and serve as reminders for key programme lessons, reinforce their salience, and re-activate social norms and peer support around the endorsed behaviour. Concurrently, field experiments with longer follow-up timeframes should be implemented to establish whether the hypothesised sustainability of impact is indeed increased (see next chapter). This recommendation also links back to the theoretical resilience framework presented in *Chapter II, 4*. Accordingly, financial resilience is understood as a process rather than a static trait. It follows that a person’s ability to stay resilient could change as new circumstances and stressors emerge and that continued external support is therefore warranted (see Patterson, 2002).

Increasing Impact (and Protecting Women) through Inclusive Targeting

Prior research has repeatedly pointed out that a household should not be considered a unitary entity and that financial preferences and spending patterns differ between male and female household members (Bernhardt et al., 2017; Ashraf, 2009; Duflo, 2000). Several studies suggest that women generally invest more money in child development, education, and health (Rubalcava, Teruel & Thomas, 2009; Duflo, 2000), which has made them popular candidates for the targeting of development programmes (Duvendack, Palmer-Jones & Vaessen, 2014). However, this may have come at an unexpected cost. Numerous studies suggest quite limited impact for female programme beneficiaries (Duvendack et al., 2014; de Mel et al., 2009), and the meta-analysis presented as part of this DPhil thesis revealed substantially lower effect sizes for saving promotion programmes that were exclusively targeted at women (see *DPhil Paper 1*). Likewise, evidence from our field experiment in South Africa pointed to reduced programme effectiveness for female participants who were not the household heads (see *DPhil Paper 2*). Corroborating this evidence, Kaiser and Menkhoff (2017) classify the gender gap in economic outcomes (e.g. financial literacy levels) as a “stylised fact in the literature” (p. 620).

More importantly, there is potential for some unintended harmful effects. Accordingly, some scholars draw on the “male backlash model” to argue that economic

strengthening programmes could expose female beneficiaries to higher risk of domestic violence and spousal abuse (Bobonis, González-Brenes & Castro, 2013; Fernald et al., 2008; Bott et al., 2005; Jewkes, 2002). The underlying logic suggests that the (economic) empowerment of women could challenge socially prescribed gender norms and that male partners may respond to this loss in authority and dominance by inflicting violence (Chin, 2012; Atkinson et al., 2005; Bloch & Rao, 2002). This literature has high relevance for the trial reported in this thesis given that the study sample was largely composed of low-income women. Testing for a potential iatrogenic test was therefore essential.

While I found no evidence for a harmful effect of the financial literacy training on intimate partner violence in our trial (see *DPhil Paper 2*), the above still prompts a crucial policy implication: programmes should seek to encompass the whole family or household to reduce disagreement and conflict on how available funds are allocated. More specifically, economic strengthening programmes should aim to enrol and target both women *and* men from within the same households. In so doing, endorsed changes in household financial decision making can also be advocated among male household heads, thus reducing the bargaining burden otherwise put onto women. More importantly, by involving men in a programme, they may become more likely to approve of its key lessons, which can help contain women's vulnerability to violence and abuse. It may also be advisable to couple economic strengthening programmes with gender equity training (see Kim et al, 2007; Pronyk et al., 2006). This might be particularly warranted if development programmes seek to encourage female recipients to take on new roles and responsibilities that are not strictly in line with prevailing social norms, especially in more patriarchal societies.

4. Directions for Future Research

In addition to the practical recommendations outlined in the previous chapter, there are also implications for future research arising from this DPhil project. The main avenues discussed here include the investigation of individual programme components, longer study timelines, and greater attention to implementation characteristics.

Unpacking Multi-Faceted Programmes

This DPhil thesis examined the impact of a multi-faceted intervention consisting of multiple components, ranging from financial literacy and saving training to parenting training and peer support. When testing complex interventions, experiments allow for causal inferences about the effect of a “bundle” of intervention elements. However, we can only draw very tentative conclusions on the relevance and impact of each individual programme component (Craig et al., 2008). Therefore, future research should employ multi-arm factorial trial designs or multiphase optimisation strategies (see Collins, Murphy & Strecher, 2007) to identify the isolated effects of different programme components.⁵⁰ These designs could also discern whether the effects of different components are interacting with each other, thus reinforcing the overall effect (Oakley et al., 2006). Findings from such studies could indicate the core ingredients that are essentially associated with a programme’s impact and may also point to possibly expendable components. They can thereby have essential implications for scale-up and cost-effectiveness considerations.

Examining Long-run Impact

Future impact evaluations would also benefit from including multiple data collection points, spread over a longer timeframe. As highlighted by my meta-analysis of 27 RCTs on saving promotion and financial literacy programmes in Sub-Saharan Africa (see *DPhil Paper 1*), only 13 studies featured follow-up periods that were longer than one year, with a maximum of three years (Dupas & Robinson, 2013b; Karlan et al., 2012). Including longer time horizons in future trials could help discern whether programme effects are lasting and also serve to test the effectiveness of possible booster sessions (see *Chapter IX, 3* above). As shown in previous studies, it may even point to programme impact that is substantially larger in the long-run, compared to more immediate follow-ups, and can thus help uncover key mechanisms driving these long-term effects (Schaner, 2018; Ibarrarán et al., 2015).

⁵⁰An ongoing experimental study in Kenya analyses the impact of income supplements, both combined with and separate from a psychological intervention to promote future orientation through inspirational movies, goal setting, and reminders on psychological and economic outcomes (see Orkin et al., 2017). Findings from this study will allow to derive causal associations between psychological and economic variables.

With reference to the parenting intervention presented in this thesis, a long-term follow-up study could generate unprecedented evidence on the long-run impact that nurturing parenting relationships and family support may have on economic and psychological wellbeing in adulthood (Crowder, 2013). Resilience literature ascribes central importance to positive parenting practices and supportive relationships with an adult caregiver for determining a child's life outcomes (Walsh, 2015, 2012; Bolger & Patterson, 2003). Following this, effective parenting interventions could have far-reaching impact. Besides, a long-term follow-up study could further show whether youth financial literacy training can have lasting effects on financial behaviour and coping in adulthood (Krishnan & Krutikova, 2013). This could also inform pertinent targeting decisions on whether to deliver financial literacy training to youth or adult populations – or both.

Reporting Implementation (Failures)

The systematic review of this thesis has highlighted an important shortcoming of some current evidence from field experiments: characteristics of implementation and programme delivery of development interventions are largely under-reported (see *DPhil Paper 1*). However, understanding how well an intended programme was implemented is crucial for the interpretation of trial results (*who benefits and why?*) and for drawing conclusions about the replicability and scalability of a programme effect (Moore et al., 2015; Steckler & Linnan, 2002). Examining possible implementation failures can also help explain null results (Karlan & Appel, 2016). Most importantly, taking implementation characteristics into account is essential for distinguishing interventions that are inherently faulty (*failure of theory*) from interventions that could work if they had not been delivered poorly (*implementation failure*) (Oakley et al., 2006).

A key strength of the *Sinovuyo Teen* project was the inclusion of a comprehensive process evaluation to capture participant attendance, engagement, and facilitator performance as well as fidelity to the programme curriculum (led by Dr. Yulia Shenderovich). Most prominently, it allowed us to examine whether and how these factors were associated with treatment effectiveness and participant attendance (i.e. “dosage” received) (see Shenderovich et al., forthcoming). Following this, it

should be an imperative for future studies to measure and transparently report implementation characteristics (Miguel et al., 2014). Respective procedures should be pre-specified in trial registries and pre-analysis plans, sufficiently described in outcome reports, and routinely included in heterogeneity analyses.

5. Dissemination and Impact

A central principle of this DPhil project is to avoid “parachute” research and help ensure that evidence stemming from this thesis is shared with the wider research community, policy makers, and study participants themselves. Dissemination of findings from this DPhil has included (a) two first-authored and three co-authored publications in peer-reviewed journals, (b) presentations at international conferences and workshops, (c) talks at the CEBI research group of the Department for Social Policy and Intervention, the Centre for the Study of African Economies (CSAE) research seminar, and the Green Templeton College DPhil presentations, and (d) blogposts and research briefs for non-academic, policy-oriented audiences (see p. 6ff). Findings were also presented to families participating in the study, community leaders, and social service providers in a full-day dissemination workshop in the Eastern Cape, South Africa. In addition, the *Sinovuyo Teen* project received a “highly commended” rating for the Oxford University *Vice-Chancellor's Public Engagement with Research Award* and has been shortlisted for a *Poverty Reduction, Equity and Growth Network (PEGNet) Best Practice Award*.

Intervention manuals, training materials, and questionnaires developed by the research team are now advertised and distributed via the World Health Organisation and UNICEF, and freely accessible on their websites.⁵¹ At the time of writing, the *Sinovuyo Teen* programme is being set-up or already delivered in multiple countries, including Tanzania, Uganda, Democratic Republic of Congo, South Sudan, Kenya, Zimbabwe, Cameroon, Lesotho, Cote D'Ivoire, and Swaziland. The research team has also established a close cooperation with implementing

⁵¹ See: <https://www.unicef-irc.org/research-family-and-parenting/?article=1789>, http://www.who.int/violence_injury_prevention/violence/child/plh/en/

partners, including USAID-DREAMS and Catholic Relief Services, and facilitated cultural adaptation of several programme manuals. As part of this process, the candidate has supported the adaptation of the economic strengthening programme for delivery to mining families in Tanzania. The research team estimates that the programme currently reaches between 250,000 and 300,000 families.

X. Conclusion

Poverty remains one of the most pressing issues in contemporary society. This DPhil project presents new and much needed evidence on one set of effective programming strategies to increase financial resilience among the poor. It first identified various mechanisms that increase and perpetuate poverty and then shed light on interventions and development strategies that seek to alleviate these. In a systematic review, I report findings that underscore the significance of the 2030 Sustainable Development goal to “*expand access to banking, insurance and financial services for all*”. Thus, I argue that reliable and institutionalised financial services can help the poor manage their volatile and small incomes and build resilience to income shocks. However, the systematic review also points to an important lacuna in most current saving and budgeting promotion programmes: little consideration is given to psychological and emotional factors. Yet, as suggested by the ecological resilience framework (and previous innovative programme designs), effective programming strategies need to draw on multiple levels of influence and thus also place emphasis on psychological capabilities and nurturing social environments.

In response, this DPhil project is the first study to test the impact of a combined parenting and financial literacy intervention on a range of economically relevant outcomes. Based on a field experiment with poor families in the Eastern Cape province of South Africa, I report positive programme effects on financial behaviours and wider financial wellbeing. In comparison to previous financial literacy programmes, I posit that impact could be enhanced by the psychosocial programme components of the intervention. Indeed, I find indication that the programme effects ran through psychological channels, namely increased optimism and confidence, as well as social channels in the form of improved socio-emotional support. While further research and multi-arm trial designs would be important to reinforce and extend these findings, they still have important implications for policy and practice. First and foremost, my findings suggest that future poverty alleviation programmes could bolster effectiveness by integrating similar psychosocial elements into their curricula. In addition, my findings may contribute to the improved functioning of South Africa’s cash transfer system for poor families by

empowering and enabling recipients to make the most effective and informed use of their monthly grant money.

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