



Article

Does money buy happiness? Evidence from an unconditional cash transfer in Zambia



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ABSTRACT

The relationship between happiness and income has been at the center of a vibrant debate, with both intrinsic and instrumental importance, as emotional states are an important determinant of health and social behavior. We investigate whether a government-run unconditional cash transfer paid directly to women in poor households had an impact on self-reported happiness. The evaluation was designed as a cluster-randomized controlled trial in rural Zambia across 90 communities. The program led to a 7.5 to 10 percentage point impact on women's happiness after 36- and 48-months, respectively (or 0.19–0.25 standard deviations over the control group mean). In addition, women have higher overall satisfaction regarding their young children's well-being, including indicators of satisfaction with their children's health and positive outlook on their children's future. Complementary analysis suggests that self-assessed relative poverty (as measured by comparison to other households in the community) is a more important mediator of program effects on happiness than absolute poverty (as measured by household consumption expenditures). Although typically not the focus of such evaluations, impacts on psychosocial indicators, including happiness, should not be discounted as important outcomes, as they capture different, non-material, holistic aspects of an individual's overall level of well-being.

1. Introduction and motivation

'Happiness is the meaning and the purpose of life, the whole aim and end of human existence'

Aristotle.

In the past two decades, alternative measures of human progress beyond gross domestic product (GDP) gained importance, shifting focus from solely economic output to more holistic measures of wellbeing (Stiglitz, Sen, & Fitoussi, 2009). Measures like subjective wellbeing (SWB) provide multi-dimensional and complementary knowledge of the lives and living conditions of individuals and may capture, among others, the evaluation of one's life and levels of emotional health and happiness. Consequently, SWB has become an important and relevant outcome to understand the impact of public policy beyond monetary dimensions (Kolev & Tassot, 2016). The economics of happiness, or SWB, has focused primarily on the evaluative (or cognitive) aspects of

SWB (such as the assessment of life's satisfaction) and to a lesser extent on the emotional or hedonic account of SWB (such as self-reported happiness) (MacKerron, 2012). However, the concepts of life satisfaction and happiness are often used interchangeably in the literature on the assumption that these measures are highly correlated (MacKerron, 2012; Stevenson & Wolfers, 2008).¹

The relationship between SWB and income has been at the center of a vibrant debate. Generally, studies have found a positive correlation between income and SWB, a relationship that is stronger at lower income levels (at the micro level) and in poorer countries (at the macro level, albeit controversial) suggesting a diminishing marginal utility of income (Veenhoven, 1991; Diener, Sandvik, Seidlitz, & Diener, 1993; Inglehart, 2000; Frey & Stutzer, 2000; Diener & Biswas-Diener, 2002; Blanchflower & Oswald, 2004). Understanding whether income increases SWB is of intrinsic and instrumental importance. SWB is an end in itself, but it can also be a means to achieve better educational and health outcomes, improve social relationships and economic outcomes

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¹ For practical reasons, we generally follow the same approach in reference to reviewing relevant literature, unless a measurement distinction is made by authors between the two concepts.

including productivity, savings and consumption (De Neve, Diener, Tay, & Xuereb, 2013; Oswald, Proto, & Sgroi, 2015; Bryson, Forth, & Stokes, 2015; Gutman & Vorhaus, 2012; Guven, 2012; De Neve & Oswald, 2012; Goudie, Mukherjee, de Neve, Oswald, & Wu, 2014). SWB is also an important determinant of behavior in most spheres of life including eating habits, exercise and weight control, and smoking, all of which have important implications for both individual and societal health and welfare (Blanchflower, Oswald, & Stewart-Brown, 2012; Pettay, 2008; Schneider, Graham, Grant, King, & Cooper, 2009; Garg, Wansink, & Inman, 2007; Strine et al., 2008a, 2008b; Grant, Wardle, & Steptoe, 2009; Kubzansky, Gilthorpe, & Goodman, 2012).

The literature on happiness and its relation to income is complex. One of the first, and most contested papers examining the income-happiness relationship concluded that better-off people tend to be happier than poorer ones within any society at a specific point in time; however, rising incomes do not make people happier (the so called “Easterlin paradox”; Easterlin, 1974; Easterlin, McVey, Switek, Sawangfa, & Smith Zweig, 2010). Hedonic adaptation (and income habituation), or the tendency to return to a relatively stable level of happiness after positive or negative events, is often used to partially explain the phenomena (Clark, Frijters, & Shields, 2008; Helliwell, Layard, & Sachs, 2012; MacKerron, 2012; di Tella, Haisken-De New, & MacCulloch, 2007; Easterlin, 1995). The relative income hypothesis (based on Duesenberry, 1949) has also been put forward to explain the Easterlin paradox: it suggests that people get utility by comparing themselves with a reference group. Stated differently, the level and self-evaluation of one’s happiness depends upon relative rather than absolute income as individuals care more about their relative position in society (Easterlin, 1974; Clark & Oswald 1996; Clark et al., 2008). Further, it has been hypothesized that absolute income is important up to a certain threshold (until basic needs are met); beyond this level of income, more money “no longer improve individual’s ability to do what matters most to their emotional wellbeing, such as spending time with people they like, avoiding pain and disease, and enjoying leisure” (Kahneman & Deaton, 2010:4).² The debates on this relationship have continued partially because studies examining the relationship between happiness and income have been fraught with methodological constraints, thus it has been difficult to establish causality and arrive at a definite conclusion (MacKerron, 2012; Stutzer & Frey, 2012). We employ data from a cluster randomized control trial (RCT) of a government-run anti-poverty program—an unconditional cash transfer (UCT) targeted to women in households with young children—to provide new evidence on whether ‘money can buy happiness.’ The social experiment involved 2519 households over 90 clusters, that were randomized to the treatment or control condition in three rural districts in Zambia. The study design allows us to measure the effect of an exogenous increase in income on happiness—overcoming methodological constraints due to the simultaneity of emotional SWB and income. We investigate whether the program had an impact on happiness of transfer recipients, virtually all of whom are women, after 36- and 48-months of program participation (from 2010 until 2014). We complement this analysis through investigation of women’s satisfaction regarding their children’s well-being, representing both cognitive and affective SWB such as satisfaction with their children’s health and positive outlook on their children’s future.

In addition, to shed light on competing theories underlying the income-happiness relationship, we investigate two potential mediating pathways of change from the intervention to our outcome of interest: consumption expenditures (absolute poverty) versus (self-assessed) relative poverty. For example, if the relative income hypothesis used to explain the Easterlin paradox dominates emotional states in our sample, then we would expect

² However, this same conclusion does not hold for life evaluation, which increases with income even at higher income levels. The authors believe these results reflect the distinction between the concepts of life evaluation and emotional wellbeing; the former captures what individuals *think* about their life (cognitive measure) and is therefore more responsive to socioeconomic status, whereas the latter captures how individuals *feel* (affective measure) and is therefore more responsive to situations that bring emotions such as spending time with friends or family and so on (Kahneman & Deaton, 2010).

relative poverty to be a stronger mediator of happiness as compared to absolute poverty. However, as our sample is comprised of households in extreme poverty in a resource-low setting, without resources to cover their basic needs (e.g. under the ‘threshold’), it is also plausible that absolute poverty will be a significant factor in explaining happiness.

We are not the first to utilize a cash transfer impact evaluation to answer this question. In fact, there is increasing empirical evidence showing the impact of cash on psychosocial and SWB from sub-Saharan Africa (SSA), both for large-scale Government programs, as well as for non-governmental organization (NGO) programming. Most of these studies however focus on evaluative measures (e.g. assessment of life’s satisfaction), rather than emotional measures of SWB (e.g. self-reported happiness), whereas we primarily focus on the latter.³ One of the few studies on Government programming which we are aware of which examines emotional SWB is the unconditional Livelihood Empowerment Against Poverty (LEAP) program in Ghana, which was found to increase happiness by 16 percentage points after 24-months (Daidone et al., 2015). Examining the Kenyan Government’s Cash Transfers for Orphans and Vulnerable Children, Handa, Martorano, Halpern, Pettifor, and Thirumurthy (2014) and Handa, Martorano, Halpern, Pettifor, and Thirumurthy (2016a) find strong impacts on a five-question quality of life scale from caregivers and youth (aged 15 to 25 at endline) 48 months after the onset of the program. Kilburn, Handa, Angeles, Mvula, and Tsoka (2018) find that, after 12 months of transfers, the unconditional Government Social Cash Transfer Program in Malawi had a positive impact on adult recipients satisfaction with own life as measured by a eight-question scale. Haushofer and Shapiro (2016) investigate the impacts of the NGO GiveDirectly’s UCT in Eastern Kenya and report impacts over a one-year period on a broad spectrum of outcomes: the program led to a 0.16 standard deviation (SD) increase in happiness (measured using the happiness question from the World Value Survey) and a 0.17 SD increase in life satisfaction. All these studies utilize experimental methods (RCTs), with the exception of the LEAP evaluation, which used quasi-experimental methods (matching). In addition, all programs share common features: they are all unconditional, and targeted to vulnerable rural households, thus beneficiaries represent populations in the lower income distribution in each country.

Our results show the CGP improved the happiness of women in rural Zambia; 48-months after the onset of the program the effect is around 10 percentage points or a 0.25 SD increase over the control group. This effect increases over time, despite the likelihood that a proportion of the sample has graduated from the program at 48-months. We also show that the impact on women’s happiness has been accompanied by an improvement in satisfaction regarding their young children’s well-being (measures which include both affective and cognitive SWB). Complementary analysis suggests that relative poverty is an important channel through which the intervention transmits its effect on women’s happiness with 39 percent of the total program effect mediated through relative poverty. Alternatively, very little of the program effect is mediated through household consumption, suggesting that even among this very poor population, relative (rather than absolute) poverty appears to be the more dominant determinant of happiness.

Our paper contributes to the broader literature on the income and happiness relationship in low-income settings, as well as the relatively new but growing evidence linking cash transfers to (emotional) SWB in SSA. The particular feature of this paper is that we focus on a sample of women still in their prime child bearing age (97 percent of our sample is aged 15 to 49 years at baseline) and who are the primary caregivers of young children. Given the important linkages highlighted in the literature between maternal mental health and child outcomes, exploring

³ Other papers have investigated the impact of cash transfers on related outcomes including mental health, however we do not review findings explicitly here (Kilburn, Thirumurthy, Halpern, Pettifor, & Handa, 2016; Baird, de Hoop, & Ozler, 2013; Haushofer & Shapiro, 2016).

the impact on mother's happiness is relevant as it could also in turn affect children's well-being. In addition to having direct adverse consequences on the mothers, common maternal mental illnesses such as antenatal depression, anxiety and stress can also lead to sustained negative impacts across the lifespan on the physical, cognitive, and socio-emotional health of the foetus, infant and child (Atif, Lovell, & Rahman, 2015; Herba, Glover, Ramchandani, & Rondon, 2016; Kingston & Tough, 2014; Kingston, Tough, & Witfield, 2012). The study also benefits from a well implemented RCT design, enabling a clear causal argument with attribution due to the program. Finally, our results are also notable given the relatively long duration of the evaluation and potential for cash to induce sustainability of the impacts over time.

2. Child Grant Program (CGP) and evaluation design

The CGP was established by the Zambian Ministry of Community Development and Social Services (MCDSS).⁴ It is a UCT implemented in three of the most remote and rural districts of Zambia characterized by high poverty, high child malnutrition, morbidity and mortality (Kaputa in Northern Province, and Kalabo and Shangombo in Western Province; see map, Fig. 1). The program was targeted to all households with at least one child under the age of five years at program initiation and was paid directly to the primary caregiver or mother of the target child, 99 percent of whom are women. During the study reference period (2010–2014), beneficiary households received a flat transfer of 120 Zambian Kwacha (re-based, ZMW), corresponding to roughly 24 US dollars, on a bi-monthly basis. The transfer represented an increase by almost a third (27 percent) to the household's pre-program monthly expenditure and was calculated as an amount sufficient to purchase food equivalent of one meal monthly per day on average for all household members. The transfer was distributed through a local pay-point manager and evidence suggests that the implementation was operationally successful (AIR, 2011). The primary goal of the CGP was poverty reduction, with specific objectives focusing on young children outcomes (reduction of child mortality and morbidity, stunting and wasting) and broader specific household outcomes including increasing food security and productive asset ownership.

The impact evaluation of the CGP was commissioned by the Government of Zambia and UNICEF Zambia as part of the Transfer Project, a consortium of international research partners, civil society and national governments to support improving knowledge and practice on cash transfers in SSA. The study was led by the American Institutes for Research (AIR) in collaboration with the University of North Carolina at Chapel Hill (and in later rounds, with the UNICEF Office of Research—Innocenti) and national partners Palm Associates. The evaluation was implemented using a clustered RCT whereby 90 clusters, 30 in each district, were randomly assigned to the treatment or control condition. Fig. 2 provides the flowchart of the study design. This process led to a randomly selected, representative sample of 2519 beneficiary households. Since design guidelines indicated that households with a child under five were eligible for the transfer, in the evaluation, in order to make sure that beneficiary households receive the cash transfer for at least two years, only households with a child under age three were sampled at baseline. The baseline survey was conducted in October to November 2010 during the lean season; the treatment arm received the first transfer in February 2011 and four follow-up surveys were subsequently collected at 24-, 30-, 36- and 48-months after baseline.

Power calculations, accounting for attrition and non-response, were carried out to determine the sample size needed to detect significant effects of the program on anthropometric measures of children zero to 59 months (the smallest subsample expected for analysis of key outcomes). Ethical review for the study was obtained by AIR in Washington, DC and the University of Zambia's Research Ethics Committee, and informed consent procedures were observed.

⁴ At the time of the evaluation, Ministry of Community Development, Mother and Child Health (MCDMCH).

Household questionnaires were multi-topic and administered primarily to the primary female caregiver with assistance from other household members, where appropriate. All questionnaires, study materials and reports for the CGP detailing further aspects of study design and overall impacts evaluation findings can be downloaded on the Transfer Project website (<http://www.cpc.unc.edu/projects/transfer>).

3. Data

Our analysis sample comprises all female respondents to the woman's empowerment module that was administered to one woman per household and collects information on SWB. The target woman for this module is typically the primary caregiver of the eligible child and, in treatment communities, also the cash transfer recipient. Of the lean-season surveys, only the 36- and 48-month surveys included this question, thus we primarily utilize these two rounds in conjunction with baseline statistics. Thus, our final analysis sample is the 'balanced' sample of women who completed the empowerment module and had non-missing responses to key analysis indicators at both 36- and 48-months and were present in the household at baseline.

Table 1 reports the background characteristics of the analysis sample at baseline, comprised of 2203 women (1,119 in the control sample and 1,084 in the treatment sample). The mean age of women respondents is 29; around three quarters of women are married; thirty percent of recipients never attended school. The mean household size is six and as could be expected based on the eligibility criterion of the program, households' composition is fairly 'young', with on average nearly two children aged zero to five years and over one child aged six to twelve years. Finally, mean monthly per capita expenditure was around 40 ZMW (approximately 30 US cents per person per day), indicating that 95 percent of the households were living below the 2010 national extreme poverty line of 90.5 ZMW per capita. Table 1 also shows, with one exception (proportion of women divorced or separated), there are no significant differences between treatment and control women in background characteristics at baseline. We therefore conclude that randomization produced balanced treatment and control groups, contributing to the internal validity of the study.

Another potential concern is attrition over the study period. Overall, household attrition was low at two percent at 36-months and four percent at 48-months. However, individual attrition in our sample is higher, with 12 percent of the baseline sample lost at least in one follow-up round; the attrition rate is weakly significantly higher in the treatment group ($p < 0.10$ level, see Table A1 in the Annex). However, overall differential attrition by baseline characteristics does not appear to be a concern. As shown in Table A2 in the Annex, there are no significant differences between women lost to follow-up in the control group and women lost to follow-up in the treatment group across sixteen baseline characteristics tested. Therefore, we conclude that our results will have a strong degree of internal validity.

4. Methodology and key indicators

In the economics of happiness literature, the concepts of SWB, happiness and life satisfaction have often been used interchangeably (Easterlin, 2001). However, these concepts, though closely related, are not synonyms. The new happiness economics mainly focuses on two concepts that distinguish between what people feel and what they think: 1) hedonic (or affective) and 2) evaluative (or cognitive) measures of SWB. The former captures positive affect or emotional states (a range of positive emotions and feelings, for instance, 'I feel very happy') whereas the latter, more commonly used, depicts individuals' assessments of one's life overall (for instance, 'I think I lead a very positive life') (Helliwell et al., 2012; MacKerron, 2012). Our main outcome indicator in this paper is self-reported happiness, an affective measure of SWB (Asked as: 'Do you generally feel happy?'; with response options 'yes' or 'no').

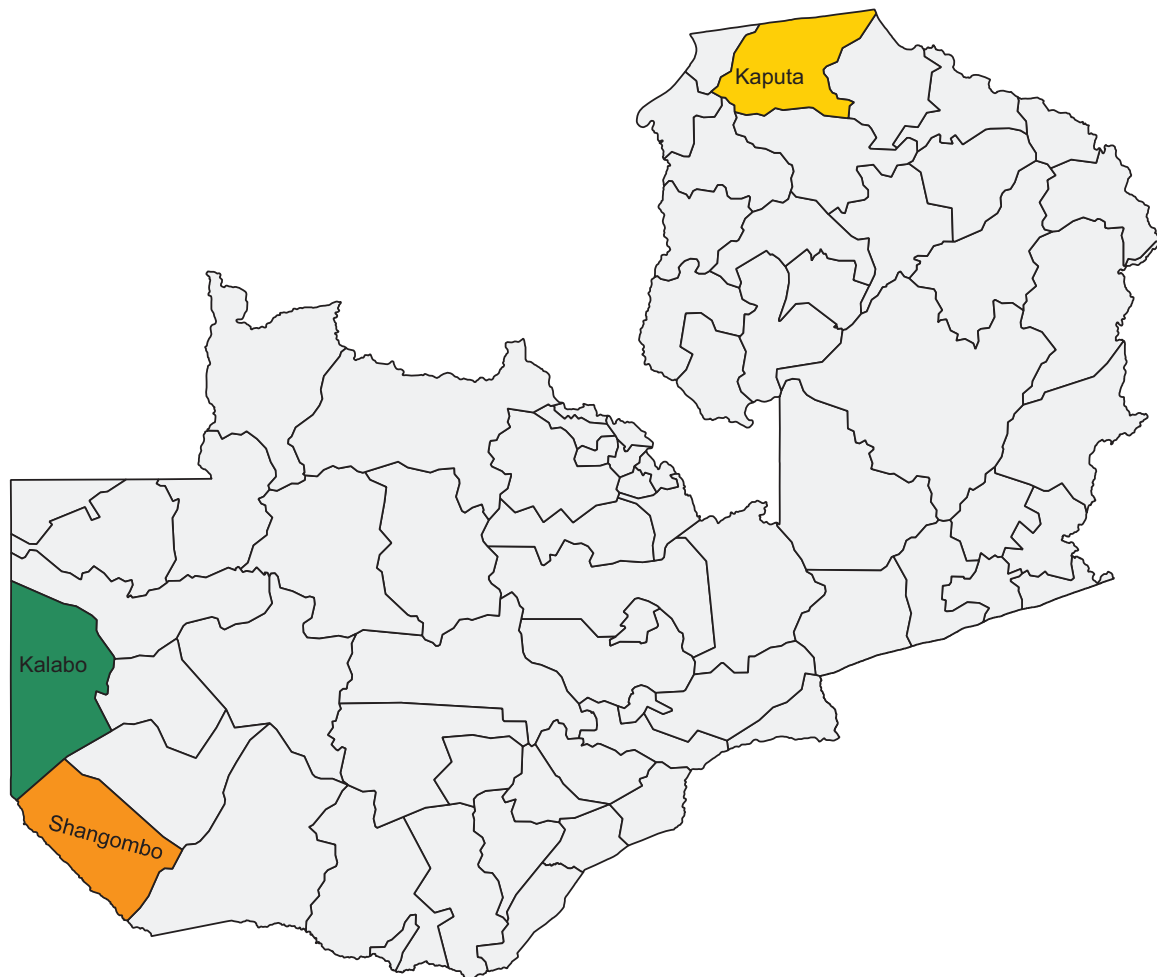


Fig. 1. Map of Child Grant Program study districts in Zambia.

In order to estimate the impact of the CGP on women’s happiness econometrically, we run a set of cross-sectional, linear probability model (LPM) regressions at 36- and 48- months. The multivariate model at time t is specified as follows:

$$Y_{ijt+1} = \alpha + \beta T_j + \sum_{k=1}^K \theta_{kit} X_{kit} + \vartheta + \epsilon_{ijt+1} \tag{1}$$

In this framework $Y_{i,j,t+1}$ is the outcome indicator corresponding to the individual woman i , in community j at $t + 1$; it is a dummy equal to 1 if the woman reports to feel generally happy. T_j is a binary variable capturing treatment status and is equal to 1 if the community was assigned to receive the CGP, its coefficient β captures the intent to treat (ITT) estimator and corresponds to the single-difference (SD) estimator of the program impact at 36- or 48- months; X is a set of k basic regressors that are all measured at baseline (time t); ϑ captures strata fixed effects and ϵ_{ijt+1} is the error term. Impact estimates use robust standard errors to adjust for clustering at the level of randomization (the community).

We report treatment effects with and without controls; in the multivariate model, we control for district fixed effects and a set of basic demographic covariates measured at baseline (reported in Table 1) that include: 1) women’s characteristics (age in years, age in years squared, whether the woman has ever attended school and marital status splines); and 2) household characteristics (log of household size, a set of dummies capturing household composition).

As women’s SWB is likely to be closely linked with that of their children, we complement our main analysis with analysis of respondents’ satisfaction with their children’s wellbeing. Specifically, in

the 48-month follow-up, the mothers or primary caretakers were asked five statements in reference to the ‘index’ child (approximately aged three to nine at the time of the follow-up), whether: 1) they are satisfied with their children’s life; 2) their children enjoy life; 3) they feel positive about their children’s future; 4) they are satisfied with their children’s health; and 5) their children are generally happy. Their level of agreement with each of these statements is measured using a five-point Likert Scale, measured from one to five (where 1 captures strong disagreement and 5 strong agreement). These questions are modeled off the World Health Organization quality of life assessment (WHOQOL Group, 1998). Strictly speaking, since these questions are asked to mothers who are evaluating their children’s lives, they could be classified as cognitive measures—however, several refer to classically affective feelings and emotions, including questions (2), (3) and (5). Therefore, for simplicity we refer to these as a mixture of cognitive and affective measures.

We replicate the main analysis for each of five questions, as well as on a scale, constructed by adding together each of the answers (ranging from 5 to 25). Similar to the main analysis, we use ordinary least squares (OLS) regression for ease of interpretation, however the results on individual indicators are robust to use of ordered probit models to take into account the ordinal nature of the Likert Scale. We present both adjusted and unadjusted model results, and in both cases control for district fixed effects and cluster standard errors at the community level.⁵

⁵ These specifications are run on a slightly smaller sample than the happiness estimations. Approximately one percent of women in our original panel sample (22 out of 2203) had to be dropped due to missing outcome values.

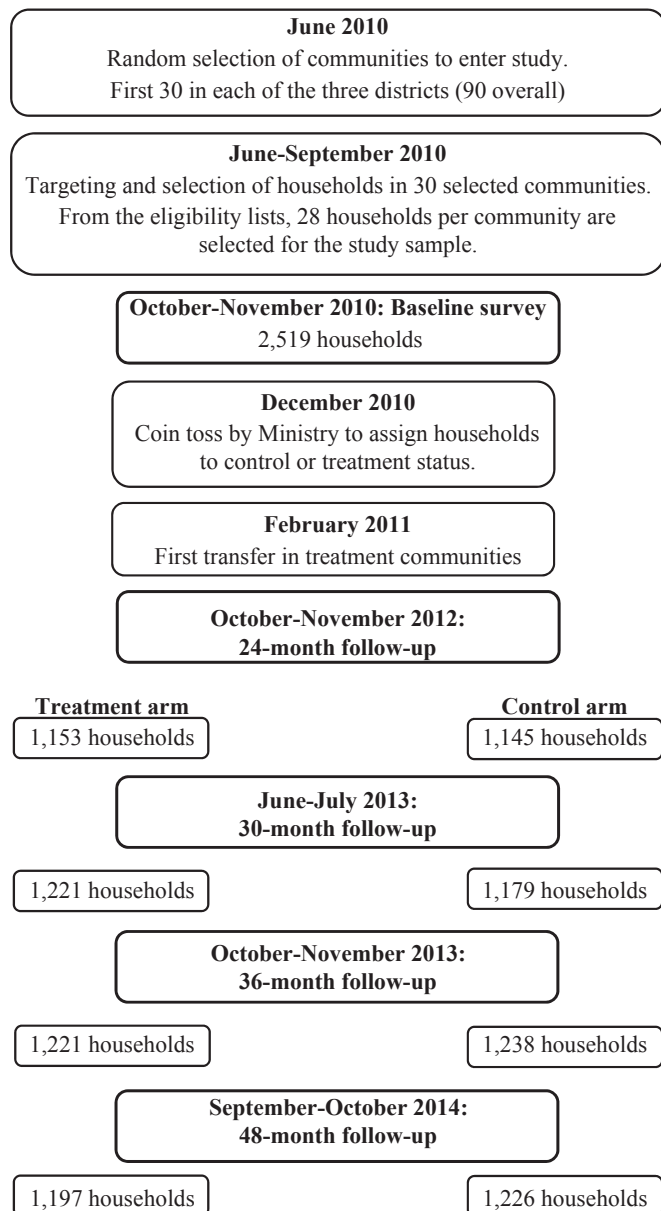


Fig. 2. Flowchart of the Child Grant Program study design.

5. Does the CGP have an impact on happiness?

5.1. Impacts on women's happiness

Overall, 36 months after the onset of the program, 86 percent of the women indicated to generally feel happy, while the remaining 14 percent indicated not feeling happy. This comparatively high proportion of 'happy' women might seem striking given the low-income and resource-poor context, but is in line with what has been observed in other developing countries (Banerjee & Duflo, 2007; Case & Deaton, 2005).⁶ More interesting is

⁶ These levels could also be influenced by social norms and cultural bias. Veenhoven (2012) discusses both the possibilities of cultural bias in the measurement of happiness (which includes issues such as translation, desirability bias, response styles and unfamiliarity) and the cultural relativity thesis of happiness (which reflects the idea of happiness as a social construction; as notions of the good life vary over time and across cultures, so happiness could be expected to be culturally relative). However, it should also be noted that the internal validity of our findings is not affected by these cross-country biases since we are comparing groups in rural areas of the same country—and thus these discussions go beyond the scope of this paper.

Table 1
Baseline characteristics of women by study arm.

	All	Control	Treatment	P-value of diff.
Age (years)	29.46	29.30	29.63	0.58
Age squared (years)	946.24	935.92	956.89	0.64
Ever attended school	0.72	0.70	0.74	0.30
Never married	0.11	0.11	0.11	0.99
Divorced or separated	0.10	0.11	0.08	0.05
Widowed	0.06	0.06	0.06	0.87
Household size	5.68	5.61	5.76	0.38
Number of members aged 0 to 5 years	1.91	1.93	1.90	0.64
Number of members aged 6 to 12 years	1.27	1.26	1.28	0.77
Number of members aged 13 to 18 years	0.55	0.51	0.59	0.14
Number of members aged 19 to 5 years	1.33	1.30	1.36	0.20
Number of members aged 36 to 55 years	0.54	0.53	0.54	0.71
Number of members aged 56 to 69 years	0.06	0.06	0.06	0.95
Number of members aged 70 years or older	0.03	0.02	0.03	0.58
Shangombo district	0.35	0.34	0.35	0.98
Kaputa district	0.32	0.33	0.31	0.90
<i>Mediators</i>				
Total household consumption (ZMW per capita)	40.07	39.31	40.86	0.57
Total household consumption (logged ZMW expenditure per capita)	3.49	3.46	3.52	0.40
Household comparatively less poor	0.41	0.38	0.45	0.10
Observations	2203	1119	1084	

P-values are reported from Wald tests on the equality of means of Treatment and Control for each variable. Standard errors are clustered at the community level.

Table 2
Impact of the Child Grant Program on women's happiness at 36- and 48-months.

	36-months		48-months	
	(1) Unadjusted	(2) Adjusted	(3) Unadjusted	(4) Adjusted
Treatment status = CGP beneficiary	0.0753*** (0.0252)	0.0752*** (0.0249)	0.106*** (0.0223)	0.103*** (0.0224)
Observations	2203	2203	2203	2203
R-squared	0.015	0.032	0.043	0.055
Control mean at follow-up	0.82	0.82	0.78	0.78
Treatment mean at follow-up	0.90	0.90	0.88	0.88

Notes: Estimations use single difference linear probability modeling. Robust standard errors clustered at the community level are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1 Estimations with basic controls include: woman's age, education and marital status, household size and household demographic composition, and districts.

the difference between beneficiaries and non-beneficiaries: almost 90 percent of women in program participant households report to feel generally happy compared to 82 percent in the control group; at 48-months these statistics are 88 and 78 percent respectively (Table 2).

Table 2 presents impact estimates on women's happiness at 36- and 48-months (Table A3 in the Annex report the full regression including all baseline controls). After 36 months, the program significantly increased the proportion of women who generally felt happy by around 7.5 percentage points. Forty-eight months after program onset, the impact is sustained and increases to around 10 percentage points. In both cases, adjusted and unadjusted estimates are very similar. Results correspond to a 0.19 to 0.25 SD increase in happiness at 36 and 48

Table 3
Impact of the Child Grant Program on women's satisfaction with young children's wellbeing at 48-months.

	Overall satisfaction scale		'I am satisfied with my child's life'		'My child enjoys life'		'I feel positive about my child's future'		'I am satisfied with my child's health'		'My child is generally happy'	
	(1) Unadj.	(2) Adj.	(3) Unadj.	(4) Adj.	(5) Unadj.	(6) Adj.	(7) Unadj.	(8) Adj.	(9) Unadj.	(10) Adj.	(11) Unadj.	(12) Adj.
Treatment status = CGP beneficiary	0.663*** (0.248)	0.673*** (0.240)	0.0890 (0.0577)	0.0884 (0.0554)	0.165*** (0.0572)	0.169*** (0.0563)	0.199*** (0.0568)	0.202*** (0.0546)	0.117** (0.0495)	0.122** (0.0489)	0.0957* (0.0555)	0.0966* (0.0545)
Observations	2181	2181	2182	2182	2182	2182	2181	2181	2182	2182	2182	2182
R-squared	0.012	0.028	0.003	0.015	0.011	0.020	0.016	0.039	0.010	0.022	0.007	0.016
Control mean at follow-up	19.7		3.9		3.9		3.9		4.0		4.0	
Treatment mean at follow-up	20.4		4.0		4.0		4.1		4.1		4.1	

Notes: Estimations use single difference ordinary least squares modeling. Robust standard errors clustered at the community level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Estimations with basic controls include: woman's age, education and marital status, household size and household demographic composition, and districts. Each outcome in column 3–12 reflects the woman's level of agreement with each of these statements measured using a five-point Likert Scale ranging from one to five (where 1 captures strong disagreement and 5 strong agreement). The overall satisfaction scale aggregates across these indicators and ranges from a possible 5 to 25 points.

months, respectively.

The 48-month estimate is particularly notable given the program design guideline that stipulated that households would 'graduate' from the program when the target child turned five years old. Operationally, the timeliness and enforcement of this rule varied by geographical area. As our original sample contained households with children aged zero to three years at baseline, we expect that a portion of households would no longer be eligible for the transfer 48-months later. We conduct an extension to the main analysis exploiting this variation, disaggregating the sample into households that report currently receiving the transfer and those who report no longer receiving the transfer (29 percent at 48-months). Due to the compositional differences between households with different age target children, in this specification we control for the age (in years) of the youngest child in the household (who proxies for the target child). Findings reported in Table A4 in the Annex indicate that there is a positive and significant impact for both treatment arms; the impact is larger in magnitude and more strongly significant for households who report they are still receiving the cash transfer. However, the estimates are not statistically significantly different from one another. Although this evidence is suggestive, and relies on self-report of transfer receipt, and not official records, it suggests that women who no longer receive the cash transfer (e.g. may have 'graduated' from the program) continue to have significantly higher SWB as compared to control women.

5.2. Impacts on women's satisfaction with young children's wellbeing

Women report relatively high satisfaction with their children's wellbeing, with individual indicators across five measures at an average of 4 points (they generally 'agree' with statements, out of five points) and the overall scale averaging approximately 20 points (out of 25 points). Results from OLS regressions are shown in Table 3 and indicate a strongly significant positive impact of the program on the overall satisfaction scale of around 0.7 points after 48-months (columns 1 and 2). Specifications 3 to 12 report the impacts of the program on each of the five measures, with the strongest positive impacts on whether their child enjoys life, satisfaction with their child's health and feeling positive about their child's future (ranging from 0.11 to 0.20 points). However, there is only a marginally significant impact on agreement of whether the child is generally happy (columns 11 and 12) and no impact on satisfaction with children's life (columns 3 and 4). These results confirm that the main impacts on women's happiness have also been accompanied by an improvement in perceived wellbeing of their children.

6. Testing pathways of relative versus absolute poverty

An obvious question given existing theories underlying the income-happiness relationship is: Through which mechanisms might the program be leading to positive impacts on happiness? Building on complementary analysis conducted using the same evaluation data, we discuss two main pathways debated in the literature, which could be responsible for this impact: 1) absolute poverty and 2) relative poverty.⁷ In doing so, we review evidence from other studies conducted with the same data which estimates overall impacts on these and other domains. Following this we conduct a mediation analysis to understand the relative importance of each in mediating the total effect on happiness found using the 48-month panel. A mediator is a factor that can be influenced by the program and that has in turn an influence on the outcome variable (Baron & Kenny, 1986). As such, impacts on mediators like absolute and relative poverty may help to explain the causal pathway through which the CGP affects happiness.

First, the cash transfer could exert a pure income effect (*absolute poverty channel*). Following the receipt of the cash transfer, poor households have now access to economic resources that can be spent to meet their basic needs according to their preferences and constraints; this opens up opportunities and choices that might increase their level of SWB. A number of publications (Seidenfeld et al., 2015; Handa, Seidenfeld, Davis, Tembo, & the Zambia Cash Transfer Evaluation Team, 2016b; Handa, Natali, Seidenfeld, Tembo, & Davis, 2018) have shown that the CGP had a positive impact on household total consumption (both food and non-food) in the range of 20–28 percentage points (or 0.4–0.5 SD) depending on the wave examined. These results are supported by a significant negative impact of the program after 48-months on the extreme, as well as moderate poverty headcounts of 10 and 3 percentage points, respectively (AIR, 2016). Positive impacts on food security scales, including food coping behaviors corroborate findings of positive impacts on food consumption (Handa et al., 2018). Furthermore, the intervention had a strong and significant positive impact on additional measures of financial and economic well-being including household's livestock ownership, ability of households to pay back long-term outstanding debts and women's financial position, through increases in women's cash savings (Handa et al., 2018; Natali, Handa, Peterman, Seidenfeld, & Tembo, 2016).

⁷ There are many more indicators which could be tested as mediators, however as the list is almost infinite and many analyses have already been conducted on impacts across domains using this evaluation, we focus on these two factors and complement the analysis by discussion of existing literature.

Relatedly, we hypothesize that beneficiaries could perceive an increase in their relative position in the community or the society at large (*relative poverty channel*). Handa et al. (2018) explore the impact of the CGP on three relevant indicators, all asked to the primary female caregiver: 1) relative poverty with respect to others (external reference point) and, 2) relative poverty with respect to the past and 3) relative poverty with respect to future expectations (internal reference points). Findings indicate that there is a strong and significant impact on relative poverty, and on the probability of reporting to be better off with respect to the previous year. However, there is no significant impact on future expectations (life will be better in either one, three, or five years) (Handa et al., 2018). The impacts on relative measures from past to current position are particularly interesting, as they indicate that over time, hedonic adaptation is not eliminating the positive impact of the income gains due to the cash transfer.

We estimate mediation effects by including relative and absolute poverty in the main regression at 48-months (adjusted, see column (4) of Table 2). According to Imai, Keele, and Tingley (2010), to confidently estimate causal mediation, sequential ignorability must be achieved. This implies that treatment must be independent of both potential values of outcome and mediating variables. In addition, the mediators must be independent of all potential values of the outcome conditioned on the observed treatment and pretreatment covariates. The first condition is satisfied due to the experimental design of the evaluation. However, the second condition implies that mediators must also act as effectively randomized among treatment arms (Keele, Tingley, & Yamamoto, 2015). Therefore, we control for all pretreatment covariates that may confound the relationship between the mediators and happiness, including pretreatment levels of each mediator (absolute and relative poverty).

For absolute poverty, we utilize the value of total monthly per-capita household consumption expenditure, measured by adding the value of over 200 food and non-food items reported by the household, converted in monthly terms, deflating to 2010 levels and logging the final value. For relative poverty we utilize a single question in the survey asking whether the respondent considered the household to be ‘non poor’, ‘moderately poor’ or ‘very poor’ using an external reference point. To standardize the direction of mediators (e.g. higher values = better off), we constructed a dummy equal to one if the respondent felt the household was comparatively less poor (e.g. ‘non poor’ or ‘moderately poor’ as opposed to ‘very poor’). We conduct mediation for each of absolute and relative poverty separately, as well as together in the same model (Table 4). The inclusion of per-capita consumption reduced the treatment effect from 0.103 to 0.095, or about 8 percent, however the coefficient of per-capita consumption is not statistically significant. Alternatively, inclusion of relative poverty reduced the treatment effect to 0.063, a 39 percent reduction, and the relative poverty measure itself is a highly significant predictor of happiness. Including both mediators in the same regression led to a reduction in the treatment effect to 0.061, or a 41 percent reduction. These results suggest that even among an extremely poor population, relative poverty has an important mediating effect on SWB, and this effect appears to dominate that of absolute poverty.

A critique of the mediation approach could be that the continuous nature of household expenditure operationalized here could mask important shifts as compared to the binary indicator of relative poverty. Therefore, as a robustness check, we include binary measures of moderate and extreme poverty (as per national poverty line definitions) and find similar results to those presented in Table 4 (not presented, however available upon request). A second critique of the approach of utilizing per-capita household consumption is that the measure is a general household measure and may not be specific enough to mediate women’s outcomes. A more specific specification would be able to include individual-specific consumption (e.g. women and child specific) to understand if the mediating effect of consumption depended on the type or nature of expenditure. Unfortunately, as the data collected are largely at the household level, we are unable to provide this robustness check and therefore our results must be interpreted with this caveat in mind.

Table 4
Impact of the Child Grant Program on happiness at 48-month including mediators: Absolute versus relative poverty.

	(1) 48- months adjusted	(2) 48- months adjusted	(3) 48- months adjusted	(4) 48- months adjusted
Treatment status = CGP beneficiary	0.103*** (0.0224)	0.0948*** (0.0224)	0.0626*** (0.0223)	0.0606*** (0.0227)
Absolute poverty = Total monthly consumption per capita (logged ZMW)		0.0307 (0.0205)		0.00775 (0.0196)
Relative poverty = Comparatively less poor			0.155*** (0.0212)	0.154*** (0.0210)
Constant	0.829*** (0.163)	0.645*** (0.180)	0.799*** (0.158)	0.788*** (0.175)
Mediator = Absolute poverty		X		X
Mediator = Relative poverty			X	X
Observations	2203	2201	2203	2201
R-squared	0.055	0.057	0.093	0.094

Notes: Estimations use single-difference modeling. Robust standard errors clustered at the community level are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Estimations are adjusted and include basic demographic controls (woman’s age, education and marital status, household demographic composition, and districts) as well as the pre-treatment value of the mediators; unadjusted estimations are consistent with estimates presented here.

7. Conclusion

Researchers have increasingly sought to understand the effects of public policies on SWB, recognizing the importance of going beyond monetary or economic dimensions of human wellbeing. Thanks to the experimental design, our results provide causal evidence that a bi-monthly, poverty-targeted UCT program improved the happiness of rural women living in remote areas of Zambia. Impacts are large at 7.5 and 10 percentage points, corresponding to a 0.19 to 0.25 SD increase in happiness at 36 and 48 months, respectively. The increase in magnitude of impact at 48-months is particularly notable, since according to official documentation, a portion of the beneficiary households should have ‘graduated’ from the program. Thus, at the same time that a sub-set of the treatment sample reports no longer receiving regular transfers, the magnitude of the overall impact increased, rather than faded out. These findings overall seem to suggest that the Easterlin paradox does not hold within our sample—money (in this case a cash transfer) did result in greater happiness. Compared with existing studies examining the impact of UCTs on self-reported happiness, our findings are broadly in line with Haushofer and Shapiro (2016) who report a 0.16 SD increase in happiness in Kenya after approximately 12-months, but lower than the 16 percentage points impact found by Daidone et al. (2015) in Ghana after 24-months. Corroborating these findings, women also have higher overall satisfaction regarding their young children’s well-being, including both cognitive and affective measures of SWB, such as satisfaction with their child’s health and positive outlook on their child’s future. These findings advance our understanding of the income-happiness relationship, as they represent impact among a unique group of reproductive-age women within a government large-scale program and examine a longer time frame as compared to existing studies.

Our results also shed light on theory concerning the income-happiness relationship. We find evidence that the relative poverty pathway dominates the absolute poverty pathway in explaining treatment effects. These results are robust to different specifications and suggest that even in a resource-low setting, without resources to cover their basic needs (e.g. below the ‘threshold’), relative poverty is a major factor explaining happiness. Overall the two indicators of relative and absolute poverty account for approximately 40 percent of the program impact on happiness, unsurprisingly

indicating the majority of impact on our affective measure is realized through other factors (Lucas and Diener, 2008; Tov and Au, 2013). As our study was not designed to explicitly measure all pathways, a comprehensive examination of all mediation factors is beyond the scope of this analysis.

There are other limitations to the analysis worth mentioning. In particular, we do not have additional standard outcomes of SWB to triangulate findings, including for example, women’s life satisfaction which is a cognitive and longer-term measure of SWB compared to our affective measure (happiness). However, we do show that the program improved women’s satisfaction regarding their young children’s life, a proxy for wellbeing and perceived quality of life of children. Additionally, as our outcomes are collected only in latter waves (36 and 48 months), we are unable to do a more rigorous analysis of changes over time. Nonetheless, our results indicate that UCTs can be a powerful tool for increasing SWB among populations of poor and vulnerable women. These impacts on happiness and SWB should not be discounted in development evaluations, as they are intrinsically linked to, and provide a complementary insight to objective and material measures of health and wellbeing.

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Ethical review

Ethical review for the study was obtained by the American Institutes for Research (AIR) in Washington, DC and the University of Zambia’s Research Ethics Committee, and informed consent procedures were observed.

Annex

See Tables A1–A4 here.

Table A1
Individual attrition rates of women by treatment arm over the study period.

	N	All	Control	Treatment	P-value of diff.
Attrition rate	2492	0.116	0.102	0.130	0.089

P-values are reported from Wald tests on the equality of means of Treatment and Control for each variable. Standard errors are clustered at the community level. Analysis considers the attrition rate among the balanced panel of women interviewed at baseline, and loss to follow-up over 36-months and 48-months.

Table A2
Testing individual differential attrition women over the study period by baseline characteristics.

	Control			Treatment			Difference	
	Lost to follow-up (1)	Panel (2)	P-value (3)	Lost to follow-up (4)	Panel (5)	P-value (6)	Col(1)-Col(4) (7)	P-value (8)
Age (years)	32.61	29.30	0.02	31.53	29.63	0.07	1.08	0.54
Age squared (years)	1207.78	935.92	0.03	1147.76	956.89	0.03	60.02	0.70
Ever attended school	0.75	0.70	0.32	0.71	0.74	0.36	0.04	0.46
Never married	0.09	0.11	0.61	0.15	0.11	0.15	−0.06	0.17
Divorced or separated	0.15	0.11	0.19	0.12	0.08	0.19	0.03	0.39
Widowed	0.10	0.06	0.12	0.12	0.06	0.00	−0.02	0.58
Household size	5.86	5.61	0.24	5.70	5.76	0.75	0.16	0.61
Number of members aged 0 to 5 years	1.89	1.93	0.60	1.77	1.90	0.10	0.12	0.27
Number of members aged 6 to 12 years	1.32	1.26	0.61	1.20	1.28	0.41	0.12	0.48
Number of members aged 13 to 18 years	0.57	0.51	0.34	0.69	0.59	0.19	−0.12	0.26
Number of members aged 19 to 35 years	1.28	1.30	0.85	1.30	1.36	0.36	−0.01	0.90
Number of members aged 36 to 55 years	0.60	0.53	0.42	0.56	0.54	0.86	0.04	0.68
Number of members aged 56 to 69 years	0.15	0.06	0.00	0.14	0.06	0.03	0.01	0.76
Number of members aged 70 years or older	0.04	0.02	0.37	0.04	0.03	0.43	−0.00	0.87
Shangombo district	0.24	0.34	0.01	0.25	0.35	0.03	−0.02	0.86
Kaputa district	0.38	0.33	0.41	0.43	0.31	0.01	−0.05	0.67
Observations	127	1119		162	1084			

Overall N for control is 1246. Overall N for treated is 1246. *** p < 0.01, ** p < 0.05, * p < 0.1; T-tests based on standard errors clustered at the community level. Analysis considers the attrition rate among the balanced panel of women interviewed at baseline, and loss to follow-up over 36-months and 48-months.

Table A3
Impact of the Child Grant Program on women's happiness at 36- and 48-months.

	36-month (1) Unadjusted	36-month (2) Adjusted	48-month (3) Unadjusted	48-month (4) Adjusted
Treatment status = CGP beneficiary	0.0753*** −0.0252	0.0752*** (0.0249)	0.106*** (0.0223)	0.103*** (0.0224)
Age (years)		−0.0134** (0.00529)		−0.00424 (0.00647)
Age squared (years)		0.000116* (6.68e-05)		4.44e-05 (8.03e-05)
Ever attended school		0.00209 (0.0193)		0.0296 (0.0203)
Never married		−0.0108 (0.0258)		−0.0285 (0.0342)
Divorced or separated		−0.0802** (0.0328)		−0.0136 (0.0338)
Widowed		−0.0114 (0.0381)		−0.0798* (0.0429)
Household size (logged)		0.148 (0.121)		0.0830 (0.123)
Number of members aged 0 to 5 years		−0.0234 (0.0212)		−0.0106 (0.0199)
Number of members aged 6 to 12 years		−0.0130 (0.0203)		−0.0313 (0.0204)
Number of members aged 13 to 18 years		−0.0118 (0.0199)		−0.00781 (0.0218)
Number of members aged 19 to 35 years		−0.0385 (0.0245)		0.000681 (0.0202)
Number of members aged 36 to 55 years		−0.0235 (0.0284)		0.0103 (0.0240)
Number of members aged 56 to 69 years		−0.0578 (0.0391)		−0.0681 (0.0478)
Number of members aged 70 years or older		−0.0152 (0.0566)		0.0604 (0.0380)
Shangombo district	−0.0426 (0.0290)	−0.0504 (0.0315)	−0.0638** (0.0273)	−0.0642** (0.0298)
Kaputa district	−0.0291 (0.0333)	−0.0264 (0.0341)	−0.139*** (0.0275)	−0.142*** (0.0291)
Constant	0.848*** (0.0297)	1.023*** (0.167)	0.844*** (0.0247)	0.829*** (0.163)
Observations	2203	2203	2203	2203
R-squared	0.015	0.032	0.043	0.055
Control mean at follow-up	0.82	0.82	0.78	0.78

Notes: Estimations use single difference linear probability modeling. Robust standard errors clustered at the community level are in parentheses. *p < 0.1, **p < 0.05, ***p < 0.001 All controls are measured at baseline.

Table A4
Impact of the Child Grant Program on women's happiness at 48-months by graduation status.

VARIABLES	(1) 48-month Adjusted
Treatment 1: CGP beneficiary, reporting currently receiving cash	0.117*** (0.0231)
Treatment 2: CGP beneficiary, reporting not currently receiving cash	0.0671* (0.0346)
Household has child 13 to 24 months at baseline	−0.0539*** (0.0185)
Household has child over 25 months at baseline	−0.0524*** (0.0254)
Observations	2203
R-squared	0.062
P-value Treatment 1 = Treatment 2	0.1478

Notes: Estimations use single difference linear probability modeling. Robust standard errors clustered at the community level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The excluded dummy is "Household has child 0–12 months at baseline". Estimations also include as basic controls: woman's age, education and marital status, household size and household demographic composition, and districts; a dummy for households with child with missing age at baseline has been included.

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