

The complementarity between cash transfers and financial literacy for child growth

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Abstract

A large body of international research focuses on the corrective influence that cash transfers can have on the health of chronically malnourished children. However, the evidence also points to the heterogeneity of the impact of these cash grants within the recipient population. Identifying pre-existing household conditions that are correlated with grant efficacy can have important policy consequences. In this paper, we examine one such a condition, namely the financial literacy of the caregiver of the child. We make use of the fourth and fifth waves of the South African National Income Dynamics Study (NIDS) data. We estimate the relationship between the height and growth in a sample of children aged 0 to 7 years and the child support grant. We find that eligible children who have financially literate caregivers receiving the cash transfer on their behalf have higher growth trajectories over time, compared to children with financially illiterate caregivers. We however find no such an effect for child height. Our results do not preclude a pure income effect for cash transfers: children who become CSG beneficiaries gain in height immediately, even without financially literate caregivers. Arguably, the combination of cash transfers and financial literacy have long-run benefits for children over and above an income effect. Although we are unable to identify the specific mechanisms through which financial literacy may impact child growth, we discuss some potential channels. The results have important policy conclusions regarding potential ways in which to improve the efficacy of the child support grant in South Africa.

1 Introduction

A large body of international research focuses on the corrective influence which cash transfers can have on the health of chronically malnourished children (Manley et al., 2012). However, the evidence also points to the heterogeneity of the impact of these cash grants within the recipient population (de Groot et al., 2017). For example, longer exposure matters: children who start receiving grants early in their lives are more likely to benefit than those who only receive them later (Agüero et al., 2007; Coetzee, 2013). In addition, impacts of cash transfers are larger for more vulnerable populations; those who reside in areas with high infant mortality rates and low levels of access to health services are especially elastic to grant receipt (Manley et al., 2012). Grant effectiveness also depends on the characteristics of the recipient caregiver (females are more likely to spend cash on children than male recipients (Duflo, 2000)), as well as the beneficiary child (younger children are more likely to benefit from grants than slightly older children (Zhang and Wang, 2007)).

Information on household conditions which help to explain larger impacts of cash transfers can be a powerful tool in the hands of policy makers, as it highlights potential areas for effective interventions to improve grant efficacy. In this paper, we examine one such a condition, namely the financial literacy of the caregivers receiving unconditional cash grants on behalf of their eligible children. Individuals who are more financially literate have been shown to be more likely to make sound financial decisions, including saving more and incurring less debt - in particular of the risky kind (see [Lusardi and Mitchell \(2014\)](#) for a detailed discussion of the literature).

We focus our attention on South Africa, a country which has low levels of financial literacy ([Nanziri and Leibbrandt, 2018](#)) and high levels of grant receipt ([Woolard et al., 2012](#); [Eyal and Njozela, 2016](#)). For our analysis, we make use of data from the fourth and fifth waves of the National Income Dynamics Study (NIDS), which was collected during 2014/5 and 2017. The fifth wave of the NIDS also includes, for the first time, a module on financial literacy. In this module, respondents were asked five questions which were aimed at ascertaining their level of financial knowledge.¹ The module aligns with questions first developed by [Lusardi and Mitchell \(2011\)](#). The validity of the questions for measuring financial literacy has been tested in various contexts, including including the USA, Germany, the Netherlands, Sweden, Italy, Japan, New Zealand, Russia ([Lusardi and Mitchell, 2011](#)), and India and Indonesia ([Cole et al., 2011](#)).

Although various cash grants are disbursed within the South African social security system, we only consider recipients of the South African Child Support Grant (CSG). It is an unconditional cash transfer that is paid to primary caregivers of children who are eligible (younger than 18 years old and who meet an income means test). We use children’s current height, measured by their standardised height-for-age Z-score (HAZ) as our primary measure of nutrition. We also study changes in children’s HAZ over time (i.e. growth trajectories). Childhood stunting is correlated with impaired health, cognitive functioning and economic performance in adulthood ([Dewey and Begum, 2011](#)). The advantage of considering both height in levels, as well as growth over time, is that it allows us to distinguish between associations that differentiate children from each other immediately, as well as those that have more long-run consequences (changes in growth trajectories over time). Previous work has shown that receipt of the CSG is associated with improvements in child HAZ ([Case, 2004](#); [Agüero et al., 2007](#); [Coetzee, 2013](#)). However, the association between receipt of the CSG and child growth has not yet been explored.

We draw various conclusions from our analysis. We firstly show that caregiver financial literacy does not have unconditional benefits for children. However, our central finding is that financial literacy influences the growth path of poor children if they also receive the CSG. Conversely, the CSG only improves child growth when received by a financially literate caregiver. Our results do not preclude a pure income effect for cash transfers: children who become CSG beneficiaries gain in height immediately, even without financially literate caregivers. However, the combination of cash transfers and financial literacy have long-run benefits for children over and above an income effect. Our results do not establish

¹The five questions included in this module have been repeated in the appendix to this paper

the exact mechanisms by which financial literacy and cash transfers re-inforce each other; however, we know a few things. The effect arises from specific financial skills: general educational attainment and financial inclusion – neither of which guarantee financial know-how - do not play a similar role in improving child growth. The effect also does not arise because of prioritised spending on food. We hypothesise that improved diet quality – a factor which we do not measure – possibly follows if financially literate individuals are given cash to make decisions that are good for children.

Our findings have important policy conclusions, and point towards an area in which South African government intervention could lead to increased efficiency of grants. Although the evidence we present here is not causal in nature, it speaks to the association between grant receipt and financial literacy. Future research should focus on obtaining a better understanding of the causal mechanisms through which the association works.

In the next section, we discuss the relevant literature on child height and growth, grant receipt, and financial literacy in South Africa. We then discuss the methodology we use, as well as the data. After presenting the results, we conclude.

2 Literature review

2.1 Child Health and Cash Grants

Stunting - having a height-for-age more than two standard deviations below the WHO Child Growth Standards (De Onis, 2006) - is the result of cumulative malnutrition over time, often starting as early as when the child was *in utero* (Dewey and Begum, 2011). Longitudinal studies which have followed stunted children into adulthood have highlighted the various negative factors which are correlated with stunting (both short stature and low levels of growth), including impaired cognitive performance, lower levels of schooling, and reduced earnings (Dewey and Begum, 2011). In addition, Özaltın et al. (2010) highlight the intergenerational effects of stunting; women who were stunted as children are more likely to have children who are also stunted or underweight at birth and during infancy. Özaltın et al. (2010) also highlight the negative association between child mortality and maternal stature.

Over time, it is possible for children to recover from being stunted through a period of increased (above average) growth. This phenomenon is also referred to as catch-up growth. Desmond and Casale (2017) and Handa and Peterman (2016) find evidence of catch-up growth among South African children. In this article, we do not focus explicitly on recovery from stunting either as a child outcome or as a driver of adult outcomes. However, we do consider the growth trajectories of children over time. Existing evidence shows that a period of increased growth, which facilitates recovery from stunting, decreases the cognitive deficit which stunted children experience. However, it is not sufficient to completely close the gap between children who recovered from stunting and those who were never stunted to begin with (Casale and Desmond, 2015; Mendez and Adair, 1999).

de Groot et al. (2017) highlight the multidimensionality of the problem of chronic malnutrition during the first 1000 days of a child's life. Underlying poor nutrition is one

of a multitude of other risk factors, including poverty and social exclusion. Given the complexity of the problem, it is not clear whether a single intervention would be sufficient to have any effect on the health of children. Nevertheless, numerous studies have shown the effectiveness of cash grants in improving the nutritional status of children, both in terms of increased height and reduced prevalence of stunting.²

Although there is evidence illustrating the positive impact of CSG receipt on the height of children in South Africa (Case, 2004; Agüero et al., 2007; Coetzee, 2013; Oyenubi, 2018), there is, to our knowledge, no research linking the CSG to the growth trajectories of children.

de Groot et al. (2017) (following an earlier approach by Smith and Haddad (2002)) consider the pathways through which cash grants may have an effect on child nutrition. They highlight the household’s food security and diet, maternal and child care, and the health environment in which the child grows up, as the three most important channels through which child nutrition and therefore child height and growth are influenced. In this model the pathways are supported by various factors which mediate or moderate the impact from cash grant to observed improvements in child nutrition and health. Although not explicitly mentioned by de Groot et al. (2017), we postulate that the financial literacy of the child’s caregiver, could be one of the factors mediating the transformation of cash into improved health.

2.2 Financial Literacy

A module with questions measuring the level of financial literacy of participants was included in the fifth wave of the NIDS. Five questions were included (these questions have been reproduced in the appendix to the paper). The questions aligned with those developed by Lusardi and Mitchell (2011; 2014). They are aimed at testing three concepts which are related to the level of financial literacy of the individual, namely their understanding of compound interest (and numeracy, i.e. the ability to do a simple calculation incorporating compound interest), understanding of inflation, and risk diversification. The instrument has been used to measure financial literacy in many countries across the developed and developing world (Lusardi and Mitchell, 2011; Cole et al., 2011).³

There are many reasons why higher levels of financial literacy would be correlated with better outcomes for grant recipients. Financial literacy has been shown to be associated with a host of economic outcomes, including better financial planning, improved savings, and transacting at lower costs (Lusardi and Mitchell, 2014). Importantly, the financially literate are far less likely to engage in high-cost borrowing, including payday loans (similar to South African garnishee orders)⁴, pawn shops and rent-to-own arrangements (Lusardi and de Bassa Scheresberg, 2013).

² Various systematic reviews have considered the evidence of cash transfers on child antropometrics (including HAZ) and growth over time. See, for example, Fernald et al. (2008) Fernald et al. (2009), Lagarde et al. (2009), and Manley et al. (2012).

³Including the USA, Germany, the Netherlands, Sweden, Italy, Japan, New Zealand, Russia, India and Indonesia.

⁴A garnishee order is a court order giving a creditor the right to deduct money from the debtor through a third party, often the employee of the debtor

South Africans have low levels of financial literacy. [Nanziri and Leibbrandt \(2018\)](#) report a mean score of 48.4 (out of a total of 100)⁵ for all adults appearing in the Fin-Scope data from 2005-2009.⁶ Only approximately 24% of the sample self-reported having knowledge on how to use savings, insurance and investment products.

Given the low levels of financial literacy in South Africa, along with the potential advantages that improved financial literacy could have on financial decision-making and economic welfare, a focus on improving this competency appears to be an obvious policy goal. However, not much research has been conducted on what the best way would be to improve financial literacy.

[Steinert et al. \(2018a\)](#) evaluate the effectiveness of a recent intervention in the Eastern Cape Province in South Africa. Adolescents received basic budgeting and savings training, as well as training aimed at addressing psychological and social factors.⁷ The study finds significant effects on financial planning and management (increased savings, decreased borrowing, and increased financial self-efficacy) as well as improvements in economic welfare (decreased levels of self-reported financial distress and worrying over money, and increased levels of self-reported ability to cope with financial shocks).

[Steinert et al. \(2018a\)](#) briefly discuss the potential interplay between grant receipt and financial literacy. They hypothesise regarding the potential additional advantages from the financial education programme which would accrue to recipients of cash transfers. However, they do not test this hypothesis. In the rest of the paper, we take this discussion further by exploring the relationship between cash transfers and financial literacy and examine what advantage this combination affords to beneficiary children.

3 Data and Methodology

We follow a cohort of children who were aged 0 to 7 in 2014/5 and whose anthropometric measurements were recorded in the 4th wave of the National Income Dynamics Study (NIDS) ([Southern African Labour and Development Research Unit - University of Cape Town, 2018](#)). The children were observed and measured again in the fifth wave of NIDS, enumerated in 2017 when the cohort was aged 1 to 10 ([Southern Africa Labour and Development Research Unit, 2018](#)).⁸ We limit ourselves to children who were pre-pubescent and can be tracked in both surveys. Most variables used in our analysis are sourced from the 2017 data, so that we effectively treat the final wave of the study as a cross section. The panel element is only leveraged to measure the dynamics of child height between 2014/5 and 2017, and to assess whether caregivers accessed the CSG in both periods or whether they were new recipients in 2017. As discussed in section 2, the 2017 data is unique, in that

⁵It should be noted that the measure of financial literacy used by [Nanziri and Leibbrandt \(2018\)](#) differs from that included in the NIDS. The measure used by [Nanziri and Leibbrandt \(2018\)](#) measures participants' familiarity with and understanding of various financial terms, the use of financial products, as well as the regulatory and institutional framework in South Africa as a proxy of financial knowledge

⁶[https:// www.finmark.org.za/finscope/](https://www.finmark.org.za/finscope/)

⁷This included training focusing on improving relationships between parents and children, as well as others in the household and introducing mechanisms to cope with stress

⁸Timing between waves differed across households and individuals, allowing some children to age more than others in the intervening period.

it is the first time financial literacy was recorded in the NIDS. This feature informed our choice of data. The five questions which comprise the financial literacy module have been reproduced in the appendix. We count someone as financially literate if they answered 3 or more of the questions in the module correctly.

We conduct multiple analyses. Firstly, we study level effects, understanding which factors endow a height advantage over *other children*. Secondly, we investigate whether the same factors change the growth trajectory *for the same children*. The approaches have fundamentally different interpretations. In the first instance, we measure whether factors such as cash transfers and financial literacy shift the height for age profile upwards; all children who benefit from a factor are affected in the same way. Factors that change the *growth* profile positively allow the shortest children to converge on their taller counterparts over multiple periods. If only levels are affected by a chosen factor, and height differences across children remain, those children stay behind in the long-run; to the contrary, if growth is affected, remaining differences can be bridged over multiple periods, even if not immediately.

Analysis of levels is common in the literature on the CSG (Coetzee, 2013; Agüero et al., 2007). We refine the question to understand whether child support grants are effective only under certain conditions - in other words, do recipient children have a height advantage only when their caregivers are also financially literate or more educated, *inter alia*? To do so we estimate cross section equations on wave 5 NIDS data as follows:

$$HAZ_i = \hat{\beta}_0 + \hat{\beta}_1 CSG_i + \hat{\beta}_2 z_i + \hat{\beta}_3 CSG_i * z_i + \mathbf{x}'_i \boldsymbol{\alpha} + u_i \quad (1)$$

where z_i is on of a set of complementary factors, such as financial literacy or education, skills which enable caregivers to make decisions that benefit their children. If estimates of $\hat{\beta}_3 \neq 0$, while $\hat{\beta}_1 = 0$, child support grants are conditionally effective at giving children a height advantage. To the contrary, if $\hat{\beta}_1 \neq 0$, while $\hat{\beta}_3 = 0$, the CSG operates either through other channels or represents a pure income effect. If both coefficients are non-zero, z_i is amplifies the effects of the grant over and above an income effect (conditional on introducing adequate controls in \mathbf{x}_i).

Growth analyses amount to a simple adaptation to this approach. We do so by introducing lagged anthropometric measures. Should growth be linear, height-for-age Z-scores (HAZ) would remain unchanged for all children, and no convergence would arise. However, this is rarely the case. Estimates of the following equation enable us to assess this along various dimensions:

$$HAZ_{i;2017} = \hat{\beta}_0 + \hat{\beta}_1 HAZ_{i;2014} + \mathbf{x}'_{i;2017} \boldsymbol{\alpha} + u_{i;2017} \quad (2)$$

As $\hat{\beta}_1 \rightarrow 1$, height-for-age persists exactly on the standardised growth path for all children, and rankings across them remain unchanged. As $\hat{\beta}_1 \rightarrow 0$, the rankings and magnitudes of HAZ shift, and initially shorter children grow more rapidly than expected; they depart from the standard growth path. This can be equivalently rewritten as a β -convergence model

$$\Delta HAZ = \hat{\gamma}_0 + \hat{\gamma}_1 HAZ_{i;2014} + \mathbf{x}'_{i;2017} \boldsymbol{\alpha} + u_{i;2017} \quad (3)$$

where $-1 < \hat{\gamma}_1 = \hat{\beta}_1 - 1 < 0$ indicates that initially stunted children exhibit quicker growth than the initially taller part of the population. We estimate the first version of the model. As was the case with levels, we extend the analysis to understand the role of various factors that complement the CSG in contributing to changes in the growth profile. Our estimates take the form:

$$HAZ_{i;2017} = \hat{\beta}_0 + \hat{\beta}_1 HAZ_{i;2014} + \hat{\beta}_2 HAZ_{i;2014} * CSG_{i;2017} * z_{i;2017} + \mathbf{x}'_{i;2017} \boldsymbol{\alpha} + u_{i;2017} \quad (4)$$

The specification includes main effects and sub-interactions. Estimates on the triple interaction test whether the CSG adds momentum to the growth path conditional on grant recipients also being financially literate or better educated ($\hat{\beta}_2 < 0$).

Estimation of equations such as those in (4) come with a host of well-known econometric problems. Most famously, dynamic models of this kind suffer from Nickel bias, and an instrumental variable for the lag dependent variable is required. Since we only use two waves of data to study the cohort within a relevant age range, it is not feasible to turn to the GMM system estimators of [Arellano and Bond \(1991\)](#). Alternatively, we experimented with weather shocks measured at the district council level as instruments; however, relevance was poor and we do not report the results.

Furthermore, selection into child support grant receipt is endogenous to the outcome variable. Children living in poor households may be shorter; simultaneously, impoverished children qualify for cash transfers. To minimise selection all analysis is limited to CSG-eligible children. Because the cohort of interest falls far below the age threshold of 18 that was applicable for CSG receipt in this period, the limiting criteria relies exclusively on caregivers' incomes. Up until April 2017, single caregivers with income below 3500 South African Rands (ZAR) qualified for a CSG; married couples' combined incomes below ZAR7000 also qualified. After April 2017 thresholds were raised to ZAR3800 and ZAR7600 respectively ([National Treasury Republic of South Africa, 2017](#)). Relevant eligibility criteria are matched to the month in which the child and caregiver were interviewed. Furthermore, we exclude children whose caregivers also received the state's Old-Age Pension (OAP). This cash transfer has a substantially higher monetary value and we wish to identify the influence of the CSG only, as it is specifically targeted at children. Inclusion of OAP caregivers also introduces multiple other selection problems⁹; firstly, the sample is much older and therefore less educated as a result of generational increases in human capital; secondly, the sample is less likely to apply for a CSG. The latter pattern may arise because the cash from the OAP is large relative to the CSG; hence, there is disincentive to embark on the application for a relatively small cash amount.

While these sample limitations remove substantial bias, it is still true that eligible caregivers who do not take up receipt differ significantly from those that do (see the

⁹These descriptives are available on request.

discussion in section 4.1). We therefore construct a motivation variable in line with the work of Oyenubi (2018), Coetzee (2013) and Agüero et al. (2007). This variable essentially aims at capturing the eagerness of caregivers to apply for the grant. We use it as a proxy for the level of motivation of each caregiver, with the assumption that motivation is correlated with various unobserved characteristics that are correlated with both grant take-up and child height. Controlling for this variable should reduce selection bias. As a first step, we calculate the number of days after first eligibility that each caregiver in the sample delayed accessing the CSG.¹⁰ For children who received the grant, the delay is calculated as the difference (in number of days) between the child’s birth date and the date of initial grant receipt. For children who have never received the grant, delay is calculated as the difference (in number of days) between their birth date and the date of interview. Following the approach by Oyenubi (2018), we take into consideration instances where children do not receive the grant, but where an application for the grant had previously been submitted. For these children (approximately 100 children in our sample), we calculate delay as the difference between the date of birth and the date on which application for the CSG on their behalf was first made (although the application was unsuccessful in these instances).

We then predict the expected delay, conditional on the age of the child, the geographic area where the child resides (formal or informal urban area, or rural area, distinguishing between traditional rural areas and farms), and the relationship between the child and their caregiver. Oyenubi (2018) has shown that caregivers who are not the child’s mother or father, are much less likely to delay their applications. We obtain predictions using a Tobit (censored regression) model, to take into consideration the fact that delay is censored to the right. For those individuals who have never received the grant, delay will always be calculated as their age in days.

Once expected delay has been calculated, we construct the motivation variable as the difference between expected delay and actual delay for each child. We standardise this variable to have a mean of 0 and a standard deviation of 1. Negative values therefore indicate a caregiver who delayed more than was expected, given the age of the child, the location of the child’s household, and the relationship between the caregiver and the child. Negative values are therefore interpreted as signaling a caregiver who is not very motivated. The opposite, of course, holds for positive values.

4 Results

4.1 Descriptive Statistics

Table 1 presents a set of descriptive statistics. Average CSG recipients differ significantly from other eligible caregivers along a number of dimensions. Recipients’ caregivers are younger and more educated; their total incomes (excluding social grants) are, however, not different across groups. Differences are more pronounced if we include caregivers who also receive the OAP (this is not shown in the tables). Groups therefore differ primarily in relation to a generational split. While younger generations have spent more time in school,

¹⁰Since all sample members are eligible, we can calculate this for all children in our sample

the labour market returns - relative to older generations - of the additional education is absent. This pattern is reflected in generational expansions in education accompanied by declining returns to primary and some levels of secondary schooling (Moll, 1996; Branson et al., 2013). Finally, as expected, the motivation index is significantly higher for CSG recipients.

Children who receive the CSG are shorter, more likely to be stunted and less likely to be covered by medical aid. These figures emphasise the remaining selection after limiting our sample, rather than a negative causal effect of receiving the CSG. In our multivariate analysis we therefore control for observables - in particular motivation - to obtain a cleaner effect of the CSG on height levels and growth paths. In contrast, the figures show that the CSG is correlated with more responsible financial behaviour. CSG recipients live in households where a larger share of the budget is prioritised towards food expenditure and where greater proportions of incomes go unspent (or are saved).¹¹ Measuring higher savings rates among recipients may be spurious, since we do not observe a similar dichotomy between the financially literate and illiterate; we also do not observe that CSG recipients access bank services in greater numbers, despite a large rollout of bank cards towards grant recipients in 2012 (see also footnote 12).

Next we turn the comparison to examine differences across caregivers' financial literacy status. As is expected, financially literate adults are more likely to maintain bank accounts and children in their care have higher medical aid coverage; however, their propensity to apply for a CSG and their motivation to do so is no different from the financially illiterate. Lacking knowledge about money does not deter access to public services; however, financial knowledge does improve confidence in using financial products. Financially literate caregivers are better educated and live in households that spend a greater share of their budgets on food. Generic human capital obtained during schooling therefore overlaps somewhat with specific financial skills. Financially literate caregivers also spend their money in a manner that is beneficial for nutrition. In sections 4.2 and 4.3 we distinguish between generic education and financial literacy as separate mechanisms for the effect of the CSG on childrens' stature.

¹¹Savings rates are measured as $save = \frac{Householdincome - householdexpenditure}{Householdincome}$. Measurement errors in both variables are likely to compound to produce unreliable statistics. However, we present these figures as indicative of household savings.

Table 1: DESCRIPTIVE STATISTICS

	Unconditional							CSG recipients			CSG non-recipients			Interact			
	CSG	No CSG	Diff	Fin Lit	Not lit	Diff	Fin Lit	Not lit	Diff	Fin Lit	Not lit	Diff					
<i>Caregiver characteristics</i>																	
CSG recipient					0.906	0.922	-0.016										
Financially literate	0.365	0.412	-0.048														
Education in years	9.679	9.259	0.420	**	10.000	9.419	0.581	***	10.089	9.431	0.658	***	9.139	9.275	-0.136	0.794	**
Age	33.234	37.380	-4.146	***	33.710	33.559	0.151		33.183	33.294	-0.111		38.822	36.708	2.114	-2.224	*
log(income)	2.853	2.920	-0.066		2.930	2.864	0.066		2.941	2.845	0.096		2.819	3.092	-0.272	0.368	
Has a bank account	0.550	0.580	-0.030		0.596	0.527	0.069	***	0.595	0.524	0.071	***	0.604	0.563	0.041	0.030	
Is a woman	0.996	0.956	0.040	***	0.995	0.992	0.003		0.997	0.996	0.000		0.980	0.944	0.036	0.035	***
Motivation index	0.167	-1.147	1.314	***	-0.011	0.017	-0.028		0.167	0.162	0.005		-1.162	-1.124	-0.038	0.042	
<i>Child characteristics</i>																	
Height/Age Z 2017	-0.864	-0.711	-0.153	**	-0.825	-0.868	0.043		-0.839	-0.879	0.039		-0.692	-0.736	0.045	-0.005	
Height/Age Z 2014/5	-1.031	-0.887	-0.144		-0.960	-1.056	0.096	*	-0.974	-1.065	0.091		-0.830	-0.950	0.119	-0.028	
Δ HAZ	0.213	0.201	0.012		0.191	0.225	-0.035		0.195	0.224	-0.029		0.152	0.246	-0.094	0.065	
Stunted 2017	0.137	0.105	0.033		0.123	0.142	-0.019		0.125	0.144	-0.019		0.101	0.111	-0.010	-0.009	
Stunted 2014/5	0.208	0.157	0.051	*	0.196	0.210	-0.014		0.203	0.212	-0.009		0.129	0.186	-0.057	0.049	
Is a girl	0.520	0.480	0.040		0.508	0.521	-0.012		0.511	0.525	-0.014		0.485	0.472	0.013	0.027	
Age	5.506	5.724	-0.218		5.550	5.501	0.050		5.507	5.496	0.011		5.970	5.556	0.415	-0.404	
Parent is caregiver	0.838	0.648	0.190	***	0.819	0.828	-0.009		0.838	0.843	-0.005		0.634	0.646	-0.012	0.007	
Covered by medical aid	0.018	0.152	-0.134	***	0.037	0.025	0.012	*	0.024	0.015	0.008		0.168	0.139	0.029	-0.021	
<i>Household characteristics</i>																	
Food share in budget	0.520	0.472	0.048	***	0.527	0.509	0.018	**	0.533	0.513	0.020	***	0.477	0.468	0.009	0.011	
Savings rate	0.125	-0.130	0.255	***	0.095	0.106	-0.011		0.111	0.129	-0.018		-0.064	-0.177	0.114	-0.132	
Tribal	0.513	0.476	0.037		0.551	0.485	0.067	***	0.560	0.484	0.076	***	0.465	0.493	-0.028		
Urban formal	0.319	0.344	-0.025		0.300	0.335	-0.035	*	0.293	0.336	-0.042	**	0.366	0.326	0.040		
Urban informal	0.066	0.076	-0.010		0.070	0.066	0.004		0.071	0.064	0.006		0.059	0.083	-0.024		

NOTES: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$

Contrary to expectations, age does not appear to be correlated with financial literacy, and the literate are more concentrated in rural areas. We proceed to break down the effect of literacy by conditioning on grant receipt. Notably, financial literacy is uncorrelated with any other variable among non-recipient adults, children and their households. All differences which we picked up before are driven by the group of CSG recipients. Our evidence therefore shows that financial literacy only has conditional influence on the *use* of financial services and especially spending on food.¹² The final column of Table 1 presents the coefficients of interactions between financial literacy and CSG receipt; they show that only caregiver age, education and gender are related to simultaneous selection into CSG treatment and being financially literate. Specifications in equations 1 and 4 are motivated by the complementarities identified in the descriptives.

4.2 Level models

Table 2 presents Ordinary Least Squares estimates that correspond to equation 1. The negative relationship between the CSG and height-for-age in the baseline specification in column (1) indicates that selection is still present. Caregiver financial literacy and education do not shift heights significantly. Caregiver “skills” therefore do not unconditionally influence child outcomes in the eligible sample. However, children are taller if their caregivers report having a bank account. Given the positive relationship between literacy and banking reported in table 1, it does suggest that caregivers’ ability for financial planning affects their children’s nutritional status. Food shares are not significantly related to heights, but savings are associated with lower heights. Under-spending (as opposed to saving) is therefore associated with child malnutrition.

Columns (2) to (5) re-estimate this model, but each specification includes an interaction of the CSG with various complementary factors. Only caregiver education presents a significant factor that works in improving child height in conjunction with the CSG. The introduction of additional controls in (6) to (10) does not change our models substantially: the CSG main effect becomes positive but remains statistically insignificant. Overall, we find that only generic skills acquired through education shift the height-for-age profile in levels *if* caregivers receive a child support grant. While education does not have an unconditional impact on child height, a conditional relationship exists: child support grants have a positive influence only when those that spend them are better qualified. However, it is not clear which skills are important in this regard. Our findings suggest that these are competencies unrelated to caregivers’ ability to make better financial decisions: all models investigating those channels do not yield significant effects.

¹²In 2012 the South African Social Security Agency (SASSA) initiated the universal rollout of bank cards to cash transfer recipients. Our figures suggest that this goal was not achieved; however, by all indications financial inclusion was under-reported in the NIDS, especially by cash transfer recipients. 61.4% of all adults in NIDS wave 5 reported having a bank account and only 55% of CSG adult recipients report the same. This compares poorly to figures of 77% and 100% respectively collected by Finscope (Fanta et al., 2017) for a similar time period. Arguably the latter survey is more reliable on this count, as the instrument specifically targeted information on financial services. We speculate two possibilities: financially literate individuals were more inclined to select into the card rollout process; alternatively, respondents report on bank account “usage” rather than ownership. The latter explanation is more plausible, and indicates that financially literate individuals are more confident at using financial products.

Up to here, we have established that the CSG does not operate as a pure income effect, but is effective only conditional on unknown abilities. However, our findings in table 2 can at most illuminate short-run consequences of the CSG, as they do not consider the potential impact of conditional factors on the *growth* path of children. The next section addresses some of these questions.

4.3 Growth models

Table 3 extends the previous analysis to include lags of the dependent variable, as shown in equation 4. We apply various sample limitations to understand sub-group heterogeneity. First, we limit ourselves to children whose caregivers also received a CSG in wave 4. The coefficient on CSG therefore becomes representative of a group that count as recipients in both waves 4 and 5; we therefore term this sub-sample the non-switchers. Secondly, we consider the opposite: limiting ourselves to a sample that did not access a CSG in wave 4, the coefficient on CSG represents a group of newcomers or "switchers".

Starting with the full sample in columns (1) to (3), we observe only weak persistence in heights, regardless of the controls introduced. Autoregressive coefficients range from only 0.427 to 0.499 for CSG non-recipients who are also financially illiterate. Even without the cash from a grant and in the absence of caregiver financial knowledge, our evidence is consistent with a significant departure from a linear growth path. Controlling for other endowments such as incomes, education and motivation to apply for cash transfers does not change this situation. It confirms that shorter children are able to converge on taller children even in contexts without substantial resources. Interacting the lag dependent variable with only financial literacy yields a positive and significant coefficient: children whose caregivers are financially literate but do not receive a CSG are less likely to catch up with their peers. Caregiver financial skills do not help lagging children without a complementary income effect. A similar result holds for children who receive the CSG but whose caregivers are not financially literate. The insignificant interaction effect of CSG with the lag dependent variable indicates that the cash injection is ineffective if recipients do not command the necessary financial knowledge to manage it for the benefit of children. Clearly the effect of the CSG is conditional on financial competency. This is confirmed by the significantly negative coefficient on the triple interaction term. Only among the group of CSG recipients, does financial literacy reduce persistence and speed up convergence substantially.

4.3.1 Robustness checks

Estimates for a sample of non-switchers in columns (4) to (6) mirror those of the full sample very closely. The opposite holds for a sample of switchers in columns (7) to (9). We therefore find that more extensive exposure to the CSG is a precondition for the effects we measure. While financial literacy does not shift children's height profiles up or down (as discussed in the analysis of table 2), it does have dynamic effects by changing the rate at which children grow. Should the adjusted growth path continue on the same incline beyond the period covered by our data, children whose caregivers are financially literate

and received the CSG are likely to experience a permanent advantage.

Table 2: LEVEL MODELS

Dependent: HAZ_t	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CSG	-0.102 (0.077)	-0.131 (0.101)	-0.549 (0.237)**	-0.218 (0.116)*	-0.099 (0.077)	0.006 (0.132)	-0.016 (0.145)	-0.489 (0.265)*	-0.115 (0.158)	0.005 (0.132)
Financial Literacy	0.043 (0.052)	0.016 (0.146)				0.035 (0.052)	-0.015 (0.145)	0.031 (0.052)	0.034 (0.052)	0.035 (0.052)
Caregiver Educ	0.005 (0.010)		-0.019 (0.022)			0.015 (0.010)	0.015 (0.010)	-0.028 (0.023)	0.017 (0.011)	0.015 (0.010)
HH Food share	0.120 (0.137)					0.169 (0.141)	0.167 (0.141)	0.152 (0.141)	0.159 (0.141)	0.170 (0.141)
Caregiver bank	0.235 (0.054)***			0.073 (0.145)		0.213 (0.055)***	0.213 (0.055)***	0.214 (0.055)***	0.019 (0.150)	0.212 (0.056)***
HH savings rate	-0.053 (0.026)**				-0.040 (0.051)	-0.057 (0.027)**	-0.056 (0.027)**	-0.056 (0.027)**	-0.055 (0.027)**	-0.045 (0.051)
CSG x FinLit		0.057 (0.156)					0.057 (0.155)			
CSG x Educ			0.046 (0.024)*					0.052 (0.024)**		
CSG x Bank				0.192 (0.154)					0.216 (0.155)	
CSG x Savings					-0.021 (0.059)					-0.015 (0.059)
Medical Aid						0.420 (0.141)***	0.421 (0.141)***	0.449 (0.141)***	0.434 (0.141)***	0.421 (0.141)***
log(caregiver income)						0.005 (0.007)	0.005 (0.007)	0.005 (0.007)	0.005 (0.007)	0.005 (0.007)
Parent is caregiver						-0.098 (0.102)	-0.099 (0.102)	-0.075 (0.102)	-0.095 (0.102)	-0.098 (0.102)
Motivation						-0.006 (0.064)	-0.007 (0.064)	0.002 (0.064)	-0.006 (0.064)	-0.006 (0.064)
Constant	-1.662 (0.154)***	-1.417 (0.115)***	-1.249 (0.225)***	-1.437 (0.127)***	-1.414 (0.098)***	-2.031 (0.224)***	-2.011 (0.230)***	-1.632 (0.291)***	-1.938 (0.234)***	-2.031 (0.224)***
Other child controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Other caregiver controls	N	N	N	N	N	Y	Y	Y	Y	Y
N	1940	1940	1940	1940	1940	1940	1940	1940	1940	1940
R ²	0.078	0.065	0.068	0.076	0.066	0.086	0.086	0.088	0.087	0.086

NOTES: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$. Other child controls include age and gender. Other caregiver controls include age and gender.

We find no complementarity with financial literacy among the group of switchers. New grant recipients are significantly shorter compared to those who still don't receive the grants in wave 5 (coefficients range from -0.438 to -0.552). While both groups were initially outside of the social safety net, new recipients have selectively applied for the CSG based on greater disadvantage. However, new recipients' growth paths incline, with the interaction between the lag dependent variable and the CSG being significantly negative. Importantly, this effect arises independent of financial literacy. New cash recipients therefore experience an income effect, with an immediate alteration of the growth path. Comparing this result to the group of non-switchers suggests that positive income shocks benefit the growth path of children, while financial literacy is required to sustain or create added height benefits into the future. Child support grants on their own represent a positive shock that has once-off effects on children; as non-switchers illustrate, complementary skills are essential to build on these benefits over a longer timeframe.

The correlations we measure here may not necessarily be attributable to financial skills directly. For instance, financial literacy of caregivers may only be a placeholder for other cognitive and non-cognitive skills which - if genetically transferable - could also affect child anthropometrics directly (in the case that caregivers are related to the children in our sample). [Richter et al. \(2018\)](#) find that stature by age two is largely accounted for by inheritable biological factors. To stress test our model, we therefore control for a variety of factors. All models include education, food budget shares, access to bank accounts and savings, even if the output is omitted. We therefore establish that the measured effects do not arise because financially literate caregivers spend their money in more "suitable" ways to benefit nutrition directly. One shortcoming of our approach is that we do not measure diet quality and nutritional value with data on (food) budgets. It is plausible that financially literate caregivers also command better knowledge about health and nutritional choices. For instance, [von Fintel and Pienaar \(2016\)](#) show that the old age pension increases dietary diversity among non-farming households. Dietary diversity makes the largest contribution to multi-dimensional food security in South Africa ([Ryan and Leibbrandt, 2015](#)).

Furthermore, in columns (2), (5) and (8) we control for the index we construct to capture the motivation of caregivers to access the grant; this does not change our results on financial literacy or the CSG. Therefore, this type of motivation does not confound our results. Of course, other types of motivation in other domains are not captured by this measure. Finally, columns (3), (6) and (9) expand the specifications to include caregiver incomes, whether the children are covered by medical aid, and whether the caregiver is a biological parent. Our results remain stable, so that additional nurture (caregiver income) and nature (blood relation) do not drive our results on financial literacy and the CSG. We are therefore somewhat confident that we measure the intrinsic effects of caregiver financial literacy.

We repeat the exercise shown in table 3, but substitute other factors as complements to the CSG in our specifications.¹³ Firstly, we consider education. Our intention is to distinguish between the effects of more general skills instilled by schooling and specific

¹³Results are not shown, but available on request.

skills that relate to financial competency. As the descriptives in table 1 show, the two concepts overlap. However, we find no significant complementarity between education and the CSG in changing the growth path. This strengthens our argument that our findings on financial literacy are specific to financial know-how. This result is in line with what has been found elsewhere. Education does not diminish the effect of financial literacy on economic decision-making, but rather enhances it (Lusardi and Mitchell, 2014; van Rooij et al., 2012). Lusardi and Mitchell (2014) argue that both general knowledge (education) and specialised knowledge (in the form of financial literacy) are preconditions for making wise economic decisions.

Secondly, we study complementarity with caregivers' financial inclusion. We find no significant interaction between caregivers' access to banking and the CSG. It is possible that we obtain downward biased and noisy estimates due to measurement error (see footnote 12). However, financial inclusion in and of itself does not lead to better use of the CSG towards child growth. Command over financial literacy is more pivotal than offering individuals financial products they cannot necessarily leverage effectively. This finding has important implications for our understanding of the impact of universal rollout of bank cards to South African social grant recipients (Fanta et al., 2017). While financial inclusion can have other benefits, it does not automatically shift household decisions to be beneficial for children.

Thirdly, we study budgetary patterns. Neither food shares nor savings interact with CSG receipt. As noted above, spending amounts may be less important than the quality of the food that was purchased. The food sub-components in the NIDS are poorly reported, making for poor analysis of dietary composition.

In summary, our results show strong complementarity between financial literacy and cash transfers for altering children's growth paths. While income effects do emerge for new grant recipients, financial literacy is an important complementary factor for sustained child growth among existing recipients. Financial inclusion, "broad" education and directing budgets towards food are insufficient factors for explaining these patterns; instead, specific skills that are not "created" by obtaining bank accounts or schooling are important in bolstering child growth.

Dependent: HAZ_t	All			Non-switchers			Switchers		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
HAZ_{t-1}	0.499 (0.053)***	0.437 (0.066)***	0.427 (0.066)***	0.439 (0.095)***	0.339 (0.101)***	0.341 (0.101)***	0.522 (0.060)***	0.475 (0.082)***	0.493 (0.083)***
Financial Literacy	0.149 (0.121)	0.097 (0.150)	0.083 (0.151)	0.288 (0.231)	0.245 (0.259)	0.246 (0.260)	0.083 (0.131)	-0.056 (0.173)	-0.159 (0.178)
CSG	-0.061 (0.086)	-0.087 (0.121)	0.103 (0.146)	0.084 (0.162)	0.049 (0.193)	0.275 (0.221)	-0.438 (0.131)***	-0.433 (0.189)**	-0.552 (0.232)**
HAZ_{t-1} x FinLit	0.207 (0.084)**	0.181 (0.100)*	0.183 (0.100)*	0.306 (0.145)**	0.321 (0.155)**	0.316 (0.155)**	0.147 (0.095)	0.075 (0.122)	0.048 (0.124)
HAZ_{t-1} x CSG	0.023 (0.056)	0.067 (0.069)	0.074 (0.069)	0.116 (0.096)	0.201 (0.103)*	0.198 (0.103)*	-0.308 (0.080)***	-0.309 (0.104)***	-0.340 (0.106)***
CSG x FinLit	-0.166 (0.130)	-0.115 (0.161)	-0.101 (0.162)	-0.297 (0.236)	-0.264 (0.266)	-0.261 (0.267)	-0.067 (0.199)	0.122 (0.254)	0.265 (0.260)
HAZ_{t-1} x CSG x FinLit	-0.237 (0.088)***	-0.220 (0.106)**	-0.219 (0.106)**	-0.327 (0.149)**	-0.351 (0.159)**	-0.343 (0.160)**	-0.093 (0.122)	0.033 (0.153)	0.072 (0.154)
Motivation		0.054 (0.038)	-0.025 (0.055)		0.066 (0.045)	-0.038 (0.069)		0.080 (0.078)	0.146 (0.116)
Medical Aid			0.235 (0.119)**			0.146 (0.167)			0.271 (0.166)
log(caregiver income)			0.003 (0.006)			0.004 (0.007)			-0.013 (0.016)
Parent is caregiver			-0.160 (0.087)*			-0.199 (0.104)*			0.166 (0.185)
Constant	-0.507 (0.097)***	-0.732 (0.166)***	-0.918 (0.209)***	-0.549 (0.169)***	-0.858 (0.229)***	-1.033 (0.276)***	-0.669 (0.156)***	-0.363 (0.323)	-0.479 (0.425)
Other controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	2745	1713	1711	2374	1469	1467	371	244	244
R ²	0.390	0.397	0.399	0.400	0.417	0.419	0.416	0.397	0.418

NOTES: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$. Other child controls include age and gender. Other caregiver controls include age, gender, banking and education. Other household controls include share of food in budget and savings.

5 Conclusion

In this paper we consider the financial literacy of a caregiver as a contributing factor to the effectiveness of cash transfers. We specifically focus on South Africa, a country with low levels of financial literacy and high levels of grant receipt.

We find that caregiver financial literacy does not have unconditional benefits for children. However, financial literacy influences the growth path of poor children if they also receive the CSG. Conversely, the CSG only improves child growth when received by a financially literate caregiver. Our results do not preclude a pure income effect for cash transfers: children who become CSG beneficiaries gain in height immediately, even without financially literate caregivers. Arguably, the combination of cash transfers and financial literacy have long-run benefits for children over and above an income effect.

We are not able to establish the exact mechanisms by which financial literacy and cash transfers re-inforce each other. However, we conduct various robustness checks in order to eliminate confounding factors. We *are* able to conclude that the effect arises from specific financial skills: general educational attainment and financial inclusion – neither of which guarantee financial know-how - do not play a similar role in improving child growth. The effect also does not arise because of prioritised spending on food. We hypothesise that improved diet quality – a factor which we do not measure – possibly follows if financially literate individuals are given cash to make decisions that are good for children. This is an avenue for future research.

The findings have important policy conclusions, suggesting that improved financial literacy (perhaps through the introduction of financial education programmes) might be an effective way in which to raise the efficacy of the CSG. However, this proposal should be viewed with caution. Evidence suggests that pure financial literacy interventions (as opposed to "product based" interventions, where beneficiaries are provided with access to bank accounts or commitment devices alongside financial literacy training) are on average not very successful (Steinert et al., 2018a,b). In addition, the evidence from Steinert et al. (2018a) seems to suggest that an intervention would be most effective if it also addressed the various social and psychological barriers to sound financial behaviour and decision-making. Any policy recommendations regarding interventions to improve financial literacy should take these factors into account. Our results also show that financial literacy alone does not necessarily produce desirable benefits; however, complementary interventions may have greater effect. In our case, cash incomes work together with financial know-how to alter the growth paths of children.

Appendix

Questions on financial literacy included in the adult questionnaire in the 5th wave of the NIDS:

1. Suppose you need to borrow R100. Which is the lower amount to pay back: R105 or R100 plus three percent?
2. Suppose over the next 10 years the prices of the things you buy double. If your income also doubles, will you be able to buy less than you can buy today, the same as you can buy today, or more than you can buy today?
3. Suppose you put money in the bank for two years and the bank agrees to add 15 percent per year to your account. Will the bank add more money to your account the second year than it did the first year, or will it add the same amount of money both years?
4. Suppose you had R100 in a savings account and the bank adds 10 percent per year to the account. After five years, if you did not remove any money from the account, would you have... more than R150, exactly R150 or less than R150
5. Suppose you have some money. Is it safer to put your money into one business or investment, or to put your money into multiple businesses or investments?

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