



Cash transfers and the mental health of young people: Evidence from South Africa's child support grant

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ABSTRACT

This study examines the longitudinal impact of the South African Child Support Grant (CSG) on risk for depression and life satisfaction among young people (15–19 years). We analysed data from the last three waves of the National Income Dynamics Study (NIDS), a nationally representative panel survey that took place every two years from 2008 to 2017. We used an instrumental variable (IV) approach that exploits multiple changes in age eligibility from 1998 to 2012. Depressive symptoms were assessed using an 8-item version of the Centre for Epidemiological Studies Depression Scale; participants who scored above 8 were considered at risk for depression. Life satisfaction was rated on a scale of 1 ('very dissatisfied') to 10 ('very satisfied'); participants who scored 8 or above were classified as satisfied. We also examined impacts on educational deficit (≥ 2 years behind) and not being in education, employment or training (NEET) as secondary outcomes, as these are also important for mental health. Age eligibility strongly predicted CSG receipt at Wave 3. In instrumental variable models, CSG receipt did not influence the risk for depression ($\beta = 0.10$, $SE = 0.10$, $p = 0.316$), nor life satisfaction ($\beta = -0.07$, $SE = 0.09$, $p = 0.420$) at Wave 3, nor at Waves 4 or 5. Some improvements in educational deficit were observed at Wave 3 among CSG beneficiaries compared to non-beneficiaries. These results were robust to multiple specifications. CSG receipt did not improve the psychological wellbeing of adolescents and young adults, nor did it improve their education or employment outcomes. Our findings highlight the need to identify alternative social policies that address the root causes of youth social disadvantage, in conjunction with targeted approaches to improve the mental health of young South Africans living in poverty.

1. Introduction

Common mental disorders such as depression often emerge in adolescence or early adulthood (Whiteford et al., 2013), at a time when young people face major physical, social and psychological changes. Young people also face the challenge of completing secondary school and transiting to employment, a process that can be disrupted in low-resource settings, such as in South Africa, where 33% of youth are not in employment, education or training (Statistics South Africa, 2021). Given that individuals living in poverty are more likely to experience mental health problems (Lund et al., 2010; V. Patel and Kleinman, 2003), these conditions place young people in low- and middle-income

countries (LMICs) at particularly high risk of poor mental health.

Cash transfers have become a dominant poverty reduction policy across many LMICs. While these programmes offer immediate poverty relief, evidence suggests that they also improve education, employment and overall life chances, and through this mechanism they may also improve the mental health of children and young adults (see theoretical framework in Appendix 1). For example, in a meta-analysis on primary and secondary school children in LMICs, Garcia and Saavedra (2017) found that conditional cash transfers improved school enrolment, attendance, dropout and completion, although the effect depended largely on programme characteristics. A more recent review by Cooper et al. (2020) also suggests that both unconditional and conditional cash

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transfers (which provide money to households on the condition that they meet pre-defined requirements) improve children's health and development. However, a recent review indicates that evidence that these programmes can improve the mental health of young people in LMICs is inconclusive (Zimmerman et al., 2021). Likewise, an earlier meta-analysis by Pega et al. (2017) found no evidence that unconditional cash transfers reduce depression among children or adults.

South Africa offers a unique context to study the impact of cash transfers on youth mental health: depression contributes 5.8% of the overall burden of disease in the country (Jack et al., 2014), while one in five adults live under the food poverty line (Statistics South Africa, 2018) and more than 60% of children are multidimensionally poor (Statistics South Africa, 2020). In 1998, South Africa launched the Child Support Grant (CSG), as an unconditional cash transfer given to caregivers, with the initial aim of improving the health and nutrition of children under the age of 7 (Lund Committee, 1996). Since its inception, the grant amount and eligibility criteria (age restriction and income threshold of caregiver) have gradually increased to cover both children and adolescents (UNICEF, 2014). Since 2012, all children (below 18 years) who are means-eligible, that is whose caregiver's monthly income is below a threshold (270 US Dollars (USD) as of January 2021) can be CSG beneficiaries. To date, the CSG, which is now equivalent to 27 USD per month, has become the single biggest programme for alleviating child poverty in South Africa, with over 12 million beneficiaries (SASSA, 2020).

A key challenge in establishing the causal impact of the CSG programme is selection: children who participate in the programme belong to families who are disadvantaged along multiple dimensions, and therefore have generally worse outcomes than those who do not participate in the programme. In the absence of a randomised controlled trial, identifying the causal effect of the programme on outcomes requires us to identify exogenous (as-if-random) variation in eligibility that is uncorrelated with children's and family's characteristics. The change in age eligibility from 2003 to 2012 generates a natural experiment that enables us to assess the impact of the CSG on outcomes by comparing children from the same age belonging to different birth cohorts.

There are some reasons to expect that the CSG may improve the mental health of adolescents and young people in South Africa. Evidence suggests that the CSG has beneficial effects on early child development (L. Patel et al., 2017), nutrition (Aguero et al., 2006; d'Agostino et al., 2018; Von Fintel et al., 2019) and maternal depression (Ohrnberger et al., 2020a). Eyal and Burns (2019) also showed that the CSG reduced the transmission of depression from parents to adolescents. On the other hand, effects on educational outcomes are more mixed, suggesting positive effects on enrolment but weak or no effects on educational attainment (Eyal and Njozela, 2016; Eyal and Woolard, 2013; Eyal et al., 2018). These latter findings raise questions on the effectiveness of the CSG to improve overall life chances, which may limit its ability to influence mental health and life satisfaction outcomes in the long-run. To our knowledge, no study has assessed how these mixed improvements in outcomes translates into long-term impacts on youth mental health.

The aim of this study was to examine the longer-term impact of the CSG on a sample of nationally representative adolescents' and young adults' mental health in South Africa. We understand mental health as existing on a continuum from psychological wellbeing (measured here as life satisfaction) to severe and disabling mental illness (measured here as risk for depression) (V. Patel et al., 2018). We use data from the National Income Dynamics Study (NIDS), a nationally representative panel survey, and use a quasi-experimental approach that exploits changes in age eligibility in an instrumental variable analysis. This study is part of the CHANCES-6 research project, which focuses on poverty reduction, mental health and the chances of young people in six low- and middle-income countries in Africa and South America (Bauer et al., 2021).

2. Materials and methods

2.1. Study design

The NIDS is a nationally representative South African panel study which investigates changes in the living conditions of household members over time. Data collection began in 2008 and waves were repeated approximately every two years until 2017, with a total of five waves. In 2008, the age limit to receive the CSG had been increased to <14 years, and by the time data collection for Wave 3 took place in 2012, the age eligibility had been gradually increased to 18 years (Appendix 2). So, among those assessed in 2012, participants born before 1994 experienced more restrictive age eligibility criteria than those born during or after 1994. Therefore, the present study makes use of waves 3 to 5, to assess the impact of changes in CSG eligibility at Wave 3 on outcomes at Waves 3 to 5.

2.2. Sampling and recruitment

Households were selected using a stratified two-stage sampling design. First, 400 primary sampling units (PSU) out of 3000 were randomly identified using Statistics South Africa's 2003 Master Sample (Statistics South Africa, 2004). Within each PSU, 8 clusters of dwelling units were randomly selected, two of which were allocated to the NIDS study sample base (M Brown et al., 2012). All households within each selected unit were approached. If at least one person within the household agreed to participate, all resident household members were included in the study and considered continuous sample members (CSM) (Leibbrandt et al., 2010). Residents were defined as individuals who resided in the household for at least four nights a week. For the purpose of this longitudinal study, only CSMs recruited at Wave 1 were considered.

2.3. Participants

A total of 10,642 households were approached at Wave 1; 7305 households (69%) agreed to participate and 28,226 participants were recruited as CSMs (Leibbrandt et al., 2009). Only CSMs between the ages of 15 and 19 years at Wave 3 (born between 1993 and 1997) were included in the present study. The age criterion was chosen as this age group shows the most variability in exposure to the CSG. Fig. 1 shows the probability of receiving the CSG at Wave 3 according to age, for individuals born in different months. The probability of receiving the CSG at Wave 3 declined gradually from age 15 to age 18, at which point there is a clear discontinuity in CSG receipt caused by the eligibility rules.

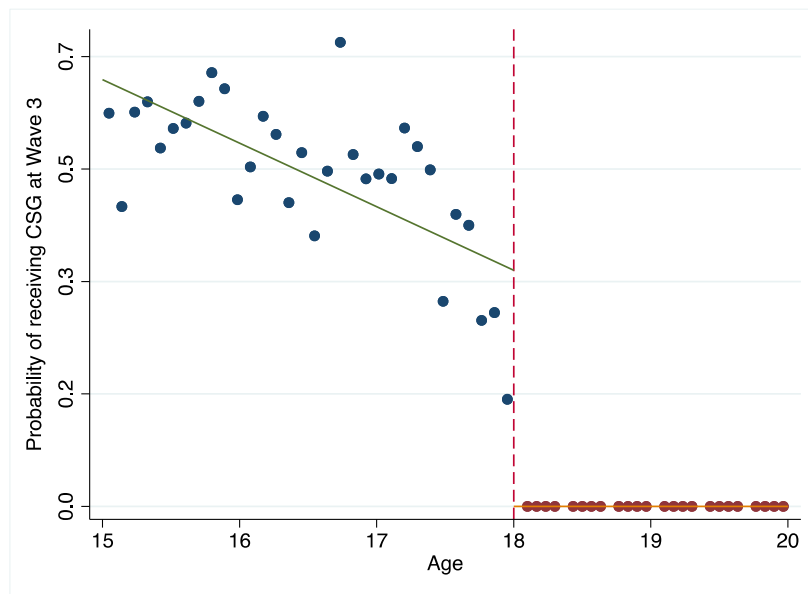
2.4. Data collection

All participants aged 15 years or older completed an individual adult questionnaire. A household questionnaire was also completed by the household head or person most knowledgeable about the household's expenditure. Questionnaires were available in all 11 official languages. A computer-assisted interviewing system was used to collect data, with android mobile devices.

3. Measures

3.1. Socio-economic characteristics

Socio-economic measures collected included age, gender, ethnicity, geographic characteristics, household size, household assets and characteristics, parents' education, as well as total and grant-related household income. An equivalence-scaled household income measure was used, adjusted for household size (Indicators, 1982). Multiple Correspondence Analysis was employed to generate a household wealth



Note: Each dot represents the means of observations within approximately one month of age

Fig. 1. Probability of receiving the CSG at Wave 3 by age Note: Each dot represents the means of observations within approximately one month of age.

score (Booyesen et al., 2008) which was then divided into tertiles, and further binarized by classifying those in the lower tertile as reporting the lowest household wealth. Perceptions of neighbourhood violence was reported by the household head – greater scores indicated greater perceived violence in the neighbourhood.

3.2. CSG-related variables

Participants' eligibility for the CSG was determined at Wave 3 based on their age (<18 years old) and their caregiver's non-governmental income, the same criteria used by South African Social Support Agency (SASSA). CSG eligibility was coded 1 if participants were both age- and means-eligible, and 0 otherwise. The mother residing in the same household was assumed to be the main caregiver. If she was not present, the status of caregiver was assigned through a stepped process, considering grandparents, the oldest woman living in the household, the father residing in the same household and the household head.

Information on CSG receipt was collected directly from participants aged 15–17 years. However, we did not use information on years of participation in the CSG programme as reported by participants, since earlier studies have raised concerns about the quality of the data (MD Brown et al., 2013). Instead, following the approach in previous studies (Eyal et al., 2018; Ohrnberger et al., 2020a), we use potential years of exposure as a proxy for CSG duration at Wave 3, constructed using participants' age, date of birth and history of policy changes on age eligibility thresholds over time.

3.3. Mental health and psychological wellbeing measures

Depressive symptoms in the past week were assessed from Waves 3 to 5 using a modified version of the 10-item Centre for Epidemiological Studies Depression Scale (CES-D) (Andresen et al., 1994). Scores range from 0 to 30, with higher scores indicating greater severity of symptoms. The instrument has been validated among isiXhosa, isiZulu and Afrikaans-speaking populations in South Africa, with good psychometric properties (Baron et al., 2017). Following these authors' research, the two positively-worded items ("I was happy" and "I felt hopeful about the future") were not congruent with the other negatively-worded items, we decided to exclude these two items; the new 8-item version had an

internal consistency of 0.71–0.78 at Waves 3 to 5. Using the same data collected by Baron et al. (2017), the optimal cut-off score indicating high risk for a major depressive disorder was 8 for 15–24-year olds and 9 for adults (Appendices 3–4). The latter was the cut-off used to determine high risk for depression among the participants' parents.

Life satisfaction, which is one of two key indicators of psychological wellbeing (V. Patel et al., 2018), was assessed at Waves 3 to 5 using the Cantril Ladder of Life (Cantril, 1965), which asks participants to rate, on a scale of 1–10, how satisfied they feel with their life as a whole, with 1 meaning 'very dissatisfied' and 10 'very satisfied'. Participants who scored 8 or above (above the 75th percentile) were classified as satisfied. While this scale was originally developed for adults, it has been validated in adolescent samples in Europe (Levin and Currie, 2014), and is associated with emotional wellbeing and perceived health among adults and children (Diener et al., 2013; Mazur et al., 2018). The scale was also used in the South African Social Attitudes Survey conducted in 2012 among a representative sample of South Africans aged 16 years or older (Møller and Roberts, 2017).

3.4. Education and employment

To understand the potential mechanisms involved in explaining the effect of the CSG on mental health, and given previous evidence on the impact of cash transfers on education and employment (Garcia and Saavedra, 2017) which are also important for mental health (Lee et al., 2009; McDaid et al., 2020), education and employment outcomes were also examined. Educational deficit and not being in education, employment or training (NEET), outcomes strongly linked to youth poverty (Frame et al., 2016), were measured from waves 3 to 5. Educational deficit was defined as being at least two years behind the expected grade level given the age. A participant was classified as NEET if they were unemployed or not economically active, not receiving training and not enrolled in school. To take into account the temporality of NEET states, and the different impact of being NEET for longer periods of time on life chances (Branson et al., 2019; De Lannoy et al., 2018), whether participants had been in a NEET state at both Wave 3 and Wave 5 (defined as persistent NEET), or at Wave 5 only (incident NEET) was also considered. At Wave 5, when all participants were aged 19 years or more, we also incorporated a measure of whether

participants completed secondary school and whether they were economically active (defined as employed or actively looking for work); both indicators are considered good proxies for life chances (Branson et al., 2019).

3.5. Statistical analyses

All analyses were performed using Stata version 16. The significance level was set at 0.05. Bivariate logistic regression was used to assess socio-demographic and health-related characteristics associated with receiving the CSG at Wave 3. Estimates were adjusted using sampling weights from Wave 3, to ensure estimates were representative of the South African population in 2012.

The association between CSG receipt and depression and life satisfaction at Wave 3 was first estimated using adjusted logistic regressions, controlling for key confounders. All models were adjusted for clustering at the PSU level (EA), and real income-related variables were transformed using inverse sine hyperbolic transformation (Aihounon and Henningsen, 2021). A potential concern is the strong selection bias that arises if individuals eligible to the programme are different (e.g., more disadvantaged) from non-eligible individuals. To address this endogeneity bias, our main identification strategy was based on an instrumental variable (IV) approach that exploited changes in age eligibility for the CSG among participants aged 15–19 years.

For an unbiased interpretation, the instrument must meet two conditions: first, the instrument must be correlated with the endogenous variable of interest – in this case, CSG receipt at Wave 3; second, the instrument must meet the exclusion restriction – that is, the instrument must influence the assessed outcomes only through its impact on the endogenous variable (Angrist and Pischke, 2008). We used age eligibility as our IV; this variable has been used previously to assess the impact of the CSG on other outcomes (Eyal et al., 2018; Ohrnberger et al., 2020a), and it is assumed to be exogenous as it is the result of changes in legislation regarding eligibility rules for the programme that are presumably uncorrelated with individual characteristics other than age.

To ensure that our models assess the impact of age eligibility over and above the effect of age itself, age was also included in a flexible specification in all models, and we present results for age in linear and quadratic form. Our models also controlled for other variables potentially associated with age eligibility and/or depressive symptoms. All models were adjusted for clustering at the PSU level and robust standard errors are reported. We also assessed outcomes at Waves 4 and 5 cross-sectionally: the same IV analysis was performed, regressing risk for depression and life satisfaction at Waves 4 and 5 separately on CSG receipt at Wave 3, again using age eligibility at Wave 3 as the instrument. Estimates were adjusted using respective sampling weights from Wave 4 and 5.

Several robustness checks were also performed. First, the same IV analysis was performed among means-eligible only participants, and among a narrow age range (17–18 years), as fewer differences in socio-demographic characteristics were identified between age-eligible and non-age-eligible participants in this age group. Because there were irregularities in the report of the CSG for children over the waves, despite the lack of follow-up means eligibility review, the same analysis was performed, this time assuming that once a participant indicated receiving the CSG in Waves 1 or 2, they remained beneficiaries at Wave 3 if under the age of 18. This applied to 16.8% of the sample ($n = 311$). The difference in the association between CSG receipt and outcomes across participants living in a rural vs. urban setting was also assessed, given employment and education prospects vary greatly by location (Zizzamia and Ranchhod, 2019). Finally, our models controlled for several economic-related variables to avoid omitted variable bias, some of which are likely correlated. To determine whether we faced issues relating to overfitting or multicollinearity, we ran the same analyses, this time including only household income as the economic variable in

our models.

To explore some of the potential mechanisms, the same IV analyses were performed to assess the effect of CSG receipt on educational deficit and being NEET at Waves 3–5, as well as on completing secondary school, being economically active, and being persistent and newly NEET at Wave 5.

3.6. Ethical considerations

The NIDS was approved by the Commerce Faculty Ethics Committee and the Human Research Ethics Committee (HREC) at the University of Cape Town, South Africa. The present study was approved by the HREC (Ref: 396/2019). Informed consent was provided by all participants included in the study.

4. Results

4.1. Sample characteristics

A total of 2814 participants met the criteria for inclusion in the analysis. The sample was balanced in terms of gender, and the majority were Black African ($n = 2372$, 83.0%). Participants had been exposed to the CSG for 10 years on average ($SD = 4.13$), and close to a third ($n = 902$, 32.1%) reported being current CSG beneficiaries (Table 1). The majority of those receiving the CSG were means- and age-eligible ($n = 737$, 95.3%), yet over a third ($n = 595$, 34.8%) of participants who were not CSG beneficiaries were eligible. Current CSG beneficiaries had also been exposed to the CSG on average for 13 years ($SD = 1.14$), compared to 8 years ($SD = 4.20$) among the non-beneficiaries. Altogether, 14.5% ($n = 391$) screened positive on the CES-D-8, indicating a risk for depression. Nearly half ($n = 1531$, 49.2%) reported being at least two years behind at school and 14.7% ($n = 450$) reported being NEET. Univariate analyses indicate that CSG beneficiaries and non-beneficiaries differed on many socio-demographic characteristics (Table 1). Of note, CSG beneficiaries were more likely to reside in rural areas, report greater neighbourhood violence, and live in households of lowest wealth, with more residents and with higher monthly grant income and lower OECD-adjusted monthly household income. These results confirm that CSG receipt is correlated with many socio-economic characteristics and endogenous to socioeconomic disadvantage.

4.2. CSG receipt, risk for depression and life satisfaction

Table 2 shows results from logistic regression models. Receipt of the CSG was associated with lower odds of screening positive on the CES-D-8 ($OR = 0.66$, $SE = 0.13$, $p = 0.040$), but it was not associated with life satisfaction ($OR = 1.08$, $SE = 0.19$, $p = 0.654$) at Wave 3 (see Appendices 5a and 5b for full tables with descriptive statistics). Reduced odds of risk for depression were also noted at Wave 4 ($OR = 0.63$, $SE = 0.13$, $p = 0.023$); this was not the case at Wave 5 ($OR = 1.17$; $SE = 0.22$, $p = 0.401$) (Appendix 6). Supplementary models showed that there was no interaction between gender and CSG receipt for risk for depression at Wave 3 (OR for interaction = 0.82, $SE = 0.23$, $p = 0.484$), but there was a small but significant gender interaction for life satisfaction: female participants were at decreased odds of reporting life satisfaction at Wave 3 when receiving the CSG compared to male participants (OR for interaction = 0.61, $SE = 0.15$, $p = 0.049$) (Appendix 7). No other gender interactions were noted at Waves 4 or 5 (see Appendix 8). Remaining analyses were thus conducted among the entire sample, irrespective of gender.

Results from logistic models, however, do not have a causal interpretation. We therefore now turn to the results from the IV models. Before showing results from IV models, we first examined whether the age-eligibility threshold was correlated with key socio-demographic characteristics, as one of the assumptions in our IV model is that the distribution of age-eligibility is as-good-as-random. Figures in Appendix

Table 1
Sample characteristics at wave 3, by CSG receipt.

	All (N = 2807)		CSG beneficiary (N = 899)		Non-beneficiary (N = 1908)		p
	N	%	N	%	N	%	
Female	1395	48.7	446	47.5	949	49.1	0.649
Ethnicity							
Black African	2372	83.0	809	94.2	1563	78.6	<0.001
Coloured	378	9.2	89	4.4	289	11.1	<0.001
Asian (Indian)	22	2.1	3	1.1	19	2.4	0.189
White	42	5.8	1	0.3	41	7.9	0.001
Resides in rural area	1649	47.6	604	60.4	1045	42.6	<0.001
Lower HH wealth	935	25.0	363	32.6	572	22.0	<0.001
Eligible for the CSG ^a	1332	50.9	737	95.3	595	34.8	<0.001
Educational deficit	1531	49.2	465	51.4	1066	48.4	0.380
NEET	450	14.7	48	4.1	402	18.8	<0.001
At risk for depression (CES-D-8 ≥ 8)	391	14.5	116	14.8	275	14.4	0.850
Satisfied with life	437	16.7	129	12.4	308	18.5	0.014
Mother is alive	2020	85.4	736	89.8	1284	83.5	0.002
Mother is HH resident	2017	74.9	734	83.5	1283	71.6	<0.001
Mother completed secondary school	473	28.2	103	14.0	370	33.9	<0.001
Mother at risk for depression (CES-D-8 ≥ 9) ^b	299	13.7	107	16.2	192	12.7	0.134
Father is alive	1586	72.9	556	73.8	1030	72.5	0.639
Father is HH resident	1580	61.4	551	66.0	1029	59.6	0.032
Father completed secondary school	455	35.5	113	19.9	342	41.8	<0.001
Father at risk for depression (CES-D-8 ≥ 9) ^b	116	15.3	34	11.8	82	16.5	0.305
	Mean	SD	Mean	SD	Mean	SD	p
Age	16.9	1.37	15.9	0.80	17.3	1.36	<0.001
Education (yrs)	9.0	1.84	8.1	1.49	9.3	1.86	<0.001
Monthly HH grant income (USD) ^c	126.9	146.60	180.9	140.13	106.3	144.17	<0.001
Monthly HH total income (USD) ^d	309.0	615.11	118.7	101.53	385.2	710.36	<0.001
Household size	6.3	3.29	6.5	3.39	6.1	3.24	0.031
Neighbourhood violence	12.4	6.44	13.3	6.04	12.0	6.57	0.003
CSG exposure (yrs)	9.7	4.13	12.9	1.14	8.4	4.20	<0.001
CES-D-8 score	3.3	3.45	3.1	3.47	3.4	3.42	0.340

Estimates are weighted using sampling weights from Wave 3; analysis performed among participants aged 15–19 years at Wave 3; ^a Means-test and age eligible; ^b Data only available for 1748 and 727 of mothers and fathers, respectively; ^c Excludes income from the CSG; ^d adjusted for household size. HH=Household.

Table 2
Correlates of risk for depression, life satisfaction and life chances outcomes at Wave 3.

Characteristic at Wave 3	At risk for depression (≥8 on CES-D-8)		Satisfied with life (score ≥8)		Educational deficit		NEET	
	Adjusted OR (SE)	P	Adjusted OR (SE)	p	Adjusted OR (SE)	p	Adjusted OR (SE)	p
CSG beneficiary	0.66 (0.13)	0.040	1.08 (0.19)	0.654	0.65 (0.09)	0.002	0.49 (0.11)	0.001
Age (in months)	1.14 (0.12)	0.192	0.85 (0.08)	0.064	1.55 (0.13)	<0.001	1.28 (0.10)	0.426
Female	1.30 (0.19)	0.077	1.19 (0.14)	0.154	0.37 (0.04)	<0.001	1.35 (0.19)	0.036
Years of schooling	0.98 (0.05)	0.608	1.01 (0.04)	0.789				
Resides in rural area	0.88 (0.23)	0.638	1.17 (0.26)	0.469	0.72 (0.10)	0.021	0.80 (0.16)	0.273
Lower household wealth	0.84 (0.17)	0.397	0.85 (0.19)	0.444	1.55 (0.19)	<0.001	1.28 (0.19)	0.100
Number of additional CSG received in household	1.06 (0.07)	0.396	0.97 (0.07)	0.731	1.07 (0.05)	0.119	0.94 (0.06)	0.341
Household monthly grant income (USD) ^a	0.99 (0.04)	0.768	1.03 (0.03)	0.334	1.08 (0.03)	0.005	0.96 (0.03)	0.237
Household total monthly income (USD) ^{a,b}	0.78 (0.10)	0.041	1.51 (0.15)	<0.001	0.78 (0.06)	0.001	0.67 (0.07)	<0.001
Household size	0.99 (0.04)	0.719	1.05 (0.04)	0.195	0.98 (0.02)	0.472	1.05 (0.03)	0.082
Perceived neighbourhood violence	0.99 (0.02)	0.365	0.99 (0.02)	0.629	0.99 (0.01)	0.362	1.00 (0.01)	0.825
Mother is household resident	0.75 (0.15)	0.137	1.02 (0.24)	0.933	0.88 (0.11)	0.323	0.92 (0.16)	0.632
Father is household resident	1.09 (0.15)	0.528	1.13 (0.19)	0.465	0.84 (0.09)	0.106	0.83 (0.11)	0.167
Mother completed secondary school	1.28 (0.25)	0.222	0.83 (0.14)	0.275	0.36 (0.05)	<0.001	0.72 (0.14)	0.096
Number of observations		1921		1956		2170		2156

OR = odds ratio. NOTE: Robust standard errors reported, adjusted for clustering at PSU level; analysis performed among participants aged 15–19 years at Wave 3; also controlling for ethnicity, province of residence, means-eligibility and quadratic form of age to account for non-linearity between age and outcomes. NOTE: Parental risk for depression was considered as a covariate, however missing data for 37.7% and 74.1% of mothers and fathers, respectively, meant including these covariates would reduce the sample size considerably though similar results were found with these covariates were included (results not presented here); ^a transformed using inverse sine hyperbolic transformation; ^b adjusted for household size.

9 show that there was no discontinuity in key socio-demographic characteristics at the age threshold of 18, to be expected given the random assignment of age eligibility. However, further univariate logistic regression models among 15-19 year-old participants at Wave 3 indicate a greater proportion of age-eligible participants reported living with their mother or father, and a greater proportion had mothers who had completed secondary school (Table 3). These variables were thus

controlled for in all IV models and we assume that, conditional on these covariates, CSG receipt is distributed as good as random.

Table 4 shows first and second stage coefficients from models that use age eligibility as the instrument. Only coefficients for age eligibility (first stage) and CSG (second stage) are presented. Results consistently indicated a very strong first stage: becoming eligibility for the CSG increases the probability of receiving the benefit by between 32 and 45

Table 3
Differences in characteristics by age eligibility for CSG at Wave 3.

Age eligible?	Age 15–19 (N = 2233)					Age 17–18 (N = 916)				
	Yes		No		p	Yes		No		p
	N	%	N	%		N	%	N	%	
Female	848	46.7	547	51.9	0.090	285	45.3	288	52.4	0.165
Resides in rural area	1015	47.7	634	47.3	0.892	334	44.4	344	47.0	0.563
Lower HH wealth	562	24.0	373	26.7	0.180	187	24.8	195	24.3	0.878
Educational deficit	866	45.5	665	55.5	0.002	336	58.4	397	57.6	0.887
NEET	146	7.3	304	27.0	<0.001	71	10.7	121	20.3	0.002
At risk for depression	255	15.4	136	12.9	0.194	88	17.5	69	12.6	0.113
Higher life satisfaction	280	17.2	157	15.9	0.609	85	13.0	85	15.9	0.357
Mother is alive	1271	85.4	749	85.3	0.980	413	87.7	405	86.4	0.676
Mother is HH resident	1268	76.7	749	71.9	0.045	413	79.7	405	74.1	0.140
Mother completed secondary school	328	30.5	145	24.4	0.051	103	26.5	87	28.3	0.719
Mother is at risk for depression	187	14.5	112	12.4	0.314	72	18.9	61	11.8	0.049
Father is alive	1032	75.6	554	67.9	0.003	313	73.3	304	70.4	0.521
Father is HH resident	1026	65.7	554	54.3	<0.001	313	64.0	304	57.4	0.155
Father completed secondary school	304	37.9	151	31.3	0.105	94	35.5	91	39.0	0.603
Father is at risk for depression	78	12.9	38	20.1	0.084	23	10.1	21	24.6	0.039
	Mean	SD	Mean	SD	p	Mean	SD	Mean	SD	p
Years of education	8.4	1.64	10.0	1.69	<0.001	9.1	1.60	9.9	1.63	<0.001
Monthly HH grant income (USD) ^a	133.0	146.41	117.4	147.24	0.029	128.2	150.78	110.2	140.92	0.129
Monthly HH total income (USD) ^{a, b}	301.6	540.86	325.8	726.42	0.177	246.0	305.21	329.8	578.95	0.667
Household size	6.2	3.17	6.2	3.49	0.975	6.3	3.24	6.1	3.28	0.516
Perceived neighbourhood violence	12.5	6.36	12.3	6.60	0.640	12.6	6.34	12.2	6.75	0.518
CSG exposure (years)	12.6	1.47	4.8	1.98	<0.001	11.1	1.57	6.1	1.53	<0.001

NOTE: Estimates are weighted using sampling weights from Wave 3; analysis performed among participants aged 15–19 years at Wave 3; ^a Transformed variable using inverse sine hyperbolic transformation included in the model; ^b adjusted for household size.

Table 4
Instrumental variable analysis – effect of CSG on risk for depression and life satisfaction among 15-19-year olds.

	Wave 3				Wave 4				Wave 5			
	β	SE	p	F	β	SE	p	F	β	SE	p	F
At risk for depression												
First stage: age eligibility	0.33	0.03	<0.001	109.6	0.38	0.03	<0.001	52.7	0.38	0.03	<0.001	51.7
Second stage: CSG receipt	0.10	0.10	0.316		0.05	0.10	0.583		-0.02	0.09	0.794	
Number of observations	2148				2058				1870			
Satisfied with life												
First stage: age eligibility	0.33	0.03	<0.001	109.1	0.38	0.03	<0.001	53.2	0.38	0.03	<0.001	51.2
Second stage: CSG receipt	-0.07	0.09	0.420		0.11	0.11	0.285		0.02	0.10	0.799	
Number of observations	2165				2062				1870			

Robust standard errors reported, adjusted for clustering at PSU level; analysis performed among participants aged 15–19 years at Wave 3; models adjusted for age (linear and quadratic form), gender, ethnicity, years of education, province and location of residence (rural/urban), means eligibility, perceived neighbourhood violence, household wealth status, household size, monthly household grant and total income (adjusted for household size), maternal and paternal residence status, whether father was alive and whether mothers completed secondary school.

percentage points (coefficients ranging between 0.32 and 0.45). F-statistics were all above 50, indicating that age eligibility was a strong predictor of CSG receipt, and the instrument was relevant (Schmidheiny, 2016). Second stage coefficients indicated that CSG receipt was not associated with being at reduced risk for depression ($\beta = 0.10$, SE = 0.10, $p = 0.316$), nor life satisfaction ($\beta = -0.07$, SE = 0.09, $p = 0.420$) at Wave 3. CSG receipt also had no effect on these outcomes at Waves 4 or 5.

Results did not change in models in which i) CSG receipt at prior waves was carried over to Wave 3 (CSG receipt assumed to be continuous) (see Appendix 10a), ii) analyses were restricted to means-eligible participants (Appendix 11a), and iii) analyses were restricted to 17-18-year olds (Appendix 12a). In analyses stratified by whether participants lived in a rural or urban setting, CSG receipt increased the likelihood of being satisfied with life at Wave 5 among rural participants ($\beta = 0.20$, SE = 0.10, $p = 0.053$), but decreased the likelihood among urban participants ($\beta = -0.64$, SE = 0.31, $p = 0.039$) (Appendix 13a). Finally, to examine the issue of overfitting, we re-estimated all models excluding household wealth and grant income from the IV models. Results are presented in Appendix 14a and show that coefficients are nearly

identical to our original models that control for these variables. A correlation matrix across all economic variables included in our models was also constructed to examine the issue of collinearity (Appendix 15): although these variables are indeed correlated, all correlation coefficients ranged between 0.05 and 0.37, suggesting that there is not a collinearity issue.

4.3. CSG receipt, education and employment outcomes

A possible interpretation is that the lack of effects on mental health and life satisfaction reflect weak effects of the programme on education and employment, two key outcomes the programme aimed to improve. The same IV analyses were thus conducted to assess first the effect of CSG receipt on key educational outcomes at Wave 3–5 (Table 5). The CSG reduced the probability of experiencing educational deficit among participants aged 15–19 at Wave 3 ($\beta = -0.50$, SE = 0.12, $p < 0.001$). This effect, however, was reversed at Wave 4: CSG receipt marginally increased educational deficit by 19 percentage points (SE = 0.10, $p = 0.065$); there was no longer any effect at Wave 5 ($\beta = 0.02$, SE = 0.10, $p = 0.845$). CSG receipt did not affect the likelihood of being NEET in

Table 5
Instrumental variable analysis – effect of CSG on life chances outcomes among 15–19-year olds.

	Wave 3				Wave 4				Wave 5			
	β	SE	p	F	β	SE	p	F	β	SE	p	F
Educational deficit												
First stage: age eligibility	0.31	0.03	<0.001	120.6	0.38	0.03	<0.001	58.2	0.38	0.03	<0.001	53.8
Second stage: CSG receipt	–0.50	0.12	<0.001		0.19	0.10	0.065		0.02	0.10	0.845	
Number of observations	2486				2276				2089			
NEET												
First stage: age eligibility	0.31	0.03	<0.001	118.6	0.38	0.03	<0.001	54.8	0.38	0.03	<0.001	53.4
Second stage: CSG receipt	0.14	0.10	0.155		–0.08	0.11	0.448		0.07	0.11	0.535	
Number of observations	2470				2111				2070			
Completed matric												
First stage: age eligibility									0.38	0.03	<0.001	53.8
Second stage: CSG receipt									0.01	0.12	0.948	
Number of observations									2089			
Not economically active												
First stage: age eligibility									0.38	0.03	<0.001	53.2
Second stage: CSG receipt									0.11	0.12	0.350	
Number of observations									1877			
Persistent NEET												
First stage: age eligibility									0.38	0.03	<0.001	53.9
Second stage: CSG receipt									0.01	0.04	0.897	
Number of observations									2090			
Incident NEET												
First stage: age eligibility									0.40	0.03	<0.001	54.8
Second stage: CSG receipt									–0.02	0.11	0.850	
Number of observations									1753			

Robust standard errors reported, adjusted for clustering at PSU level; analysis performed among participants aged 15–19 years at Wave 3; models adjusted for age (linear and quadratic form), gender, ethnicity, province and location of residence (rural/urban), means eligibility, perceived neighbourhood violence, household wealth status, household size, monthly household grant and total income (adjusted for household size), maternal and paternal residence status, whether father was alive and whether mothers completed secondary school.

Waves 3–5 (Table 5). The same results were found when CSG receipt was assumed continuous (Appendix 11b) and in analyses restricted to means-eligible participants (Appendix 12b), or among 17–18 year old participants (Appendix 13b).

5. Discussion

The present study sought to assess the effect of the CSG on the mental health of young people in South Africa. Using a nationally representative sample of young South Africans, we find no effect of CSG on the risk of depression or life satisfaction among adolescents and young adults, either in the short or longer term. Our findings are in line with those from a recent meta-analysis which suggests no consistent effect of cash transfers on depression among youth (Zimmerman et al., 2021). Our findings also corroborate those of Kilburn et al. (2016)'s study among 13–20-year-old South African girls, indicating that a conditional cash transfer did not have an effect on depressive symptoms. To our knowledge, only one other study reports the long-term effects of cash transfers on psychological distress of young women in Malawi (Baird et al., 2019). Authors also reported that despite short-term beneficial impacts on psychological distress, neither conditional or unconditional cash transfers had long-lasting effects two years after the end of the programme.

We hypothesised that one of the mechanisms through which CSG might improve youth mental health is by improving young people's life chances, particularly education and employment. Given the CSG did not have an impact on these outcomes, it is perhaps not surprising that the programme did not improve youth mental health. Why the programme failed to improve employment and education outcomes has been the focus of earlier research. For example, research by Graham et al. (2019) found that, although CSG beneficiaries attain marginally more years of education than non-beneficiaries, this does not translate into differences in secondary school attainment, employment or self-reported health outcomes among 21–22-year-olds. Their analysis shows that large inequalities in life chances by race, gender and geographical location remain despite the existence of this programme. Authors therefore argue that CSG as a policy instrument does not address these inequalities,

which instead need to be tackled by broader interventions that address the causes of these inequalities, such as the fact that only around 40% of young people in South Africa complete secondary school (Spaull, 2015). It is often argued that cash transfers can only increase consumption of education if the supply of high-quality education services is available for families and young people to attend school. In the absence of adequate supply, it is unlikely that either conditional or unconditional cash transfers will lead to improved educational outcomes.

Even if CSG did not improve life chances, we would still expect cash transfers to improve the financial wellbeing of households, and through this mechanism potentially improve the mental wellbeing of household members. For example, prior evidence suggests that the CSG increases food security (Jones, 2017), which we would expect to reduce psychological distress. There are at least two reasons why these effects may not have materialised for adolescents and young people. First, the CSG amount corresponded to only 14% of median household consumption. Given that monthly median expenditure is already very low (R2025 \approx \$250), the transfer may be too small to make a meaningful difference on young people's life chances and mental health (L. Patel et al., 2017). Second, because the grant is not targeted directly at the child or adolescent, any beneficial effects may not be seen directly on youth, but rather indirectly through reduced household stress and improved parental mental health. Indeed, there is evidence that the CSG improves the mental health of adults living in the same household as the CSG recipient (Ohrnberger et al., 2020a), and that the CSG increases the caregiver's engagement in children's wellbeing (L. Patel et al., 2017; L. Patel et al., 2015). An interesting finding by Eyal and Burns (2019) also indicates that the CSG reduces the risk of depression but only among children of parents who are depressed.

Several limitations need to be acknowledged. First, a potential limitation of our approach is the use of individual age eligibility at a given point in time as our instrument (Wave 3). Yet, similar results were found when potential years of exposure were controlled for, to take into account CSG exposure among those no longer age eligible at Wave 3. A potential alternative would have been to examine the impact of years of cumulative exposure to the programme throughout life. The

combination of age and date of birth creates exogenous variation due to the change in policies in age eligibility since 2003, so people of the same age but born in different years have different cumulative years of exposure to the CSG. This approach has also been employed in previous studies using the NIDS data (Eyal et al., 2018), but is not ideal given the large amount of missing data for duration of CSG receipt and reports of poor quality of the available data. Nonetheless, in sensitivity analyses, we assessed the effect of duration of CSG receipt on the risk for depression, life satisfaction and other life chances outcomes, using potential exposure to CSG as instrument (Appendix 16a–16b). In line with our main results, findings indicate that duration of CSG was not associated with any of the outcomes at any wave.

A second potential concern refers to the fact that individuals who are not age-eligible in 2012 may live with other age-eligible CSG-receiving household members in 2012 or subsequent/previous waves. To assess the potential impact of this issue, we performed stratified IV models for participants who were the youngest child in the household (i.e., who would not benefit from other children's CSG receipt status) vs. those who were not (i.e., who could potentially have benefited from other children's CSG before or after 2012). If CSG receipt from other children in the household downwardly bias the effects of the CSG assessed in our original analyses, we would expect estimates to be stronger in the subsample of children who were the youngest member of the household. Results from this analysis are included in Appendix 17. We find that the impact of CSG is not stronger among children who were the youngest member of the household, suggesting that this does not explain the lack of effects observed in our study. We also note that in our models, we control for the number of beneficiaries of the Child Support Grant in the household (excluding that received by the participant itself) and overall household grant income. Overall, these analyses suggest that our results are not likely to be biased by the fact that other children in the household may also receive the CSG. Having said that, our study design exploits the discontinuity in CSG receipt resulting from the policy change that extended CSG eligibility from age 17 to 18. While internally valid, this approach yields the local average treatment effect (LATE) of the impact of CSG receipt among adolescents who were affected by this policy change. It is possible that receipt of CSG for other reasons or at different ages would show different results. For example, our study does not preclude that CSG receipt during childhood may show different effects on outcomes than those observed for our study.

Third, attrition at Waves 4 and 5 was not random, and we note that several demographic characteristics at Wave 3, including educational deficit, were predictive of attrition at Waves 4 and 5. However, sensitivity analyses among a balanced panel led to similar results (Appendix 18). Fourth, our study was underpowered to assess gender differences, but it is important to consider the potential role of gender in future studies. Previous research in South Africa suggests that boys are more likely to drop out of school (Eyal et al., 2018), and there is a smaller change in spending patterns for boys compared to girls following an income shock (Duflo, 2003). Parental expectations of future education or labour outcomes for boys and girls may lead to potential gender differences in the impact of the CSG (Bardasi and Garcia, 2014). According to the theory of choice framework (Becker, 1991), child preference may also play a role in how the grant is used, and thus how it impact boys and girls.

Finally, in our study, only 15–16% of young people screened positive for depression, a prevalence which is lower than expected given previous evidence from the South African Youth Risk Behaviour Survey, suggesting 25% of secondary school children reported feelings of hopeless and sadness that interfered with functioning (James et al., 2017). This is unlikely to be due to the adjusted screening tool used, which has strong psychometric properties among youth. In South Africa (Appendix 1). Moreover, similar results were found when depressive symptoms were assessed on a continuous scale, or when the full 10-item version of the CES-D was used (robustness checks not presented here). The low prevalence prevented us from assessing whether CSG receipt

had a differential effect on risk for depression over time depending on the severity of depressive symptoms at the time of receiving the CSG. This is a possibility, as was shown in a previous study in Malawi, where the beneficial effects of a cash transfer on mental health, conditional on staying HIV negative, were seen particularly among those who initially had worse mental health (Ohrnberger et al., 2020b). It is important to note that the CES-D is a screening tool for depressive symptoms, and does not necessarily signify a clinical diagnosis of depression. However, even mild or sub-clinical levels of depressive symptoms can be debilitating and impact individual functioning (McGorry and Nelson, 2016). Likewise, we use a well-established measure of life-satisfaction as our measure of psychological well-being, as this is the dimension most relevant to mental health. However, well-being includes a broader set of subjective (psychological, social and spiritual) and objective dimensions (e.g., income, housing), which may be important to consider in future studies. The impact of the CSG on other mental health outcomes, particularly externalising behaviours or other risky behaviours, such as substance use and gang involvement, which are more prevalent in South Africa compared to other LMICs (Kleintjes et al., 2006), should also be investigated. For example, there is preliminary evidence from Mexico's Oportunidades conditional cash transfer programme that it can reduce aggressive and oppositional problems among 4 to 6 year-old low-income children (Ozer et al., 2009).

6. Conclusions

Our findings indicate that the CSG has limited impact on adolescent and youth mental health. In addition, the CSG did not improve the educational and employment outcomes of young people, and as such, also seems to be of limited value to address these social determinants of youth mental health. There are two possible policy implications of these findings: first, there is an urgent need to identify more effective social policies to address the large social inequalities that lead to persistent poverty and social disadvantage in youth, and only then may we expect social programmes to improve the mental health of young people. Second, while effective policies are identified, a more targeted approach may be required to directly improve the mental health of young people in South Africa, and opportunities for integrating mental health into broader social protection programmes should be sought.

Author statement

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Declaration of competing interest

The authors declare no conflict of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2021.114631>.

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