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The Persistent Effects of Youth Savings Reminders: Experimental Evidence from Text-Message Campaigns in Colombia

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Abstract

We report on a nationwide field experiment with a commercial bank in Colombia in which low-income youth (12 years old on average) who open new accounts are randomly assigned immediately after opening the account to control or to receive one of three twelve-month text-messaging campaigns: i) monthly savings reminders, ii) semimonthly reminders, iii) monthly action-oriented financial education messages. Relative to control, monthly and semimonthly reminders groups increase account balances during the campaign as a result of reduced withdrawals, potentially through savings shifts from home to bank accounts. After the campaign youth in both reminders groups continue to use the accounts but do not deplete balances. The financial education campaign had a smaller, not statistically significant, effect on account balances, but some short-term effect on reducing withdrawals, possibly through shifts from home savings.

Keywords

Financial Education; Reminders; Text-messages; Youth; Savings; Field Experiments; Colombia

1. Introduction

Formal savings worldwide are low and unequally distributed. In developed countries, 45 percent of adults save in formal institutions. In developing countries, by contrast, only 11 percent of adults do so, most of whom belong to the upper or middle classes (World Bank

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2014). Among the poor in developing countries, the majority of adults remain unbanked (Global Findex Database 2015).

As part of the sustainable development goal of eradicating poverty worldwide, multilateral agencies and national governments are advocating equal access to economic resources—including financial services (United Nations 2018; World Bank 2014). Youth are at the frontline of such efforts. Motivated, in part, by evidence suggesting that financial habits are formed at an early age (Whitebread & Bingham 2013), a number of policy initiatives around the world promote savings at very early ages. These include, among others, financial education programs in schools, automatic enrollment at birth in Child Development Accounts (CDAs) and youth savings accounts initiatives by governments, banks and non-profit organizations such as Save the Children (Masa 2009; Manandhar et al. 2015; Sherraden 2015; Save the Children 2018)

At the same time, recent evidence documents savings “action gaps” or over-optimism as to how early people start saving (e.g. Prudential 2015). Yet, starting to save at an early age may matter for multiple reasons, including, building the blocks for financial capability (Consumer Financial Protection Bureau 2016), interest compounding, habit formation (e.g. Whitebread & Bingham 2013; Alessie & Lusardi 1997; Alessie & Teppa 2010), savings inertia (e.g. Madrian & Shea 2001), adult savings (Friedline et al. 2013), collegiate financial aid eligibility (e.g. Saving for College 2016), and modified expectations about the future (e.g. Curley, Ssewamala, & Han 2010).

It is unclear, however, whether policy can actually affect long-term financial outcomes and behaviors—particularly savings—among youth. With few exceptions (e.g. Bernheim, Garret & Maki 2001; Bruhn et al. 2016; Loke et al. 2015), financial education programs have proven to be costly and largely ineffective. A recent meta-analysis of over 200 studies of financial education programs documents that these programs do not improve financial behaviors overall, and are particularly ineffective when they target low-income groups (Fernandes et al. 2014). Moreover, whenever financial education programs do improve financial behaviors, these effects decay rapidly over-time, suggesting “that content knowledge may be better conveyed via ‘just-in-time’ financial education tied to a particular decision, enhancing perceived relevance and minimizing forgetting.” (Fernandes et al. 2014: 1873).

Mobile technology in general and SMS messages in particular constitute an alternative, potentially promising platform through which such ‘just-in-time’ financial capability interventions among youth could be implemented. SMS messages, for example, force delivery of simple and concrete content. The timing of the messages can be linked to actual financial decisions. In most countries, cellphone penetration among youth is high. SMS messages are cheap and highly standardized, making these interventions potentially cost-effective, replicable and scalable. Finally, SMS messages—particularly savings reminders—have been shown in some contexts, including developing countries, to improve formal savings outcomes among adult populations (Kast et al. 2018; Karlan et al. 2016).

This paper provides experimental evidence on the effects of a mobile-based financial capability intervention targeted at increasing savings among low-income youth between 7 and 18 years old (12 years old on average). Although younger than traditionally defined youths (e.g. 15 to 25 years of age) our target age group is the appropriate one to analyze financial decisions of young individuals within the formal banking system due to age-differentiated formal financial products for minors in many contexts.¹ Financial habits, moreover, are formed at early ages, and by age 12 children already recognize the value of money and understand to some degree the notion of delayed gratification (Whitebread & Bingham 2013).

In partnership with one of Colombia's leading commercial banks, we test a low-cost SMS-based intervention that jointly addresses some of the challenges of traditional financial education programs and of youth savings strategies through youth savings accounts. About 10,000 low-income youth who open new bank accounts nationwide are randomly assigned to control or to one of three twelve-month text-messaging campaigns immediately after they open an account. One group receives twelve monthly savings reminders. The second group receives twenty-four semimonthly savings reminders. Reminders emphasize how savings can help youth achieve their goals for the future. The third group receives a relatively novel treatment of twelve monthly financial education text messages in the form of action-oriented nudges that emphasize practical ways to resist temptation, save and make financial plans, among others. The control group receives no messages.

New accountholders who receive the monthly and semimonthly reminders significantly increase account balances relative to control during the twelve-month SMS campaign. Over this period, monthly and semimonthly reminders increase account balances, on average, by \$19 and \$28, which we cannot reject to be statistically equal. For both groups, these short-term effects on account balances are primarily the result of reduced withdrawals.

The effects of reminders on account balances during the SMS campaign are economically substantial relative to various benchmarks. They represent, for example, increases of 47 percent and 58 percent, from each group's corresponding baseline balance of \$39 and \$48. Similarly, the effects on account balances of the monthly and semimonthly reminders correspond to 12 percent and 17 percent, respectively, of the monthly Colombian minimum statutory wage at the time of the experiment. The effects of reminders are also large in absolute terms when compared to estimates from experimental evaluations of SMS savings campaigns among adult populations. In Peru, Bolivia and Philippines, for example, SMS savings reminders increase adult savings by about \$1—6 percent relative to the control group (Karlan et al. 2016). In Chile, reminders increase savings by \$1 to \$17—14 to 200 percent relative to control group balances (Kast et al. 2018).

After the SMS campaign, youth who receive semimonthly reminders maintain account balances that are statistically larger than those in control, although indistinguishable from

¹Age of majority in most countries, including the USA, is 18 years of age and most banks differentiate products and segment the market for those above and below this age threshold. For example, banks worldwide offer children and young teens special savings accounts with different characteristics as those traditionally offered to legal adults.

balances in the monthly reminders group. In both of these treatment groups, youth continue to use the accounts after the campaign but do not deplete balances.

While they ultimately aimed at encouraging formal savings, the action-oriented financial education SMS campaign had smaller, not statistically significant, effects on account balances that we reject are comparable in magnitude to those from the reminders campaigns. The financial education campaign did, however, have some short-term effect on reducing withdrawals. The small and statistically insignificant effect on account balances of the financial education campaign is possibly consistent with prior evidence on the ineffectiveness of most financial education interventions that target low-income groups (Fernandes et al. 2014). Our finding on withdrawal reductions provides a slightly more nuanced view of the potential role of SMS-based, action-oriented, financial education content among youth.

Since we only observe account balances, and not total savings, we cannot make conclusive statements as to whether reminders increased overall savings or simply shifted savings from other sources. Instead, we have phone survey data from a small, but representative, subsample of participants, indicating whether youth save at home. Based on these data we find marginally jointly significant evidence suggesting that the three treatments reduced the proportion of youth saving at home. This finding is consistent with some degree of savings substitution from home to bank accounts, even though we cannot precisely determine how much. However, substitution into formal savings may in itself be welfare enhancing to the extent that it represents a no-cost reduction in risk (Dupas & Robinson 2013; Karlan et al. 2016).

Through the endline phone survey we also find—perhaps unsurprisingly—that none of the treatments have measurable effects on self-reported control over expenses, financial knowledge as measured by understanding of interest compounding, or educational aspirations (cf. Bruhn et al. 2016). Overall, the results of our study highlight how ‘just-in-time’ mobile-based interventions in a developing country can be effective at changing youth behavior that results in lasting impacts on formal savings. From the bank’s perspective, moreover, these savings reminders campaigns are a relatively low-cost way to increase deposits and, possibly downstream, financial product cross-sales.

The paper builds on recent research on approaches to increase formal savings in developing countries. We analyze the impact of SMS savings campaigns on a policy-relevant population of very young low-income individuals, core to the growing digital economy. Previous studies have analyzed how text messages can promote adult savings (e.g. Kast et al. 2018; Karlan et al. 2016). We also explicitly analyze whether differences in content or frequency of messages matters. While we find some evidence that message content matters, we find little evidence suggesting that higher-frequency reminders are more or less effective at increasing account balances than monthly reminders. Unlike most prior studies, our findings are not limited to a population with pre-specified savings plans, or to bank accounts with explicit savings goals. Youths in our experiment open and use a transactional account, suggesting that reminders about how savings can help youth achieve their goals are effective even among those with potentially weak commitments to save. Our data allows us to

examine whether SMS messages have lasting impacts on formal youth savings outcomes, as well as to explore the financial accounting channels by which messages increase savings (cf. Bruhn et al. 2016, who analyze self-reported youth savings, budgeting, price negotiation and payment methods). Our study also complements recent findings on potential substitution between home and formal banking savings among youth in other developing contexts (e.g. Berry, Karlan & Pradhan 2018).

Section 2 presents the background and context in which the field experiment takes place. Section 3 describes the experimental design and evaluation sample. Sections 4 and 5 describe the data and empirical strategy. Section 6 presents results of the text-message campaign on account balances. Section 7 introduces a simple accounting framework to understand the contribution of to account balances of withdrawal and deposit channels. Section 8 presents impacts on self-reported financial behaviors and financial knowledge. Section 9 discusses costs of the SMS campaigns for the bank and section 10 concludes.

2. Background and context

2.1. Savings and financial capabilities among youth

There are generally limited data collection efforts aimed at measuring levels of financial literacy and financial behaviors among young people—particularly in developing countries. To characterize savings and financial capabilities among youth in Colombia, in this section we rely on data collected by the Organization for Economic Development and Cooperation (OECD) in its pilot assessment of financial literacy from the 2012 Program for International Student Assessment (PISA).² In 2012, the OECD measured, through the PISA test, financial literacy and financial behaviors among 15 year-old students from a subsample of eighteen countries, including Colombia.³ PISA's target age group, the inclusion of Colombian youth and the timing of the tests vis-à-vis our experiment, make these data well suited to characterize financial literacy and behaviors among Colombian youth, and to contextualize those characteristics relative to international benchmarks.⁴

Colombian youth are comparable to those from other OECD countries in their interest in money. About one-quarter of youth from both groups report discussing money matters at least weekly. However, access to formal banking among Colombian youth is substantially lower than in other OECD countries, and in Colombia exhibits a strong wealth gradient. As a whole, only 5 percent of Colombian 15 year-olds have formal banking access, as measured by whether they have a bank account or a prepaid debit card (OECD mean is 26 percent). While 12 percent of Colombian youth from the top wealth quintile have formal banking access, only 4 percent of those in the bottom quintile do so.

In terms of savings behavior, 30 percent of Colombian youth report saving (OECD mean = 36 percent) but only 15 percent report saving regularly—weekly or monthly amounts (OECD mean = 18 percent). Thirty four percent of Colombian youth from the top wealth

²Available at <http://www.oecd.org/pisa/data/pisa2012database-downloadabledata.htm>, retrieved June 5, 2018.

³For additional details see <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-vi.htm>, retrieved June 5, 2018.

⁴The Global Findex Database, for example, does not measure financial literacy, does not contain individual level data, and focuses primarily on adults.

quintile save and 17 percent of them save regularly. In contrast, among youth from the bottom wealth quintile, 25 percent save, and 10 percent save regularly. Many Colombian youth who save presumably do so informally as the fraction of those who save well exceeds the fraction of those who bank formally—particularly among youth from the bottom wealth quintile.

2.2. Partner bank and savings product characteristics

Colombia has levels of bank financial penetration comparable to other Latin American countries. Most Colombian banks offer a wide portfolio of services for individuals and companies. Nine of Colombia's twenty-three banks offer youth-specific financial products. These accounts typically have lower costs than savings accounts for adults and some even offer prizes (e.g. movie tickets or toys) as part of long-term fidelity strategies.

Banco Caja Social (BCS bank henceforth)—the project's partner bank—is one of Colombia's oldest banks. BCS bank was established in 1911 by the Jesuit community with the aim of providing financial services to micro and small enterprises and to low- and middle-income households. BCS bank continues to primarily target financial services towards low-income urban populations in Colombia. Of the bank's 4.8 million clients (8th largest nationwide), one-third earn less than the minimum statutory wage of \$250/month. BCS bank's share of low-income clients is the highest among all Colombian banks with the exception of the government's rural bank. Over 80 percent of BCS's bank branches and of clients live in metropolitan areas.

BCS bank offers two bank accounts for the youth market, *Tuticuenta* and *Cuenta Amiga*. We chose *Tuticuenta* account holders as the population of our study for two reasons. First, the *Tuticuenta* account is a transactional account with no explicit savings goals. In this regard, it is similar to other accounts available to youth in Colombia and in other countries. *Tuticuenta* charges no monthly fees, no ATM transaction fees and no fees for online transactions. *Tuticuenta* also has a very low minimum opening balance of \$4. *Cuenta Amiga*, by contrast, has a higher opening balance of \$10, imposes withdrawal restrictions and charges fees for certain transactions.

Second, *Tuticuenta* has been in existence since 1997 whereas *Cuenta Amiga* has only been offered to clients since 2012. BCS bank salespersons are, therefore, more proficient at selling *Tuticuenta* accounts than at selling *Cuenta Amiga* accounts and, as a result, in a typical month, about 4,000 youth open a *Tuticuenta* account whereas about only 200 open a *Cuenta Amiga* account. Statistical power and sample size considerations implied that only with *Tuticuenta* accounts we would be able to detect economically meaningful minimum effect sizes.

As with most youth accounts worldwide *Tuticuenta* accounts do not generate direct profits to BCS bank, even though they generate a potentially large flow of deposits. In addition, youth accounts are an effective channel to promote bank product cross-sales. Evidence suggests, in general, a strong business case for youth savings accounts (Kilara et al. 2014).

3. Experimental design and evaluation sample

For our experiment, *Tuticuenta* accountholders are randomly assigned to control or to one of three twelve-month SMS campaigns. The first group (monthly reminders) receives twelve SMS savings reminders—one per month; the second group (semimonthly reminders) receives twenty-four SMS reminders—two per month. Reminder messages are the same every time. The message reads: “Remember to save in your *Tuticuenta*! This way you will be one step closer to your goals and make your dreams come true. Banco Caja Social.” The third experimental group receives twelve financial education SMS messages—one per month—in the form of action-oriented nudges. This action-oriented, relatively novel treatment focuses on five financial capability domains that include: i) prioritizing spending and differentiating between wants vs. needs; ii) cutting unnecessary expenses; iii) making a financial plan; iv) developing a savings habit and, 5) saving in secure places and with social support (see Appendix Table A1 for additional details).⁵ The control group receives no messages.⁶

Randomization is stratified by month of account opening and bank branch. Youth who opened a *Tuticuenta* account in February, March or April of 2013 in any of the 263 bank branches nationwide were initially eligible to participate in the experiment.⁷ A total of 14,788 youth are part of this initial selection.

We impose two additional restrictions on the final experimental sample. First, since the delivery channel for the treatment is through SMSs we only included youth accountholders who at the time of account opening registered a personal cellphone number in the account application form. This eliminates 3,442 youth account holders from those in the initial selection.

Second, among youths with a cellphone, we only included youths who opened a *Tuticuenta* account in a branch in which at least three other youths opened *Tuticuenta* accounts in a given month. This restriction guaranteed that for each randomization strata we would have at least one youth assigned to each of the four experimental conditions. This restriction further eliminates 1,293 youth from the experimental sample. Appendix Table A2 shows average characteristics of youths included and excluded from the experimental sample after imposing our two restrictions. Youths excluded from the experimental sample tend to be, on average, younger, predominantly male and predominantly attending primary school. The final experimental sample contains 10,053 accounts. Appendix Table A3 shows the number of accounts in the final sample by experimental condition and month of opening. The number of youth in each treatment group fluctuates within month because of stratification at the branch level and the fact that we assign remainder observations within strata to the control group when the number of accounts opened in that month is not divisible by 4.

⁵Microfinance Opportunities (MFO), a leading consumer-finance NGO, designed for this project the content of the financial education messages drawing on market research among the target population of youth, as well as input from Save the Children and BCS.

⁶All youths, including those in the control group receive one initial welcome text message that congratulates them for opening the account. Youth in treatment conditions receive the first treatment SMS the month following account opening. BCS sent the first monthly message to all treatment groups on a workday between the 15th and 20th calendar day of the month. Youth accountholders in the “semimonthly reminder” treatment receive the second reminder on a workday at the end of the month.

⁷Appendix Figure A1 shows the timeline of *Tuticuenta* accounts opened and the experimental sample months.

4. Data and randomization balance

4.1. Data

We use three sources of data. The first two sources are bank administrative data from: i) baseline account opening application forms, and ii) monthly account balances and transactions data. The third data source is a phone survey we administered to a subsample of experimental participants in December 2014—nine months after we sent the last text-message of the campaign.

Account opening data—We obtained de-identified baseline information on all 10,053 accountholders in the experimental sample from BCS's standard account opening form. This information includes gender, age, educational attainment, whether the youth is currently enrolled in school, marital status, socioeconomic strata of residence,⁸ whether youth have migrated, account opening bank branch, email account, if available, and cellphone number, if available.

Transactional data—We received from BCS bank de-identified matched data with monthly account information on all 10,053 accountholders in the experimental sample for up to 20 months after account opening. These data include account status (active, dormant, closed), account balance, number and value of deposits and number and value of withdrawals.

Follow-up phone survey data—We randomly selected 1,620 of the 10,053 accountholders in the experimental sample to participate in a phone survey follow-up, stratifying by treatment assignment status. BCS bank administered the phone survey 9 months after the last SMS of the campaign was sent out, 21 months after the first SMS was sent. In the survey we asked youth where they save (i.e. at home, other banks), control over expenses, financial knowledge through a question on interest compounding, educational expectations and text-message recall (see Appendix Table A4 for question details).

BCS bank successfully completed 491 phone surveys, for a 30 percent survey response rate, which is comparable to the response rate of other recent phone surveys carried out by the bank.⁹ The composition of survey respondents is comparable, on average, across experimental groups (Table A5). Likewise, we cannot reject that the composition of survey respondents is similar to the composition of survey non-respondents (Column 2, Table A6) or of youth not in the survey along (Column 3, Table A6) observables. We also cannot reject that the characteristics of experimental participants that are in the survey and those that are not are statistically similar. (Column 1, Table A6). This evidence suggests that the phone survey is a reliable and representative data source.

⁸Colombia has six different wealth strata based on neighborhood of residence. Strata one corresponds to households residing in the poorest neighborhoods in the country and strata six to those residing in the wealthiest ones. The main objective of Colombia's stratification system is the cross-subsidization of public services and targeting of public programs.

⁹Average response rate to the phone survey in the control group was 33 percent. Response rates among youth accountholders in the financial education and the monthly reminders are statistically indistinguishable from those in control. The response rate among youth assigned to the semimonthly reminder treatment is 8.4 percentage points significantly lower than control.

4.2 Baseline balance checks on randomization design

Stratified randomization successfully balanced average characteristics across groups (Table 1). Groups are balanced in terms of age, gender, socioeconomic strata, marital status, school attendance, past migration and account opening balance. On average youths in our sample are 12 years of age and are evenly distributed between boys and girls. Most youth live in low and middle socioeconomic strata neighborhoods, and most are currently attending school (primary or secondary education). About 25 percent of youths in the sample are migrants from their place of birth. Opening account balances are between \$40 and \$60.

5. Empirical strategy

Our main outcome of interest is *Tuticuenta* account balances. We take advantage of randomization to estimate causal effects of the SMS campaigns, as well as to construct exact test statistics of significance whose distribution does not depend on asymptotic convergence or distributional assumptions, and is known in each and every sample (Young 2018). Randomization-based inference has at least three important advantages relative to the more commonly employed econometric methods that rely on large sample inference. The approach explicitly considers the multiplicity of tests implicit in many treatment coefficients and many correlated outcomes. By not relying on asymptotic convergence, this approach circumvents variance estimates that are systematically biased in favor of rejection of the null, particularly in the case of robust and clustered variance estimation. Finally, under the null hypothesis of no individual treatment effect, randomization p-values do not depend on sample size or assumptions about the error term (Young, 2018). To proceed with this approach, our estimating regression equation is:

$$Y_{i,m} = \gamma_{1,m}FE_i + \gamma_{2,m}MR_i + \gamma_{3,m}SMR_i + X_i'\beta_m + \rho_{b,m} + \varepsilon_{i,m} \quad (1)$$

$Y_{i,m}$ stands for account balance of youth i in month m ; FE_i , MR_i , and SMR_i are treatment status indicators (financial education, monthly reminders, semi-monthly reminders, respectively, control is the omitted category). We normalize m to represent number of months since account opening rather than calendar month (not all youth in the experimental sample open accounts in the same calendar month) and normalize individual-level account balances to be zero in the opening month by subtracting from balance amounts each person's own opening balance.¹⁰ We estimate the system of equations (1) separately for duration of the text-message campaign (months 1–12) and for 1 to 8 months after the end of the campaign (months 13–20). System of equations (1) also includes account opening baseline controls X_i and branch (b) by month of opening (m) fixed effects $\rho_{b,m}$ to account for the stratified random assignment design; $\varepsilon_{i,m}$ are error terms clustered at the month of opening by branch level.

¹⁰The decision to normalize balances to zero in the month of opening is inconsequential to our results. In Appendix Tables A7 and A9, we show that our results on account balances during and after the intervention are unchanged if we instead include opening balance as a control variable.

The coefficients of interest are γ_{1m} , γ_{2m} and γ_{3m} . These are estimates of the effect on account balances of being assigned to each treatment group, relative to control (i.e. Intent-to-Treat estimates, as we have no bank data to validate whether youths effectively received and/or read SMSs sent). Rather than assuming that the distribution of γ_{1m} , γ_{2m} and γ_{3m} stems from the stochastic nature of the error term $\varepsilon_{i,m}$, randomization inference assumes that the only stochastic element of our estimating system of equations is the randomized allocation of treatment. Therefore, to estimate the variance of γ_{1m} , γ_{2m} and γ_{3m} and associated p-values, under the null hypothesis on no individual-level treatment effect, we re-randomize 2,000 times treatment assignments across participants within each randomization strata, re-estimate γ_{1m} , γ_{2m} and γ_{3m} in each re-randomized sample and compare the observed estimates to the distribution in the 2,000 re-randomization samples. Following Young (2018) we also report omnibus tests of joint statistical significance for all treatment groups in a given time period, for each treatment group over time, and overall across groups and time.

The main outcome of *Tuticuenta* account balance is well defined for the entire experimental sample since closed accounts have a zero account balance. However, since once closed an account is not later re-opened, we estimate Kaplan-Meier survival rates and a log-rank test for the hypothesis that treatment status is uncorrelated with whether an account remains open. As we demonstrate below, account closure in the sample is low and uncorrelated with treatment assignment.

We use OLS regressions with baseline controls to analyze (cross-sectional) phone survey data. We investigate whether youth recall receiving SMS treatment messages, whether youth save at home, educational expectations and financial knowledge as measured by understanding of interest compounding.

6. Impacts of the text-message campaign on account balances

6.1. Account balances during the twelve-month text-message campaign

Figure 1 displays graphically the paper's main results. The figure shows the evolution over time of average, individually normalized *Tuticuenta* account balances for each treatment group (Appendix Figure A2 reproduces Figure 1 without individual-level balance normalization). The vertical line at month twelve depicts the end of the text-message campaign.

During the campaign, differences in average net *Tuticuenta* account balances between youths assigned to the financial education SMS treatment and those assigned to control are small. By contrast, there are large differences over time in average account balances between youths assigned to the reminders groups relative to control. These differences emerge early on and last for the duration of (and beyond) the text-message campaign. By month twelve, average net account balances in both reminder treatments are about \$30 larger as those in either the financial education treatment or control (about \$11). Both reminders groups appear to increase account balances during the campaign.

Estimation results of net *Tuticuenta* account balances (Table 2) confirm the magnitude and of statements regarding Figure 1. Relative to youths assigned to control statistical precision conditions, the financial education SMS treatment increases average account balances during the SMS campaign by a small, yet statistically insignificant, amount (joint significance randomization p-value=0.248, bottom of Column 2, Table 2).

By contrast, we reject the null hypothesis that monthly reminders do not increase account balances during the text-message campaign (joint randomization p-value=0.003, bottom of Column 3, Table 2). The positive impact of monthly reminders on net account balances emerges as early as month two after account opening and persists for most of the remaining months of the campaign. The average estimate of the effect of monthly reminders on net account balances over the twelve months of exposure is \$18.5, a 47 percent increase relative to the group's baseline balance of \$39.3 reported at the bottom of Table 1.

We also strongly reject the null hypothesis that semimonthly reminders do not increase account balances during the text-message campaign (joint randomization p-value=0.0006, bottom of Column 4, Table 2). The positive impact of semimonthly reminders on net account balances emerges in the first month of exposure to the savings reminder SMS and persists for the remaining months of exposure to treatment. The average estimate of the effect of semimonthly reminders on account balances over the twelve months of exposure is \$28, a 58 percent increase relative to the group's baseline balance of \$48.3 reported at the bottom of Table 1. On aggregate, a randomization-based inference omnibus test of joint significance rejects the joint null hypothesis that all treatments are jointly zero in all months of exposure to treatment (randomization joint p-value=0.041, bottom of Column 5, Table 2).¹¹ For most months during the SMS campaign we reject equality of treatment effects across monthly reminders and financial education messages, as well as across semimonthly reminders and financial education messages. We cannot, however, reject for any month during the campaign equality of account balance treatment effects across the two SMS reminders groups (Appendix Table A8, Panel A).

6.2. Account balances after the text-message campaign

Semimonthly reminders have systematically persistent impacts on account balances after the SMS campaign. Impact estimates on *Tuticuenta* account balances of semimonthly reminders are statistically significant in all of months 13 through 20. Eight months after the end of the SMS campaign (month 20), account balances in monthly and semimonthly reminders groups are \$33 and \$41 (Columns 2 and 4, Table 3) higher than those in control (normalized mean is \$2.4, Column 1, Table 3). These are economically large impacts, representing increases of 84 percent and 85 percent, respectively, relative to each group's savings at baseline of \$39 and \$48, respectively reported at the bottom of Table 1.

We reject the null hypothesis of no persistence in the effect of semi-monthly reminders on account balances after the SMS campaign (randomization p-value=0.025). However, we cannot reject the null of no effect on account balances of monthly reminders after the

¹¹As Appendix Table A7 shows, these results are robust to estimating separate OLS regressions for each month, and to controlling for opening balance at baseline instead of normalizing balances with respect to initial balances.

campaign (randomization p -value=0.173, column 3, Table 3), or that of equality of treatment effects on account balances after the campaign between monthly and semimonthly reminders groups (Appendix Table A8, Panel B).¹² Financial education messages continue to have small and statistically insignificant effects on *Tuticuenta* account balances after the end of the campaign (Column 2, Table 3). We cannot reject equality between treatment effects on account balances after the campaign for financial education and monthly reminders groups (Appendix Table A8, Column 1, Panel B), but we reject treatment effect equality for various months after the campaign for financial education and semimonthly reminders groups (Appendix Table A8, Column 2, Panel B).

The persistent effect of savings reminders—particularly semimonthly reminders—on account balances after the campaign could be the result of youth forgetting about the accounts when they stop receiving messages or, alternatively, continued account usage without balance depletion. Figure 2 shows that, on average, youth in all experimental groups continue to withdraw money from the account after the end of the campaign. Figure 3 shows similar continued deposit activity after the campaign. This is evidence in favor of continued account usage without balance depletion.

Moreover, over 93 percent of accounts remain open during the period, and there are no differences across treatment groups in account survival rates (Figure 4, p -value of chi-square of a log-rank test of equality is 0.97) or inactivity (Figure 5, p -value of chi-square log-rank test of equality of inactivity is 0.82).¹³ Taken together, these results suggest that reminders likely affect youth savings through the intensive margin of withdrawals and deposits and not through the extensive margin of keeping an open or active account.

7. Accounting for changes in *Tuticuenta* account balances

Since savings reminders appear to affect balances through the intensive margin of withdrawals and deposits, in this section we present an accounting framework to decompose the contribution of each of these channels. While these calculations are nothing more than an accounting decomposition, impacts on the various financial channels could be suggestive of youth behavioral changes induced by the SMS campaigns. For example, withdrawal amount reductions holding constant number of withdrawals could be the result of more attention to expenses or a clearer distinction of wants versus needs. Similarly, reductions in number of withdrawals holding constant withdrawal amounts could be the result of more careful budgeting or increased self-control. Increased deposits holding constant deposit amounts could be the result of an intentional commitment device to avoid the temptation of holding cash. And increased deposit amounts holding constant number of deposits could be the result of prioritizing savings in financial plans, or a reallocation of savings from home into formal savings. As these examples make clear, however, our experimental design and data do not allow us to disentangle alternative behavioral responses because the same behavioral change—improved budgeting or delayed gratification—could simultaneously lead to

¹²These results are robust to estimating separate OLS regressions for each month and to controlling for opening balance at baseline instead of normalizing individual account balances with respect to initial balance (Appendix Table A9).

¹³After 20 months, 170 accounts closed in control (6.1 percent), 132 in financial education campaign (5.8 percent), 159 in monthly reminders campaign (6.1 percent) and 147 in semi-monthly reminders campaign (6.1 percent).

reductions in the withdrawals and/or deposits channel. As such, this accounting decomposition is only suggestive of potential underlying behavioral mechanisms at play.

The *Tuticuenta* account balance in month m is the difference between accumulated deposits to and withdrawals from the account up to m :

$$Balance_m \equiv \sum_{s=1}^m Deposits_s - \sum_{s=1}^m Withdrawals_s$$

Which we can further decompose as:

$$Balance_m \equiv N_m^D \bar{D}_m - N_m^W \bar{W}_m \quad (2)$$

where N_m^D is the number of account deposits up to month m , $\bar{D}_m = \frac{1}{N_m^D} \sum_{s=1}^m Deposits_s$, is

average deposit amount up to month m , N_m^W is the number of account withdrawals up to month m , and $\bar{W}_m = \frac{1}{N_m^W} \sum_{s=1}^m Withdrawals_s$, is average withdrawal amount up to m .

From estimating equation (1) above, the treatment effects of interest, $\gamma_{j,m}, j=1, 2, 3$ are: $\gamma_{j,m} = \Delta Balance_m / \Delta Treatment_j$. Therefore, totally differentiating (2) with respect to treatment status we get:

$$\Delta Balance_m / \Delta Treatment_j = \left\{ \Delta N_m^D / \Delta Treatment_j \cdot \bar{D}_m + \Delta \bar{D}_m / \Delta Treatment_j \cdot N_m^D \right\} - \left\{ \Delta N_m^W / \Delta Treatment_j \cdot \bar{W}_m + \Delta \bar{W}_m / \Delta Treatment_j \cdot N_m^W \right\} \quad (3)$$

The decomposition of treatment effects (3) makes explicit how the effects on account balances of the various treatments j can be accounted for through four financial channels: changes in number of deposits holding constant deposit amounts, $\Delta N_m^D / \Delta Treatment_j \cdot \bar{D}_m$; changes in average deposit amounts holding constant number of deposits, $\Delta \bar{D}_m / \Delta Treatment_j \cdot N_m^D$; changes in number of withdrawals holding constant withdrawal amounts, $\Delta N_m^W / \Delta Treatment_j \cdot \bar{W}_m$; and changes in withdrawals amounts holding constant number of withdrawals, $\Delta \bar{W}_m / \Delta Treatment_j \cdot N_m^W$.

In the remaining of this section we document treatment effects on these four financial channels. We then compute the contribution of each channel to the overall treatment effect on account balances for the two reminder groups—the only two groups for which balances are statistically significantly different from zero at the end of the campaign.

7.1. Withdrawal channel during the SMS campaign

Monthly and semimonthly reminders significantly decrease withdrawal amounts during the campaign (Columns 3 and 4, Table 4). Most treatment effect estimates are negative, sizeable and significantly different from zero. Randomization-based p-values indicate that we reject the null hypothesis that monthly and semimonthly reminders do not change withdrawal amounts during the SMS campaign (randomization p-values are 0.002 for monthly and 0.014, for semimonthly reminders, bottom of Columns 3 and 4, Table 4).

Monthly and semimonthly reminders also significantly decrease the number of withdrawals (Appendix Table A10). For each reminders group, we reject the null hypothesis of no joint significance of number of withdrawals for all months during the campaign. The randomization p-value for joint significance of the effects of monthly reminders on number of withdrawals in months 1–12 is 0.012 (bottom of Column 3, Appendix Table A10). The randomization p-value for joint significance of the effects of semimonthly reminders on number of withdrawals in months 1–12 is 0.022 (bottom of Column 4, Appendix Table A10). These results indicate that both monthly and semimonthly reminders reduce account withdrawals through a combination of lower withdrawal amounts and less number of withdrawals.

Point estimates suggest that the financial education messages might have also reduced withdrawal amounts, but these effects are not statistically significant for any month or jointly for the duration of the campaign (Column 2, Table 4). However, it appears that the financial education messages reduced the number of withdrawals, as we reject the joint significance null for this channel for the duration of the campaign (randomization p-value of joint significance is 0.026, bottom of Column 2, Appendix Table A10). Therefore, to the extent that financial education messages affected the withdrawal channel, they did so primarily through number of withdrawals, not withdrawal amounts.

7.2. Deposit channel during the SMS campaign

For monthly reminders, point estimates on deposit amounts for months during the campaign are negative, although they are not individually significant for any month or jointly significant for the duration of the campaign (Column 3, Table 5). Monthly reminders also do not appear to have affected the number of deposits during the campaign (Column 3, Appendix Table A11).

For semimonthly reminders, point estimates on deposit amounts for months during the campaign are also negative, and are joint significant at the 10 percent level (randomization p-value=0.087, bottom of Column 4, Table 5). Semimonthly reminders also appear to have affected the number of deposits (randomization p-value=0.088, Column 4, Appendix Table A11). To the extent that semimonthly reminders reduced deposit amounts during the campaign, the reduction in withdrawals for this group must have had to overcompensate in order to result in increased balances at the end of the campaign. Financial education messages appear to have reduced deposits, but point estimates are individually and joint statistically insignificant (Column 2, Table 5).

7.3. Contribution of withdrawal and deposit channels to the increased account balances of reminders during the campaign

Monthly reminders do not statistically affect deposits, so they increase balances primarily through reduced withdrawals. For this group the reduction in cumulative withdrawals is a combination of lower withdrawal amounts holding constant number of withdrawals $\Delta \bar{W}_m / \Delta Treatment_j \cdot N_m^W$ and lower number of withdrawals holding constant the amount $\Delta N_m^W / \Delta Treatment_j \cdot \bar{W}_m$. Note that the overall effect on cumulative withdrawal amounts reported in Table 4 is the sum of these two effects. For month twelve, for instance, this overall effect is -\$52 in the monthly reminders group. We can calculate $\Delta N_m^W / \Delta Treatment_j \cdot \bar{W}_m$ in two parts. The first is $\Delta N_m^W / \Delta Treatment_j$, which from Appendix Table A10, Column 3 (for month twelve), is equal to $-.26$. The second is $\bar{W}_m$, which is the average withdrawal amount in the control group, equal to $\$348.6/4.42 = \78.86 . Multiplying the two, $\Delta N_m^W / \Delta Treatment_j \cdot \bar{W}_m$ equals $-\$20.49$, which corresponds to a 39% ($\$20.49/\52) contribution of changes in the number of withdrawals holding constant withdrawal amount to the overall withdrawal effect. Therefore, changes in withdrawal amounts holding constant number of withdrawals, $\Delta \bar{W}_m / \Delta Treatment_j \cdot N_m^W$, contributes 61% to the overall withdrawal channel.

For semimonthly reminders the calculation is slightly more complicated because during the campaign this treatment statistically reduces withdrawals, and to a lesser extent also reduces deposits. The reduction in withdrawals amounts by month twelve for this group is $-\$32.07$ (Column 4, Table 4), but the net account balance at that point is $\$24.26$ (Column 4, Table 2), so the contribution to account balances of the overall withdrawals channel is 132%, which implies a contribution of deposits of -32% (since deposits decrease for this group). For semimonthly reminders $\Delta N_m^W / \Delta Treatment_j$ is $-.32$ (Appendix Table A10, Column 4 for month twelve), which multiplied by the average withdrawal amount in the control group of $\$78.86$, leads to $\Delta N_m^W / \Delta Treatment_j \cdot \bar{W}_m = -\25.23 or a contribution of changes in number of withdrawals holding constant amount of 104% ($\$25.23/\24.26). This implies that, for this group, changes in withdrawal amounts holding constant number of withdrawals, $\Delta \bar{W}_m / \Delta Treatment_j \cdot N_m^W$, contributes $132\% - 104\% = 28\%$ to the overall withdrawal effect.

It is unclear whether treatments induce changes in behavior after the end of the SMS campaign. While, as noted, youth in all treatment groups continue to use the accounts after the campaign, we do not find strong support for continued effects of reminders or financial education messages on withdrawal channels (value or number, Appendix Tables A12 and A13, respectively). Marginally statistically significant evidence, however, suggests that after the campaign, youth who received semimonthly reminders may still be depositing more money (randomization p-value=0.099, Appendix Table A14).

On the whole, withdrawal channels seem to account for most of the effect of reminders on account balances. This evidence is potentially consistent with—although by no means definitive proof of—behavioral changes such as savings reminders helping youth be more

attentive to expenses, draw clearer distinctions between wants and needs, and/or more carefully budget.

7.4. Summary of results

Table 6 summarizes our main randomization inference-based tests of joint significance. The financial education SMS campaign does not appear to change *Tuticuenta* financial outcomes during or after the campaign even though it reduced the number of withdrawals during the campaign (Column 1, Table 6). Monthly reminders increase *Tuticuenta* account balances during the campaign primarily through reductions in the number and amount of withdrawals during the campaign (Column 2, Table 6). Semimonthly reminders positively affect account balances through changes in the value and number of withdrawals that overcompensate for reductions in deposits (Column 3, Table 6).

7.5. Account balances vs. Total Savings

Since we only observe account balances, and not total savings, we cannot make conclusive statements as to whether reminders increased overall savings or simply shifted savings from other sources. Instead, we have phone survey data from a small, but representative, subsample of participants. These data suggest the possibility of savings shifts from home to bank accounts. Based on our phone survey results, 37 percent of youth in control save in places other than their *Tuticuenta* account (Row 1, Column 1, Table 7). While point estimates for the separate treatments are not statistically significant, jointly they are marginally significant at the 10%, indicating that the treatments might have reduced the fraction of youth saving elsewhere by 15 percentage points (40 percent, Row 1, Column 5, Table 7). This effect is possibly driven by shifts from home savings (Row 3, Table 7), as there appears to be no evidence of savings shifts from other bank accounts (Row 2, Table 7). Note, however, that substitution into formal savings may in itself be welfare enhancing to the extent that it represents a no-cost reduction in risk. For instance, many low-income individuals choose to take up and to use formal savings products even when the costs of doing so are high enough that they effectively yield negative interest rates (Dupas & Robinson 2013; Karlan et al. 2016).

8. Impacts on self-reported financial behaviors, financial knowledge, aspirations and message campaign recall

Through the phone survey, we asked youth respondents to rate how frequently they exercised control over their expenditures with possible responses being never, not often, often, very often and always. Thirty-three percent of youths in the control group report they control expenditures always or very often (Row 4, Column 1, Table 7). The text-message campaign does not influence self-reports on this particular financial behavior (Row 4, Columns 2–5, Table 7).

We measured financial knowledge with one simple question on interest compounding (see Appendix Table A4 for question details). Thirty-three percent of youth in the control group correctly understand interest compounding (Row 5, Column 1, Table 7). Unsurprisingly,

none of treatments had an impact on youths' financial knowledge, since there was no content in the messages of any of the groups relating to that.

With regards to educational aspirations, 37 percent of youth in the control group report aspiring to reach post-graduate education (Row 6, Column 1, Table 7). None of the treatments separately or pooled appear to raise self-reported educational aspirations (Row 6, Columns 2–5, Table 7).

Close to 40 percent of respondents assigned to any of the three text-message campaigns recall receiving the messages on their phones (Row 7, Column 1, Table 7). This result suggests that youth in the sample have relatively large message recall rates, despite this question being answered 9 months after they received the last message of the campaign. As such, it underscores how 'just-in-time' informational interventions may be more 'sticky' than traditional forms of financial education delivery. If one were to use recall as a measure for treatment usage, that treatment-on-the-treated estimates of the text-message campaign on *Tuticuenta* account balances would be about 2.5 times larger than the ITT estimates reported.¹⁴

Finally, thirty-eight percent of youth report that someone else also had control over the account (Row 8, Column 1, Table 7). The text-message campaign did not affect control over *Tuticuenta* accounts (Row 8, Columns 2–5, Table 7). This suggests that the campaign directly induced behavioral changes in the form of increased formal savings for at least 62 percent of youth in the sample.

9. Costs of the SMS campaigns

From a commercial standpoint, is it the case that reminders are a comparatively cheap strategy to increase deposits vis-à-vis other approaches such as offering interest through certificates of deposit? To answer this question, we limit attention to the monthly and semimonthly reminder campaigns since, as we demonstrated earlier, the financial education campaign did not increase account balances through the analysis period.

There are two sources of costs to the bank from the SMS campaigns: message costs and personnel costs associated with additional staff time incurred at the margin.

Each SMS sent costs the bank \$0.08. For the monthly reminders (and financial education) campaign, the bank sent 12 messages during the twelve-month intervention plus one welcome message at the beginning of the intervention. For the semimonthly SMS campaign, the bank sent 24 messages during the intervention period and a welcome message.

At the scale implemented, sending a batch of messages for each campaign costs the bank two hours of an analyst's time and 0.5 hours of a supervisor's time at the margin. An analyst at the bank earns \$7.69 per hour and a supervisor earns \$13.85 per hour. Hence, total monthly personnel costs of the monthly reminders (and financial education) campaign are

¹⁴The internal validity of this scale-up calculation relies on the assumption that the only channel by which message delivery impacts outcomes is through message receipt. We believe that this assumption holds for the experimental sample because messages were sent directly to eligible youth and there was no control group contamination.

$\$7.69 \times 2 + \$13.85 \times .5 = \$22.31$. Given that 2,595 youth were initially assigned to the monthly reminders campaign, personnel costs are \$0.01 per youth/month (\$0.01 per youth/month in financial education messages). Total monthly personnel costs of the semimonthly campaign are twice those of the monthly campaign, or \$44.61. Given that 2,420 youth were initially assigned to the semimonthly reminders campaign, personnel costs in the semimonthly reminders campaign are \$0.018 per youth/month.

Total monthly costs per youth of the monthly reminders and financial education campaigns are, thus, $\$0.16 + \$0.01 = \$0.17$ per youth in the first month, and $\$0.08 + \$0.01 = \$0.09$ per youth in months two through twelve. Total monthly costs per youth of the semimonthly reminders campaign are, thus, $\$0.24 + \$0.018 = \$0.26$ per youth in month one and $\$0.16 + \$0.018 = \$0.18$ per youth in months two through twelve. Thus, the net present value of total costs for each campaign amounts to \$1.13 dollar/youth for monthly reminders and financial education, and \$2.19 dollar/youth for semimonthly reminders.¹⁵ These costs are a small fraction of balance increases—particularly in the two savings reminders campaigns

As benchmark, consider that the average interest rate offered by a Colombian commercial bank for a 90-day certificate of deposit during the period of analysis was 4.89%. The direct net present cost of raising additional net deposits by \$30.2 and \$39.6 in monthly and semimonthly reminders groups through this alternative channel is the interest the bank would need to pay for such extra balances, which is \$2.53 dollars/youth in monthly reminders and \$3.27 dollars/youth in semimonthly reminders. These costs are higher than the cost of the corresponding reminders campaigns. In other words, relative to a traditional strategy of paying interest on account balances, reminders are a relatively low-cost strategy for the bank to increase balances—at least in the youth population that we study.

10. Conclusions

Under a novel RCT design, this study contributes to the knowledge on how mobile technology can help increase financial capabilities among low-income youth in developing countries. Our results using bank administrative data indicate that low-income youth who open accounts with no explicit savings goals and who receive SMS messages reminding them about savings increase balances in formal bank accounts that have fairly weak savings commitments. These increased balances are primarily the result of reduced value and number of withdrawals relative to the control group. Ancillary, marginally jointly significant, phone survey results suggest possible shifts from home savings into bank accounts, although we cannot precisely determine their magnitude. However, even if there was total substitution, increased formal savings may enhance youth welfare to the extent that it reduces risk and connects them with formal banking opportunities downstream.

In contrast, action-oriented financial education messages that ultimately aimed at encouraging formal savings had a smaller, not statistically significant, effect on account

¹⁵We used the annual inflation rate of Colombia in 2013 of 2.74% to estimate the net present values of the costs and account balances of the SMS campaign.

balances, but some short-term effect on reducing withdrawals, possibly also through shifts from home savings.

Perhaps unsurprisingly, none of the text-message campaigns had measurable effects on self-reported self-control over expenses, financial knowledge as measured by a question on understanding the concept of interest compounding or educational aspirations. These findings contrast with those in Bruhn et al. (2016) who find that a school-level intervention in Brazil increases financial knowledge and financial planning.

The savings effects of reminders persist after the text-message campaign. This is not because youth forget about the accounts. Rather youth in the two reminders groups continue to use the accounts on par with youth in the control but do not deplete balances.

Taken together our results suggest that SMS campaigns in general and savings reminders in particular can help increase formal savings among low-income youths in developing countries, and that the content of those messages likely matters. Given the low-cost of SMS-based communications and the rapid advances in mobile communications technology and mobile banking in developing countries, further understanding how mobile technology use among youths interacts with financial decision-making is a promising area for future research.

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APPENDIX

Table A1.

Financial Education text messages designed by MFO

No.	Financial Education SMS Message	Rationale
1	Every peso counts. Even if you save a small amount each day, it adds up at the end of the month. You can save more than you think! Banco Caja Social	The first message about saving should be encouraging to everyone, including those who can only save a small amount. The message also conveys that the regularity of saving is also crucial.
2	List your expenses as needs or wants. Food is a need, but candy is a want. Cut some of the wants to reach your goal. Banco Caja Social	Kids can reduce spending on unnecessary expenses or “wants”, e.g. jewelry, fashionable clothing, internet, alcohol, activities with friends.
3	Resist pressure to spend. Your friends may buy things now, but you’re saving for more later! When tempted, picture your savings goal in your mind. Banco Caja Social	Kids may feel pressure to spend to maintain their image among their peers, e.g. spend on beauty accessories and the latest fashionable clothes. Kids may also feel pressure to spend while out with their friends.
4	Start a savings trend. Your friends need to save too, even if they don’t admit it! Think of free activities you can do together so you all can save money. Banco Caja Social	Saving is easier when your friends are doing it too. Kids spend money when doing activities with their friends.
5	Find out where your money goes. Track how much you spend on everything for 1 week by writing it down each day. See where you can cut your spending. Banco Caja Social	It is easy to lose track of where we spend all our money. By suggesting to youth to track all their expenses for one week, they can better identify how they are spending their money and decide where they can reduce or eliminate unnecessary expenditures.
6	Spend less than you receive. Calculate how much money you receive in 1 week. If you spend more than you take in, cut your spending and save instead. Banco Caja Social	Identifying the amount of their income can help ensure youth do not spend more than they take in, which is another component of budgeting.
7	Stay one step ahead. Plan how much you’ll spend this week and stick to your limit. You can do it! Banco Caja Social	Encourage youth to be pro-active in managing their money by planning ahead and setting limits to spending before they start spending.
8	You are first. When you receive money, deposit some in your account for your goal first before you start spending. That way it’s easy to save. Banco Caja Social	Encourage a savings habit among youth by making saving the first step before starting to spend on other things.
9	Be street-smart. Keeping all your money at home is like putting all your eggs in 1 basket. Protect your savings by moving the money for your savings goal into the bank. Banco Caja Social	One of the benefits of saving that youth identified in the market research was safety. Encourage youth to move the money they are saving at home for their savings goals into the bank.
10	You are the boss. By opening your account and following a savings plan, you’re in control of your money. Keep saving and you’ll achieve your goal! Banco Caja Social	Leverage the positive feelings of independence and pride youth are likely to feel with having their own savings account and being control of their own money in order to encourage them to continue saving.
11	Think ahead. What things can help or hurt as you try to meet your savings goal? Make the right choices to achieve your goal safely and responsibly. Banco Caja Social	Sometimes low-income youth may resort to risky behaviors or illegal means to obtain money to save, as the market research indicates. This message echoes a similar message from Save the Children’s financial education curriculum.
12	Make savings a habit. Don’t stop saving after you reach one goal. Achieving one goal will help lead you to new goals. Our dreams are endless. Good luck! Banco Caja Social	Kids tend to save only when they have a specific short term goal that they want to achieve. After that specific goal is reached, they stop saving. Encourage youth to continue to save as a habit, not as a short-term measure.

Table A2.

Average characteristics of youths included and excluded from the experimental sample

Youth Characteristic	In final experimental sample	Not in final experimental sample	P-value of joint test of equality of means across four treatment groups
	(1)	(2)	(3)
Age	12.32 (2.94)	11.91 2.50	0.000
Male	0.48 (0.50)	0.50 (0.50)	0.0 43
Strata 1 or 2	0.28 (0.45)	0.29 (0.46)	0.0 46
Strata 3 or 4	0.37 (0.48)	0.45 (0.50)	0.0 00
Strata 5 or 6	0.02 (0.70)	0.03 (0.70)	0.553
Strata missing	0.32 (0.47)	0.23 (0.42)	0.000
Unmarried	0.99 (0.06)	0.99 (0.01)	0.0 00
In school	0.97 (0.10)	0.01 (0.12)	0.030
Attending primary school	0.49 (0.50)	0.59 (0.49)	0.000
Attending secondary school	0.48 (0.50)	0.39 (0.49)	0.000
Attending vocational college	0.01 (0.10)	0.00 (0.03)	0.000
Attending university	0.01 (0.10)	0.00 (0.05)	0.000
Migrant	0.25 (0.43)	0.25 (0.43)	0.415
Has E-Mail	0.15 (0.35)	0.05 (0.22)	0.0 00

Notes: Table reports means and standard deviations for characteristics of BCS bank's Tuticuenta account holders included and not included in the experimental sample. Youth who opened a *Tuticuenta* account in February, March or April of 2013 in any of the 263 bank branches nationwide are initially eligible to participate in the experiment. A total of 14,788 youth are part of this initial selection. We impose two additional restrictions on final experimental sample: having a registered a personal cellphone number in the account application form and among youths with a cellphone, we only included youths who opened a *Tuticuenta* account in a branch were at least three other youths opened *Tuticuenta* accounts. See notes to Table 2 for variable definitions.

Table A3.

Randomization of accounts into treatment and control groups by month of account opening

Group	February	March	April	Total
Financial education	711	738	809	2,258
Monthly reminder	827	868	900	2,595
Semimonthly reminders	769	801	850	2,420
Control group	890	923	958	2,780
Total accounts	3,200	3,343	3,517	10,053

Notes: We used a stratified randomization design to assign accountholders to the different experimental conditions. Each strata is defined by month of account opening and bank branch. Youth who opened a BCS *Tuticuenta* account in February, March or April of 2013 in any of the 263 BCS bank branches nationwide were initially eligible to participate in the experiment. A total of 14,788 youth are part of this initial selection. We imposed two additional restrictions on the final experimental sample that jointly eliminate 4,735 accounts from the sample. First, we only included youth accountholders who at the time of account opening registered a personal cellphone number in the account application form (3,442 accounts). Second, among youths with a cellphone, we only included youths who opened a *Tuticuenta* account in a branch were at least three other youths opened *Tuticuenta* accounts (1,293 accounts).

Table A4.

Telephone survey questions

-
- 1 Do you save in some other place other than in Tuticuenta?
YES (move to # 2) NO (move to # 3)
 - 2 Where else do you save? For instance: Another bank account, moneybox, or in a hidden place.

 - 3 Besides you. Does someone else manage your Tuticuenta?
YES (Who? _____)
 - 4 In a scale from 1 to 5, where 1 is never and 5 is always. How often do you take control over your spending?
NEVER 1 2 3 4 5 ALWAYS
 - 5 What is the maximum level of education that you aspire to complete? (READ OPTIONS)
 - i. Less than secondary.
 - ii. Secondary.
 - iii. Technical college.
 - iv. Technological college.
 - v. University.
 - vi. Graduate (Master or PhD).
 - 6 In a scale from 1 to 5, where 1 means "it is not important" and 5 means "it is very important". How important it is to save for your future?
IT IS NOT IMPORTANT 1 2 3 4 5 IT IS VERY IMPORTANT
 - 7 Imagine that you have \$100 in your Tuticuenta and you receive an annual interest rate of 2%. After 5 years, how much money do you think you will have if you keep all in the account? (READ OPTIONS)
 - a. More than \$102
 - b. Exactly \$102
 - c. Less than \$102
 - d. You do not know.
 - 8 What is the maximum level of education that your mother completed? (READ OPTIONS)
 - a. Less than secondary.
 - b. Completed Secondary.
 - c. Vocational College
 - d. University degree or more.
 - 9 Did you receive the text messages about savings that BCS sent to your cellphone?
YES NO
 - 10 Do you want to continue receiving this kind of messages that BCS sent?
YES NO
-

Table A5.

Comparison of average characteristics of youths who responded the telephone survey across treatment groups

	(1)	(2)	(3)	(4)	(5)
Youth Characteristic	Control	Monthly Financial Education	Monthly Reminder	Semimonthly Reminder	P-value of joint test of equality of means across four treatment groups
Age	12.22 (2.82)	12.60 (3.10)	12.64 (2.66)	12.15 (3.18)	0.457
Male	0.43 (0.50)	0.44 (0.50)	0.52 (0.50)	0.49 (0.50)	0.451
Strata 1 or 2	0.27 (0.44)	0.32 (0.47)	0.30 (0.46)	0.23 (0.42)	0.841
Strata 3 or 4	0.31 (0.47)	0.32 (0.47)	0.35 (0.48)	0.39 (0.49)	0.403
Strata 5 or 6	0.05 (0.23)	0.01 (0.09)	0.03 (0.17)	0.01 (0.09)	0.570
Strata missing	0.37 (0.48)	0.35 (0.48)	0.32 (0.47)	0.37 (0.49)	0.053
Unmarried	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	0.99 (0.09)	0.758
Not in school	0.02 (0.14)	0.01 (0.09)	0.01 (0.10)	0.01 (0.09)	0.750
Attending primary school	0.48 (0.50)	0.50 (0.50)	0.44 (0.50)	0.51 (0.50)	0.573
Attending secondary school	0.50 (0.50)	0.47 (0.50)	0.53 (0.50)	0.44 (0.50)	0.309
Attending vocational college	0.00 (0.00)	0.01 (0.09)	0.00 (0.00)	0.02 (0.13)	0.358
Attending university	0.00 (0.00)	0.02 (0.13)	0.02 (0.14)	0.02 (0.15)	0.409
Migrant	0.22 (0.41)	0.23 (0.42)	0.28 (0.45)	0.23 (0.42)	0.707
Initial balance	\$46.34 (200.36)	\$22.96 (47.32)	\$32.17 (90.11)	\$16.57 (27.33)	0.194
Phone Survey response rate	0.33	0.32	0.25	0.32	
Number of accounts	147	118	100	126	

Notes: Numbers in parentheses are standard deviations. Table shows tests of equality of means of key socioeconomic variables and initial balances (in US dollars of 2015) across four treatment groups for youths who responded the telephone survey. These variables are obtained from BCS bank's account application form and include age, gender, socioeconomic strata (classification of residential property should receive public services, it is performed mainly to charge differentially public services), marital status, education level, and migrant (it is a dummy variable and it is true if accountholder opened Tuticuenta account in a different municipality of his birth. Socioeconomic strata is a proxy for household wealth based on residential location taking the values of 1 (lowest) to 6 (highest)).

Table A6.

Comparison of average characteristics of youths sampled and respondents of phone survey

	(1)	(2)	(3)
Youth Characteristic	P-value of joint test of equality of means across two groups (selected for phone survey and not-selected)	P-value of joint test of equality of means across two groups (Respondents vs. Nonrespondents)	P-value of joint test of equality of means across two groups (Respondents vs. Not in survey)
Age	0.217	0.781	0.666
Male	0.548	0.715	0.476
Strata 0 (missing)	0.048	0.603	0.140

Youth Characteristic	(1)	(2)	(3)
	P-value of joint test of equality of means across two groups (selected for phone survey and not-selected)	P-value of joint test of equality of means across two groups (Respondents vs. Nonrespondents)	P-value of joint test of equality of means across two groups (Respondents vs. Not in survey)
Strata 1 – 2	0.589	0.709	0.966
Strata 3–4	0.022	0.765	0.150
Strata 5–6	0.718	0.678	0.873
Single	0.586	0.356	0.557
Primary	0.561	0.889	0.791
Secondary	0.721	0.869	0.896
Technical/Technological	0.510	0.468	0.351
University	0.465	0.064	0.284
Migrant	0.645	0.379	0.600
Number of observations by groups	Selected for phone survey: 1,620 Not selected: 8,433	Respondents: 491 Non-respondents: 1,129	Respondents: 491 Not in survey : 9,562

Notes: Numbers present the p-values obtained from joint tests of equality of means of the socioeconomic characteristics detailed in Table 1 across different groups of youths from the RCT. Column 1 test differences in socioeconomic characteristics between youths randomly selected for the phone survey with those who were not-selected. Column 2 analyzes differences between those youths randomly selected to be part of the survey who responded to it with those who were selected but did not respond. Column 3 compares characteristics of youths who responded to the survey with those who were not selected to participate on the survey.

Table A7.

Tuticuenta Account Balances During Twelve-Month Text-Message Campaign – Balances without normalizing at the individual level to month zero

Equation Outcome	(1)	(2)	(3)	(4)	(5)
	Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
Net Balance After 1 Month	59.6	4.21 (6.25)	1.77 (4.66)	12.87 (9.69)	0.302
Net Balance After 2 Months	58.1	6.82 (9.14)	7.70 (6.66)	17.09* (9.50)	0.229
Net Balance After 3 Months	60.9	8.66 (9.11)	4.22 (7.36)	13.05 (8.33)	0.395
Net Balance After 4 Months	74.2	−12.01 (10.33)	−3.88 (10.97)	3.56 (11.19)	0.424
Net Balance After 5 Months	70.5	−4.02 (9.52)	−3.53 (8.85)	14.29 (10.97)	0.156
Net Balance After 6 Months	65.7	0.73 (9.09)	5.47 (8.91)	25.86** (11.49)	0.026
Net Balance After 7 Months	63.9	3.45 (9.65)	17.93* (10.78)	36.60*** (13.89)	0.007
Net Balance After 8 Months	72.4	−7.34 (10.71)	7.07 (11.98)	36.47* (20.16)	0.018

	(1)	(2)	(3)	(4)	(5)
Equation Outcome	Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
Net Balance After 9 Months	71.0	-3.06 (9.52)	14.14 (11.22)	35.06 ** (17.15)	0.013
Net Balance After 10 Months	68.8	-1.56 (9.45)	8.54 (10.62)	28.69 ** (14.37)	0.044
Net Balance After 11 Months	69.3	-5.50 (8.79)	13.34 (11.65)	25.32 * (14.18)	0.041
Net Balance After 12 Months	72.4	-2.07 (9.57)	2.70 (10.12)	16.53 (13.73)	0.368
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.257	0.004	0.001	0.039
Observations					

Notes: Monthly Tuticuenta account balances are in US dollars. Columns 1,2 and 3 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional controls are those in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times within each randomization strata to construct significance tests, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

* p<0.10

** p<0.05

*** p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table A8.

Randomization p-values for equality of account balance treatment effects across groups

Month	Financial Ed = Monthly Reminders	Financial Ed = Semimonthly Reminders	Monthly Reminders = Semimonthly Reminders
	(1)	(2)	(3)
A. During the SMS campaign			
1	0.81	0.33	0.32
2	0.43	0.29	0.56
3	0.71	0.53	0.63
4	0.12	0.10	0.84
5	0.40	0.11	0.20
6	0.25	0.04	0.17
7	0.09	0.02	0.35
8	0.08	0.03	0.23
9	0.05	0.03	0.40
10	0.13	0.05	0.36

Month	Financial Ed = Monthly Reminders	Financial Ed = Semimonthly Reminders	Monthly Reminders = Semimonthly Reminders
	(1)	(2)	(3)
11	0.03	0.04	0.74
12	0.22	0.16	0.62
B. After the SMS campaign			
13	0.12	0.11	0.83
14	0.44	0.25	0.50
15	0.14	0.02	0.17
16	0.28	0.03	0.12
17	0.39	0.10	0.26
18	0.30	0.09	0.31
19	0.26	0.10	0.38
20	0.13	0.10	0.60

Notes: Table reports the p-value for various tests of equality of treatment effects on net account balances. Regressions models include branch and opening month fixed effects to account for the stratified random assignment design, with standard errors clustered at month of opening by branch. Additional control variables include age, strata dummies, education level dummies as in Table 2, gender and migrant status of accountholder.

Table A9.

Tuticuenta Account Balances After Twelve-Month Text-Message Campaign – Balances without normalizing at the individual level to month zero

	(1)	(2)	(3)	(4)	(5)
Equation Outcome	Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
Net Balance After 13 Months	69.7	2.10 (10.37)	21.90 (18.13)	24.77 [*] (13.86)	0.237
Net Balance After 14 Months	67.9	7.19 (13.00)	7.32 (9.98)	24.25 [*] (14.06)	0.281
Net Balance After 15 Months	66.4	-5.56 (9.22)	1.83 (9.25)	29.35 ^{**} (14.62)	0.006
Net Balance After 16 Months	67.4	-0.62 (10.73)	2.44 (10.44)	33.69 ^{**} (15.66)	0.010
Net Balance After 17 Months	69.1	1.34 (11.54)	1.64 (10.44)	26.31 [*] (15.20)	0.103
Net Balance After 18 Months	65.8	2.76 (10.77)	5.73 (10.66)	29.11 [*] (15.00)	0.088
Net Balance After 19 Months	64.3	3.86 (10.38)	7.75 (10.55)	30.47 [*] (15.81)	0.090
Net Balance After 20 Months	63.0	4.00 (10.16)	15.11 (12.07)	32.92 [*] (16.95)	0.104
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.574	0.351	0.028	0.110
Observations					

Notes: Monthly Tuticuenta account balances are in US dollars. Columns 1,2 and 3 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional controls are those in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times within each randomization strata to construct significance tests, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10

**
p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table A10.

Number of Withdrawals During Text-Message Campaign

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Number of Withdrawals	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
After 1 Month	0.52	-0.07 (0.05)	-0.09 (0.06)	-0.12 ** (0.05)	0.08
After 2 Months	0.92	-0.08 (0.08)	-0.12 (0.08)	-0.13 (0.09)	0.27
After 3 Months	1.31	-0.09 (0.11)	-0.12 (0.11)	-0.15 (0.11)	0.47
After 4 Months	1.66	-0.07 (0.14)	-0.06 (0.15)	-0.16 (0.14)	0.69
After 5 Months	2.01	-0.08 (0.16)	-0.10 (0.19)	-0.20 (0.16)	0.64
After 6 Months	2.42	-0.14 (0.20)	-0.18 (0.22)	-0.29 (0.19)	0.46
After 7 Months	2.76	-0.16 (0.23)	-0.21 (0.25)	-0.35 (0.22)	0.41
After 8 Months	3.09	-0.23 (0.26)	-0.24 (0.26)	-0.37 (0.24)	0.45
After 9 Months	3.39	-0.21 (0.28)	-0.28 (0.28)	-0.35 (0.26)	0.52
After 10 Months	3.65	-0.18 (0.30)	-0.27 (0.29)	-0.35 (0.28)	0.59
After 11 Months	3.94	-0.19 (0.32)	-0.28 (0.31)	-0.33 (0.29)	0.66
After 12 Months	4.42	-0.20 (0.34)	-0.26 (0.33)	-0.32 (0.31)	0.73
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.026	0.012	0.022	0.239
Observations	10,053				

Notes: Dependent variable is cumulative number of withdrawals and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10

**
p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table A11.

Number of Deposits During Text-Message Campaign

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Number of Deposits	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
After 1 Month	0.4	0.01(0.02)	-0.01(0.02)	-0.01(0.02)	0.795
After 2 Months	0.7	0.02(0.04)	-0.03(0.03)	0.02(0.04)	0.632
After 3 Months	1.0	0.03(0.05)	-0.02(0.05)	0.04(0.06)	0.607
After 4 Months	1.2	0.04(0.06)	-0.02(0.06)	0.05(0.07)	0.701
After 5 Months	1.5	0.03(0.08)	-0.05(0.07)	0.05(0.09)	0.577
After 6 Months	1.7	0.05(0.09)	-0.07(0.08)	0.05(0.11)	0.481
After 7 Months	2.0	0.05(0.10)	-0.08(0.10)	0.05(0.12)	0.585
After 8 Months	2.2	0.03(0.11)	-0.08(0.11)	0.05(0.14)	0.713
After 9 Months	2.4	0.04(0.12)	-0.09(0.12)	0.07(0.16)	0.646
After 10 Months	2.5	0.03(0.13)	-0.10(0.13)	0.09(0.17)	0.634
After 11 Months	2.7	0.04(0.14)	-0.09(0.14)	0.11(0.18)	0.640
After 12 Months	3.0	0.04(0.15)	-0.11(0.15)	0.10(0.20)	0.661
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.386	0.157	0.088	0.412
Observations	10,053				

Notes: Dependent variable is cumulative number of deposits and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10
**
p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table A12.**Withdrawal Amounts After Text-Message Campaign**

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Value of Withdrawals	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level joint treatment joint significance tests (Randomization p-value)
After 13 Months	371.8	−32.49(44.37)	−49.27(45.20)	−31.93 (44.70)	0.670
After 14 Months	396.2	−31.64(46.61)	−37.37(51.46)	−32.13(46.57)	0.833
After 15 Months	416.9	−20.50(50.87)	−34.28(54.17)	−29.39(48.73)	0.904
After 16 Months	436.5	−20.96(52.95)	−35.19(55.43)	−22.77(50.84)	0.922
After 17 Months	456.9	−24.69(54.62)	−36.79(56.32)	−15.34(52.56)	0.916
After 18 Months	475.8	−24.29(55.73)	−38.83(57.40)	−10.15(54.36)	0.897
After 19 Months	494.5	−28.94(56.75)	−40.09(58.63)	−9.72(55.86)	0.882
After 20 Months	515.0	−35.84(57.96)	−43.91(60.10)	−10.12(57.39)	0.849
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.183	0.600	0.351	0.713
Observations	10,053				

Notes: Dependent variable is cumulative value of withdrawals and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*

p<0.10

**

p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table A13.**Number of Withdrawals After Text-Message Campaign**

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Number of Withdrawals	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level joint treatment joint significance tests (Randomization p-value)
After 13 Months	4.75	−0.21 (0.36)	−0.30 (0.35)	−0.35 (0.33)	0.710

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Number of Withdrawals	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level joint treatment joint significance tests (Randomization p-value)
After 14 Months	5.05	−0.22 (0.39)	−0.31 (0.37)	−0.31 (0.35)	0.768
After 15 Months	5.33	−0.21 (0.41)	−0.31 (0.38)	−0.29 (0.37)	0.813
After 16 Months	5.59	−0.21 (0.43)	−0.33 (0.40)	−0.27 (0.38)	0.825
After 17 Months	5.83	−0.23 (0.46)	−0.35 (0.41)	−0.24 (0.40)	0.853
After 18 Months	6.07	−0.23 (0.48)	−0.36 (0.43)	−0.20 (0.42)	0.858
After 19 Months	6.31	−0.25 (0.49)	−0.37 (0.44)	−0.19 (0.44)	0.861
After 20 Months	6.54	−0.27 (0.50)	−0.38 (0.46)	−0.18 (0.46)	0.859
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.915	0.981	0.168	0.952
Observations	10,053				

Notes: Dependent variable is cumulative number of withdrawals and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10
**
p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table A14.

Deposit Amounts After Text-Message Campaign

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Value of Deposits	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint joint significance tests (Randomization p-value)
After 13 Months	385.6	−27.90 (43.83)	−15.10 (50.02)	−1.33 (46.00)	0.923
After 14 Months	408.2	−21.63 (48.04)	−16.39 (52.21)	−1.28 (47.87)	0.963
After 15 Months	427.6	−23.11 (49.75)	−18.14 (53.66)	6.91 (49.80)	0.923
After 16 Months	448.4	−18.60 (52.81)	−18.55 (55.18)	20.16 (52.37)	0.871
After 17 Months	470.5	−20.32 (54.45)	−20.66 (55.97)	20.36 (54.25)	0.863

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Value of Deposits	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
After 18 Months	486.1	−18.55 (55.50)	−18.78 (57.38)	28.27 (56.14)	0.815
After 19 Months	503.5	−21.97 (56.50)	−17.43 (58.53)	30.43 (57.60)	0.795
After 20 Months	523.0	−29.04 (57.68)	−14.13 (60.36)	32.21 (59.87)	0.763
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.549	0.984	0.099	0.733
Observations	10,053				

Notes: Dependent variable is cumulative value of deposits and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10

**
p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table A15.

Number of Deposits After Text-Message Campaign

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Number of Deposits	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level joint treatment joint significance tests (Randomization p-value)
After 13 Months	3.19	0.03 (0.16)	−0.12 (0.16)	0.12 (0.22)	0.601
After 14 Months	3.35	0.04 (0.17)	−0.13 (0.17)	0.15 (0.23)	0.550
After 15 Months	3.51	0.05 (0.18)	−0.13 (0.18)	0.15 (0.25)	0.583
After 16 Months	3.65	0.06 (0.19)	−0.12 (0.19)	0.18 (0.26)	0.582
After 17 Months	3.81	0.05 (0.20)	−0.12 (0.20)	0.18 (0.29)	0.636
After 18 Months	3.95	0.06 (0.21)	−0.12 (0.21)	0.20 (0.30)	0.606
After 19 Months	4.10	0.07 (0.22)	−0.13 (0.21)	0.23 (0.33)	0.587
After 20 Months	4.23	0.09 (0.22)	−0.12 (0.22)	0.26 (0.35)	0.552

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Number of Deposits	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level joint treatment joint significance tests (Randomization p-value)
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.665	0.835	0.103	0.891
Observations	10,053				

Notes: Dependent variable is cumulative number of deposits and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

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p<0.10

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p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Figure A1. Number of Tuticuenta accounts opened at BCS bank in 2013 and months chosen for inclusion in the randomization sample

Notes: Youth who opened a *Tuticuenta* account in February, March or April of 2013 in any of the 263 bank branches nationwide were initially eligible to participate in the experiment. A total of 14,788 youth are part of this initial selection. Further restrictions are applied to obtain the final randomization sample. See text and notes to Table A2 for details.

Figure A2. Net *Tuticuenta* Account Balances over Time by Treatment Assignment Status (unnormalized balances)

Notes: Figure shows the evolution over time of average net *Tuticuenta* account balances for each treatment group. Months are normalized with respect to account opening month. The vertical line at month twelve depicts the end of the text-message campaign. Balances converted to US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4, 2015.

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Highlights

- SMS savings reminders have persistent effects on low-income youth's formal savings.
- Financial education SMS had a smaller, not significant, effect on account balances.
- Less withdrawals, partly through saving shifts from home to bank, explain results.
- SMS reminders are highly cost-effective at increasing bank savings among youth.

Figure 1. Net Tuticuenta Account Balances over Time by Treatment Group

Notes: Figure shows the evolution over time of average net *Tuticuenta* account balances for each treatment group. Balances are normalized for each individual to be zero at account opening month. Months are normalized with respect to account opening month. The vertical line at month twelve depicts the end of the text-message campaign. Balances converted to US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4, 2015.

Figure 2. Cumulative Value of Withdrawals Over Time by Treatment Group

Notes: Figure shows the evolution over time of average cumulative value of withdrawals for each treatment group, normalized to be zero at account opening month. Months are normalized with respect to account opening month. The vertical line at month twelve depicts the end of the text-message campaign. Balances converted to US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4, 2015.

Figure 3. Cumulative Value of Deposits Over Time by Treatment Group

Notes: Figure shows the evolution over time of average cumulative value of deposits for each treatment group, normalized to be zero at account opening month. Months are normalized with respect to account opening month. The vertical line at month twelve depicts the end of the text-message campaign. Balances converted to US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4, 2015.

Figure 4. Kaplan-Meier Plots of Account Closure Hazards by Treatment Status

Notes: Figure shows the Kaplan Meier plot of the evolution over time of closure hazard of *Tuticuenta* accounts for each treatment group. Y-axis is the fraction of Tuticuenta accounts in the experimental sample (N=10,053) that are open in a given month, by treatment group. Months are normalized to be zero at account opening month.

Figure 5. Kaplan-Meier Plots of Account Activity Hazards by Treatment Status

Notes: Figure shows the Kaplan Meier plot of the evolution over time of *Tuticuenta* accounts activity hazard for each treatment group. Y-axis is the fraction of Tuticuenta accounts in the experimental sample (N=10,053) that are active in a given month, by treatment group. Months are normalized to be zero at account opening month. An account is inactive if no transactions occur within a 6-month period. By definition, no account is inactive in the first six months since opening.

Table 1.

Sample Characteristics and Randomization Balance

Youth Characteristic	Control	Monthly Financial Education	Monthly Reminder	Semimonthly Reminder	P-value, joint test of equality of means across four experimental groups
Age	12.43 (2.93)	12.26 (2.84)	12.25 (3.06)	12.33 (2.88)	0.108
Male	0.47 (0.50)	0.49 (0.50)	0.48 (0.50)	0.49 (0.50)	0.609
Strata 1 or 2	0.27 (0.44)	0.28 (0.45)	0.27 (0.45)	0.29 (0.45)	0.623
Strata 3 or 4	0.38 (0.49)	0.36 (0.48)	0.38 (0.49)	0.37 (0.48)	0.406
Strata 5 or 6	0.03 (0.17)	0.02 (0.15)	0.03 (0.17)	0.02 (0.14)	0.202
Strata missing	0.32 (0.47)	0.34 (0.47)	0.32 (0.47)	0.32 (0.47)	0.522
Unmarried	0.99 (0.06)	0.99 (0.05)	0.99 (0.07)	0.99 (0.05)	0.385
Not in school	0.01 (0.10)	0.01 (0.10)	0.01 (0.10)	0.01 (0.09)	0.870
Attending primary school	0.47 (0.50)	0.49 (0.50)	0.50 (0.50)	0.49 (0.50)	0.254
Attending secondary school	0.49 (0.50)	0.48 (0.50)	0.47 (0.50)	0.48 (0.50)	0.511
Attending vocational college	0.01 (0.11)	0.01 (0.08)	0.01 (0.11)	0.01 (0.10)	0.401
Attending university	0.01 (0.11)	0.01 (0.10)	0.01 (0.09)	0.01 (0.10)	0.556
Migrant	0.24 (0.42)	0.25 (0.43)	0.25 (0.43)	0.25 (0.43)	0.503
Initial balance	\$60.5 (451.7)	\$51.4 (511.7)	\$39.3 (233.9)	\$48.3 (266.5)	0.240
Number of accounts	2,780	2,258	2,595	2,420	

Notes: Numbers in parentheses are standard deviations. Table shows tests of equality of means of key socioeconomic variables and initial balances (in US dollars of 2015) across four treatment groups. These variables are obtained from BCS bank's account application form and include age, gender, socioeconomic strata (classification of residential property should receive public services, it is performed mainly to charge differentially public services), marital status, education level, and migrant (it is a dummy variable and it is true if accountholder opened Tuticuenta account in a different municipality of his birth).

Table 2.*Tuticuenta* Net Account Balances During Twelve-Month Text-Message Campaign

	(1)	(2)	(3)	(4)	(5)
Equation Outcome	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
Net Balance After 1 Month	−0.9	5.30 (7.80)	6.93 (5.52)	15.46 (9.57)	0.243
Net Balance After 2 Months	−2.5	8.94 (12.79)	17.73 ** (7.94)	22.14 ** (10.20)	0.094
Net Balance After 3 Months	0.4	10.96 (13.04)	15.13 * (8.85)	18.56 * (9.69)	0.245
Net Balance After 4 Months	13.7	−9.52 (14.33)	7.82 (11.97)	9.49 (12.08)	0.355
Net Balance After 5 Months	9.9	−1.29 (14.81)	9.35 (10.36)	20.82 * (11.81)	0.192
Net Balance After 6 Months	5.2	3.52 (14.91)	18.62 * (10.35)	32.55 *** (12.26)	0.025
Net Balance After 7 Months	3.4	6.17 (15.19)	30.77 ** (12.09)	43.15 *** (14.57)	0.004
Net Balance After 8 Months	11.9	−4.55 (15.86)	20.18 (13.10)	43.14 ** (20.66)	0.013
Net Balance After 9 Months	10.5	−0.22 (15.24)	27.51 ** (12.48)	41.89 ** (17.87)	0.010
Net Balance After 10 Months	8.3	1.39 (15.28)	22.47 * (11.95)	35.80 ** (16.10)	0.029
Net Balance After 11 Months	8.8	−2.45 (15.16)	27.74 ** (12.99)	32.69 ** (16.12)	0.019
Net Balance After 12 Months	11.9	1.12 (15.72)	17.76 (11.96)	24.26 (15.83)	0.213
Omnibus Test of Treatment Joint Significance:					
Randomization p-value		0.248	0.003	0.0006	0.041
Observations	10,053				

Notes: Net monthly Tuticuenta account balances are in US dollars and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows normalized control means. Columns 2, 3 and 4 show coefficients of interest regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the omnibus test of treatment joint significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at the month of opening by branch in parentheses.

*
p<0.10

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p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

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Table 3.*Tuticuenta* Net Account Balances After Twelve-Month Text-Message Campaign

	(1)	(2)	(3)	(4)	(5)
Equation Outcome	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder (	Equation-level treatment joint significance tests Randomization p-value)
Net Balance After 13 Months	9.2	5.12 (16.07)	36.14 ** (18.30)	32.08 ** (15.85)	0.072
Net Balance After 14 Months	7.4	10.47 (18.06)	22.88 * (12.28)	32.18 ** (16.11)	0.154
Net Balance After 15 Months	5.9	-2.14 (15.62)	18.00 (12.35)	37.63 ** (16.62)	0.021
Net Balance After 16 Months	6.9	2.79 (16.35)	18.50 (12.98)	41.91 ** (17.33)	0.021
Net Balance After 17 Months	8.6	4.75 (16.98)	17.78 (13.16)	34.59 ** (17.10)	0.096
Net Balance After 18 Months	5.2	6.13 (16.41)	21.68 (13.26)	37.30 ** (16.97)	0.068
Net Balance After 19 Months	3.8	7.36 (16.54)	24.26 * (13.60)	38.94 ** (18.14)	0.065
Net Balance After 20 Months	2.4	7.49 (16.47)	31.61 ** (14.92)	41.40 ** (19.16)	0.048
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.590	0.173	0.025	0.137
Observations	10,053				

Notes: Net Monthly Tuticuenta account balances are in US dollars and are normalized at the individual-level to be zero in account-opening month (month zero). Column 1 shows normalized control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 2, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10

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p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table 4.**Cumulative Net Withdrawal Amounts During Text-Message Campaign**

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Value of Withdrawals	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
After 1 Month	38.3	−9.58 (8.34)	−14.91 ** (6.90)	−5.14 (8.66)	0.196
After 2 Months	67.3	−6.71 (13.76)	−24.87 ** (10.16)	−9.76 (12.83)	0.151
After 3 Months	94.0	−6.08 (15.88)	−26.56 ** (12.87)	−9.89 (17.43)	0.292
After 4 Months	126.6	−4.50 (20.00)	−32.84 * (17.78)	−18.29 (20.32)	0.245
After 5 Months	161.4	−14.59 (23.15)	−41.05 * (22.81)	−37.13 (22.59)	0.147
After 6 Months	190.3	−13.59 (26.47)	−49.51 * (25.42)	−40.45 (25.22)	0.112
After 7 Months	220.6	−19.05 (30.37)	−61.84 ** (29.45)	−51.26 * (29.03)	0.063
After 8 Months	246.9	−21.73 (33.37)	−53.33 (32.45)	−50.76 (32.30)	0.194
After 9 Months	278.5	−29.66 (36.47)	−63.28 * (35.69)	−50.21 (35.71)	0.199
After 10 Months	304.9	−32.05 (38.66)	−61.04 (37.62)	−41.12 (39.58)	0.358
After 11 Months	326.2	−30.29 (40.89)	−58.95 (39.56)	−34.39 (41.32)	0.455
After 12 Months	348.6	−30.64 (42.86)	−51.94 (42.50)	−32.07 (43.11)	0.606
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.563	0.002	0.014	0.085
Observations	10,053				

Notes: Dependent variable is cumulative net Tuticuenta withdrawals amounts in US dollars and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression estimation models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 2, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

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p<0.10

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p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table 5.**Cumulative Deposit Amounts During Text-Message Campaign**

	(1)	(2)	(3)	(4)	(5)
Equation Outcome: Cumulative Value of Deposits	Normalized Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Equation-level treatment joint significance tests (Randomization p-value)
After 1 Month	37.8	−4.36 (6.27)	−8.06 (6.25)	10.15 (13.06)	0.265
After 2 Months	65.5	2.08 (11.11)	−7.28 (9.74)	12.13 (15.18)	0.470
After 3 Months	95.3	4.68 (13.62)	−11.52 (12.98)	8.38 (16.85)	0.543
After 4 Months	141.5	−14.25 (18.50)	−25.09 (20.13)	−8.83 (21.39)	0.597
After 5 Months	172.7	−16.05 (22.04)	−31.75 (23.70)	−16.35 (24.03)	0.538
After 6 Months	198.0	−11.04 (25.14)	−31.94 (26.23)	−8.76 (26.89)	0.593
After 7 Months	227.6	−13.36 (29.72)	−33.00 (30.19)	−9.93 (31.30)	0.687
After 8 Months	262.6	−26.77 (33.50)	−35.07 (34.65)	−9.23 (36.95)	0.698
After 9 Months	293.0	−30.38 (35.80)	−37.73 (36.77)	−9.92 (39.00)	0.682
After 10 Months	317.4	−31.21 (37.92)	−40.56 (37.86)	−6.97 (40.41)	0.645
After 11 Months	339.2	−33.27 (39.19)	−33.17 (39.83)	−3.33 (41.98)	0.721
After 12 Months	364.9	−30.06 (41.67)	−36.15 (42.48)	−9.42 (43.91)	0.795
Omnibus Test of Treatment Joint Significance					
Randomization p-value		0.277	0.601	0.087	0.691
Observations	10,053				

Notes: Dependent variable is cumulative Net Tuticuenta deposits amounts in US dollars and are normalized at the individual level to be zero in account-opening month (month zero). Column 1 shows control means. Columns 2, 3 and 4 show coefficients of interest of regression models that include branch and opening month fixed effects to account for the stratified random assignment design. Additional control variables include age, strata dummies, education level dummies as in Table 2, gender and migrant status of accountholder. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata to construct significance tests for each time period we observe, and to calculate an omnibus test of overall significance that combines all outcomes (Young, 2018). Column 5 presents the randomized p-value of the equation-level joint treatment joint significance tests for each month. The last row presents the randomization p-value of the Omnibus Test of Treatment Joint Significance for each treatment separately. All results reflect those obtained from randomization c as suggested by Young (2018). Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10

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p<0.05

p<0.01.

All monetary variables were calculated in US dollars using the market representative rate of 1USD for 2393.58 Colombian pesos, from May 4 2015.

Table 6.

Randomization-based Omnibus Joint Significance Tests: All Outcomes (p-values)

	(1)	(2)	(3)	(4)
Outcome Variable	Financial Education	Monthly Reminder	Semimonthly Reminder	Joint Treatments
<i>Intervention period: Months 1–12</i>				
Net Balance	0.248	0.003	0.001	0.041
Cumulative Deposits	0.277	0.601	0.087	0.691
Cumulative Number of Deposits	0.386	0.157	0.088	0.412
Cumulative Withdrawals	0.563	0.002	0.014	0.085
Cumulative Number of Withdrawals	0.026	0.012	0.022	0.239
<i>Post-Intervention Period: Months 13–20</i>				
Net Balance	0.590	0.173	0.025	0.137
Cumulative Deposits	0.549	0.984	0.099	0.733
Cumulative Number of Deposits	0.665	0.835	0.103	0.891
Cumulative Withdrawals	0.183	0.600	0.351	0.713
Cumulative Number of Withdrawals	0.915	0.981	0.168	0.952

Notes: Table presents the randomization pvalue of the Omnibus Test of Treatment Joint Significance for each treatment separately (columns 1, 2 and 3) and any treatment jointly (column 4) obtained from of OLS estimation models that include branch and opening month fixed effects to account for the stratified random assignment design and control variables include age, strata dummies, education level dummies as in Table 1, gender and migrant status of accountholder, with standard errors clustered at month of opening by bank branch. We use randomization inference and re-randomize 2,000 times treatment assignments across participants within each randomization strata as suggested by Young (2018).

Table 7.**Phone Survey Results**

	(1)	(2)	(3)	(4)	(5)
Outcome	Control Mean	Financial Education	Monthly Reminder	Semimonthly Reminder	Any Treatment Joint Significance
<i>A. Savings substitution</i>					
Saves elsewhere	0.374	−0.13 (0.10)	−0.17 (0.13)	−0.15 (0.11)	−0.15 * (0.09)
Saves in another bank account	0.027	−0.04 (0.04)	0.02 (0.06)	0.00 (0.05)	−0.01 (0.04)
Saves at home	0.347	−0.09 (0.10)	−0.19 (0.11)	−0.15 (0.10)	−0.14 * (0.08)
<i>B. Control over spending, aspirations and financial knowledge</i>					
Always or very often controls monthly spending	0.347	0.07 (0.12)	0.07 (0.12)	0.13 (0.11)	0.09 (0.10)
Understands interest concept	0.327	−0.07 (0.11)	−0.02 (0.12)	−0.08 (0.10)	−0.06 (0.09)
Has graduate school education level aspirations	0.367	0.00 (0.10)	−0.00 (0.12)	0.07 (0.12)	0.03 (0.09)
<i>C. Text-message recall and control over account</i>					
Proportion of respondents who recall receiving SMS	N.A.	0.364	0.380	0.437	0.395
Someone else also has control over <i>Tuticuenta</i>	0.381	−0.08 (0.11)	−0.17 (0.11)	−0.03 (0.13)	−0.09 (0.10)
Observations		491			

Note: Table shows treatment assignment estimates from linear probability (OLS) models based on phone survey data. Control variables not shown include age, strata, education level dummies as in Table 2, gender and migrant status of accountholder as well as branch-month opening month fixed effects. Standard errors clustered at month of opening by bank branch in parentheses.

*
p<0.10

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p<0.05

p<0.01.