More Than Money: Effects of Cash Transfer Narratives on Agency and Self-Investment

Justin Abraham [*‡‡], Nicholas Otis[†‡‡], Catherine Thomas[‡‡‡], Hazel Markus [§], Greg Walton [¶]

August 11, 2017

Abstract

This document describes the pre-analysis plan for a randomized experiment examining the effects of narratives accompanying unconditional cash transfers on self-concept and economic behavior. We provided small, unconditional cash transfers to residents of two informal settlements in Nairobi and vary the message participants receive with the cash. Participants received a constant amount of cash, and randomly received a message that the cash is intended for poverty alleviation, individual empowerment, or community empowerment. We then collected self-reported measures of self-efficacy, stigma, and affect and behavioral measures of future-orientation, self-investment, and program support. This pre-analysis plan outlines our hypotheses, the schedule of experimental tasks, and our empirical strategy. In order to guarantee transparency and bind ourselves from fishing for results, we will pre-register the scripts to be used for data analysis.

[*]University of California, San Diego.[††]Contributed equally.
[†]University of California, Berkeley. [††]Contributed equally.
[‡]Stanford University [††]Contributed equally.
[§]Stanford University
[¶]Stanford University

Contents

1. Introduction

2. Research Design

2.1 Sampling

This study was conducted in conjunction with the Busara Center for Behavioral Economics in Nairobi with 565 participants residing in Kibera and Kawangware, two of Kenya's largest informal settlements (Haushofer et al. 2014). Treatment and data collection were conducted by Busara Center enumerators with participants from Kibera and Kawangware in lab and lab-in-the-field settings in Nairobi, using tablets to display audio and video media and record participant responses. This section outlines the sampling procedure used in the experiment.

Participants were recruited from the Busara participant pool and were asked to participate in the survey in one of the lab settings. There were seven survey locations used throughout the study period. Table 1 summarizes these areas.

Table 1: Survey location

Participant origin a	Survey location
Kibera	AIC Church
Kibera	Kibera Immanuel Technical Institute
Kibera	Kibera Labour Hall
Kibera	Kibera Chonesus Hall
Kibera	Busara Center
Kawangware	Kawangware Pastor Ken's Hall
Kawangware	Kawangware CDF Hall

Participants were recruited to participate in the study if they meet the following eligibility criteria:

1. Member of the Busara Center's participant pool
2. Resident of Kibera or Kawangware
3. Owns a working phone and an M-Pesa account registered under the participant's name

2.2 Statistical power

To achieve power of 80% for an estimated effect size of 0.30, the required sample size of each arm was 175 participants.

2.3 Experimental procedure

The survey questionnaire was delivered by enumerators to participants in Kiswahili or English, as preferred by the participant. The following summarizes the schedule of tasks in the questionnaire.[1]

1. Consent agreement
2. Cash transfer and message (randomized)
3. Self-efficacy module

[1]We will use a single survey instrument, programmed with Qualtrics, for treatment delivery and subsequent data collection.

4. Stigma module
5. Affect module
6. Video selection task
7. Savings task
8. Message evaluation
9. Message of support
10. Sociodemographic module

2.4 Treatment

At the outset of the survey, eligible and consenting participants were told they are receiving an unconditional cash transfer of KES 400 (USD PPP 10.5) from an organization unaffiliated with the Busara Center.[2]

Participants were randomly assigned by the survey software within enumerator[3] to receive one of three messages introducing the purpose of the cash transfer. The three messages had a similar structure, but we experimentally varied the described purpose of the cash transfer. Specifically, we changed the stated goals of the organization, rationale for providing money, assumptions about recipients, and expectations and goals for the use of the transfer. In the poverty alleviation message, the payment was described as a means to meet basic needs. The individual empowerment message described the payment as a means toward individual goals and advancement. The community empowerment message described the payment as a means toward goals advancing one's family and the community for community advancement. Participants listened to the message twice in their preferred language (English or Kiswahili) with pre-recorded audio clips or as read by the enumerator.

After hearing the message once, senior enumerators were alerted to use a project MPESA account to send USD PPP 10.5 to the participant via the mobile money system M-Pesa.[4] Enumerators were instructed to confirm receipt of the payment on the respondent's phone, after which enumerators played the message a second time.[5] Then, enumerators led the respondent's through a series of questions on how they view the transfer. In particular they are asked questions on their current needs (in the "poverty alleviation" arm) or goals (in the "individual empowerment" and "community empowerment" arms) are, the name they would assign to these funds (for example "education fund"), how receipt of these funds would affect their relationship with others, and their perceived goal of the organization.

Below, we list the three treatment messages that respondents received:

Poverty alleviation message: *The goal of this Poverty Alleviation Organization is to alleviate poverty and reduce financial hardship among the poor. This organization believes that people living in poverty should be given income support to help them meet their basic needs. This organization aims to help promote a decent standard of living among the poor and help them deal with emergencies. Thus, the Poverty Alleviation Organization gives financial assistance to*

[2]This study was conducted with Kenyan shillings (KES). We report USD values calculated at purchasing power parity using a conversion factor for private consumption of 38.15 in 2013. The price level ratio of PPP conversion factor (GDP) to KES market exchange rate for 2011 was 0.444.

[3]We evenly assigned treatment groups to achieve balance in group size.

[4]For more information on M-Pesa, we refer the reader to Jack and Suri (2011) and Mbiti and Weil (2011).

[5]For the first day and a half of the survey period (for approximately approximately 100 respondents), we used a system in which the respondent texted a code which enabled the direct transfer of the money to their account. Due to technical difficulties, we were required to change to the above system.

people like you, to help them make ends meet. For example, with the financial assistance, people might be able to struggle less to afford basic needs, like paying off debts, paying rent, and buying clothes and food. Now we are going to send you 400 KSh. Please note that this is a one-time transfer of financial assistance.

Individual empowerment message: *The goal of this Individual Empowerment Organization is to promote individuals' potential to create a better future for themselves. The organization believes that individuals are wise and know best how to help themselves become self-reliant/independent if they have the financial resources to do so. This organization aims to empower individuals to pursue their personal interests and create their own path to independence. Thus, the Individual Empowerment Organization gives financial resources to individuals, like you, to enable them to invest in their personal goals. For example, people might use their unique talents to start a self-run business, invest in job training courses, or create art. Now we are going to send you 400 KSh. Please note that this is a one-time transfer of financial resources.*

Community empowerment message: *The goal of this Community Empowerment Organization is to enable people to help promote better futures for those they care about and want to support most. The organization believes that people know best how to support each other and grow together if they have financial resources to do so. This organization aims to empower people to improve their own lives and those of the people and communities they care about most. Thus, the Community Empowerment Organization gives financial resources to community members, like you, to enable them to contribute positively to the lives of people important to them. For example, when people can invest in themselves, they are better able to expand employment opportunities for others, provide valuable services to their community, or teach others, including children, useful skills and knowledge. Now Community Empowerment Organization is going to send you 400 KSh. Please note that this is a one-time transfer of financial resources.*

3. Data

This section describes the data collected following the cash transfer treatment.

3.1 Self-efficacy module

3.2 Stigma module

3.3 Affect module

3.4 Video selection task

This task asked participants to make a choice about watching 3-4 minute video clips. Enumerators described the following six videos and the participant chose to watch two at the end of the survey. Participant could not select the same clip more than once. Video clips were played after the completion of the sociodemographic questionnaire.

- A video from the Mark Angel comedy group, featuring Emanuela (leisure)
- A trailer for the Nigerian movie, featuring Ramsey Noah (leisure)
- A Noa Ubongo video on math skills for business or CBO management (self-improvement)
- A video of football highlights from around the world (leisure)
- A Noa Ubongo video on using equity and debt for financing business development (self-improvement)
- A Naswa prank skit (leisure)

This task provided information on participants' willingness to engage in self-improvement activities over leisurely activities. We collected data on the participant's ordered first and second choices. We classified each clip as either for leisure or for self-improvement and observe the number of self-improvement clips (0, 1, or 2) the participant chooses to watch.

3.5 Savings decision task

This task allowed participants to invest a portion (either one-quarter or one-half of their initial endowment) in savings with an interest rate of 50%, to be paid out in two weeks. Enumerators reminded the participant about receiving KES 400 and present the participant with the following two choices.

1. "If you send us 100 right now, after two weeks you will get back 150 KSh."
2. "If you send us 200 right now, after two weeks you will get back 300 KSh."

If the participant chose to save, enumerators instruct them to send the appropriate amount of money to a project phone number a project phone number using M-Pesa. We also use M-Pesa to complete transfers scheduled in two weeks. To further reduce uncertainty regarding the delayed payment, we provided a phone number for participants to call to follow up on the transaction.

In addition to observing the participants' intertemporal allocation, we employed the framework of Johnson, Häubl, and Keinan (2007) and elicited thoughts the participant may have regarding the choice to delay payment. This was done prior to the participant making the choice to delay payment. Enumerators asked participants to list up to five 'queries' regarding the decision. They were then asked to classify each query as either in favor of or against choosing to save the money. We collected data on both the content of the queries and their classification. We calculated for each participant a standardized median rank difference of aspect types to summarize the tendency to produce delay-favored queries before opposed queries.

$$\frac{2(MR_p - MR_i)}{n} \tag{1}$$

MR_p is the median rank of queries supporting delayed payment, MR_i is the median rank against delayed payment, and n is the total number of queries listed.

3.6 Message evaluation

3.7 Recording a message of support

3.8 Sociodemographic questionnaire (9 items)

The final portion of the survey asked participants to report various sociodemographic characteristics including:

1. MacArthur Subjective Social Status Ladder (normalized)
2. Participant is female
3. Participant completed standard 8
4. Participant is Christian
5. Age
6. Participant is unemployed and looking for work
7. Participant is not looking for work
8. Average monthly income (in KSh log transformed and Winsorized at the top 1%)

9. Consumption in the last seven days (in KSH log transformed and Winsorized at the top 1%)
10. Participant has KSh 1000 stored away
11. Difficulty in raising KSh 3000 within 2 days (normalized)

4. Empirical Analysis

4.1 Randomization balance checks

Although the randomization of the treatment ensures balance across groups in expectation, we test for differences in sociodemographic characteristics using the following specification.

$$Y_i = \beta_0 + \beta_1 \text{IND}_i + \beta_2 \text{COM}_i + \varepsilon_i \tag{2}$$

Y_i refers to the sociodemographic variables listed in Table 4 for individual i measured at the end of the survey. IND_i indicates assignment to the individual empowerment message while COM_i indicates assignment to the community empowerment message. The reference category in this model is the poverty alleviation message. We will estimate cluster-robust standard errors at the individual level.

We include any sociodemographic variable for which we reject balance as a control variable when estimating treatment effects.

4.2 Treatment effect of cash transfer messages

We will use the following reduced-form specification to estimate the treatment effect of different messages.[6]

$$Y_i = \beta_0 + \beta_1 \text{IND}_i + \beta_2 \text{COM}_i + \varepsilon_i \tag{3}$$

Y_i refers to the outcome variables for individual i measured after the manipulation. The outcome variables described in Table 2 will be the focus of this analysis. IND_i indicates assignment to the individual empowerment message while COM_i indicates assignment to the community support message. The reference category in this model is the poverty alleviation message. We will estimate cluster-robust standard errors at the individual level. Table 3 lists the hypotheses we will test using Equation 3. In addition to our primary outcomes, we estimate the effect on secondary outcomes listed below. We will analyze these variables by both looking at individual items and constructing summary indices. Given low covariance, items may be excluded from the summary index.

1. Self-efficacy
2. Stigma
3. Affect
4. Standardized mean rank difference of thoughts in favor of and against saving

[6] We will conduct the data analysis outlined in this section using the R programming language with the scripts included in Appendix **??**.

Table 2: Primary outcome variables

Variable	Description
Video selection	Number of self-investment videos chosen (0, 1, 2 out of 6)
Savings choice	Amount saved (0 KSh, 100 KSh, 200 KSh)
Message recording	Dummy variable for decision to record message of support

Table 3: Primary hypothesis tests

Null hypothesis	Description
$H_0 : \beta_1 = 0$	Effect of individual empowerment message relative to poverty alleviation message
$H_0 : \beta_2 = 0$	Effect of community empowerment message relative to poverty alleviation message
$H_0 : \beta_1 = \beta_2$	Effect of community empowerment message relative to individual empowerment message

4.3 Covariate adjustment

To improve precision, we will also apply covariate adjustment with a vector of baseline indicators $\mathbf{X}_i$. We obtain the covariate-adjusted treatment effect estimate by estimating Equation 3 including the demeaned covariate vector $\dot{\mathbf{X}}_i = \mathbf{X}_i - \bar{\mathbf{X}}_i$ as an additive term and as an interaction with the treatment indicator.

$$Y_i = \beta_0 + \beta_1 \textsc{Ind}_i + \beta_2 \textsc{Com}_i + \gamma_0 \dot{\mathbf{X}}_i' + \gamma_1 \textsc{Ind}_i \dot{\mathbf{X}}_i' + \gamma_2 \textsc{Com}_i \dot{\mathbf{X}}_i' + \varepsilon_i \tag{4}$$

The set of indicators partitions our sample so that our estimate for β_j remains unbiased for the average treatment effect (Lin 2013). We will estimate cluster-robust standard errors at the individual level. We use this model to test the hypotheses detailed in Table 3 including the control variables listed in Table 4.

Table 4: Control variables for covariate adjustment

Variable	Description
Subjective social status	MacArthur Subjective Social Status Ladder (normalized)
Gender	Participant is female
Education	Participant completed standard 8
Religion	Participant is Christian
Age	Participant age
Unemployment	Participant is unemployed and looking for work
Not working	Participant is not looking for work
Income	Average monthly income (in KSh log transformed and Winsorized at the top 1%)
Consumptio	Consumption in the last seven days (in KSH log transformed and Winsorized at the top 1%)
Savings	Participant has KSh 1000 stored away
Emergency spending	Difficulty in raising KSh 3000 within 2 days (normalized)

4.4 Randomization inference

One potential concern is that inference might be invalidated by finite sample bias in estimates of the standard errors. To address this issue, we will conduct randomization inference to test the Fisherian sharp null hypothesis of no treatment effect for every participant (Fisher 1935).[7] We perform Monte Carlo approximations of the exact p-values using $M = 10,000$ permutations of the treatment assignment. We will then estimate our primary specification within each m^{th} permutation and calculate the standard Wald statistics for each of our hypothesis tests. We

[7]Note that this is more restrictive than the null hypothesis of zero average treatment effect we will test in the previous section.

will compare the Wald statistics from the original sample with the distribution of permuted statistics to produce approximations of the exact p-values:

$$\hat{p}_\beta = \frac{1}{10,000} \sum_{m=1}^{10,000} \mathbf{1}\Big[\hat{\beta}'_m V(\hat{\beta}_m)^{-1} \hat{\beta}_m \geq \hat{\beta}'_{obs.} V(\hat{\beta}_{obs.})^{-1} \hat{\beta}_{obs.}\Big] \tag{5}$$

Following Young (2015), we will permute the data and calculate the regressions for all outcomes within each draw.

4.5 Multiple testing adjustment

Given that our survey instrument included several items related to a single behavior or dimension, we will calculate sharpened q-values over outcomes in Table 2 to control the false discovery rate (Benjamini, Krieger, and Yekutieli 2006). Rather than specifying a single q, we will report the minimum q-value at which each hypothesis is rejected (Anderson 2008). We will apply this correction separately for each hypothesis test and will report both standard p-values and minimum q-values in our analysis.

4.6 Heterogeneous treatment effects

We will analyze the extent to which the policy messages produced heterogeneous treatment effects with the following specification.

$$Y_i = \beta_0 + \beta_1 \textsc{Ind}_i + \beta_2 \textsc{Com}_i + \delta_0 x_i + \delta_1 \textsc{Ind}_i x_i + \delta_2 \textsc{Com}_i x_i + \varepsilon_i \tag{6}$$

x_i is the binary dimension of heterogeneity. δ_1 and δ_2 identify the heterogeneous treatment effects of the individual empowerment and community empowerment messages relative to the poverty alleviation message. Testing $\delta_1 = \delta_2$ identifies heterogeneous effects between the former two messages. Standard errors are clustered at the individual level. We estimate this model with the variables summarized in Table 5.

Table 5: Dimensions of heterogeneity

Variable	Description
Gender	Participant is female
Savings	Participant has KSh 1000 stored away
Education	Participant completed standard 8

References

Anderson, Michael L. "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects". In: *Journal of the American Statistical Association* 103.484 (2008), pp. 1481–1495. ISSN: 0162-1459. DOI: 10.1198/016214508000000841.

Benjamini, Yoav, Abba M. Krieger, and Daniel Yekutieli. "Adaptive Linear Step-up Procedures That Control the False Discovery Rate". In: *Biometrika* (2006), pp. 491–507.

Fisher, Ronald Aylmer. *The Design of Experiments*. Includes index. Bibliography: p. 245. Edinburgh: Oliver & Boyd, 1935.

Haushofer, Johannes et al. *A Methodology for Laboratory Experiments in Developing Countries: Examples from the Busara Center*. SSRN Scholarly Paper ID 2155217. Rochester, NY: Social Science Research Network, Feb. 2014.

Jack, William and Tavneet Suri. *Mobile money: The economics of M-PESA*. Tech. rep. National Bureau of Economic Research, 2011.

Johnson, Eric J., Gerald Häubl, and Anat Keinan. "Aspects of endowment: a query theory of value construction." In: *Journal of experimental psychology: Learning, memory, and cognition* 33.3 (2007), p. 461.

Lin, Winston. "Agnostic notes on regression adjustments to experimental data: Reexamining Freedman's critique". EN. In: *The Annals of Applied Statistics* 7.1 (Mar. 2013), pp. 295–318. ISSN: 1932-6157, 1941-7330. DOI: 10.1214/12-AOAS583.

Mbiti, Isaac and David N. Weil. *Mobile banking: The impact of M-Pesa in Kenya*. Tech. rep. National Bureau of Economic Research, 2011.

Young, Alwyn. *Channeling Fisher: Randomization Tests and the Statistical Insignificance of Seemingly Significant Experimental Results*. Tech. rep. Technical Report, Working paper, 2015.