Keep It Simple:
A Field Experiment on Information Sharing among Strangers*

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Abstract

SMS information campaigns are increasingly used for policy. We conduct a field experiment to study information sharing through mobile phone messages. Subjects are rural households in Mozambique who have access to mobile money. In the baseline intervention, subjects receive an SMS containing simple instructions on how to redeem a voucher for mobile money. They can share this non-rival information with other exogenously assigned subjects unknown to them. We find that few participants redeem the voucher. They nonetheless share it with others and many share information about the voucher they do not use themselves. The voucher is shared more when no information is provided on the receiver. When partial information is provided, we find no evidence of more sharing with subjects who have similar characteristics. We introduce treatments to increase the cost of sending a message, shame those who do not send the voucher to others, or allow subjects to appropriate the value of the voucher. All these treatments decrease information sharing. To encourage information diffusion among strangers, the best is to 'keep it simple'.

JEL codes: D83, D64, O33.

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Many policy interventions rely on messages to convey information to a target audience so as to induce behavioral changes – e.g., letters (e.g., *Hjort et al. 2019*), SMS (e.g., *Alsan et al. 2020, Afzal et al, 2020, J-Pal 2020*), mobile phones (e.g., *Cole and Fernando 2020, Kelley et al. 2020*), and social media (e.g., *Alatas et al. 2019*). The use of messages has further increased since the onset of the COVID-19 pandemic (e.g., *Banerjee et al. 2021*). In many interventions, the policy maker has individual identifiers (e.g., phone numbers) for only a fraction of those he/she wishes to target. Consequently, reaching other interested individuals through information diffusion is often essential for the policy to succeed. Yet we know little about how to motivate people to share information with others, especially people they do not know. This paper seeks to address this knowledge gap.

The sharing of valuable information is at the heart of many important economic processes, such as: the diffusion of new technology (e.g., *Ryan and Gross 1943*; *Griliches* 1957; *Foster and Rosenzweig 1995*; *Bandiera and Rasul 2006*; *Beaman et al. 2015*; *Carter et al. 2016; Vilela* 2019; *Cole and Fernando 2020*); the adoption of new consumer products (e.g., *Fafchamps et al. 2017*); credit reference services (e.g., *Kandori 1992*; *Greif 1993*); information about market opportunities (e.g., *Granovetter 1974*; *Fafchamps and Minten 2012*; *Kelly et al. 2020*); and the referral of workers and trainees (e.g., *Beaman and Magruder 2012*; *Fafchamps et al. 2020*). Information sharing is also essential to social learning, i.e., the process by which crowds form inference by aggregating dispersed information (e.g., *Golub and Jackson 2010, Chandrasekhar et al. 2020*).

Two key maintained assumptions underlie much of this work. First, it is often implicitly assumed that people are willing to share information when doing so brings no immediate or delayed benefit. In practice, however, even when the information itself is non-rival, sharing it typically imposes a cost on the sender. Secondly, the recipient is assumed to trust the information provided. This assumption is made even though, in many cases, the quality of the information cannot be verified, or can only be verified at a cost. If these two assumptions are violated, some valuable information may not be shared, and some shared information may not be believed (e.g., *Allcott and Gentzkow 2017*).

Epidemiological models of diffusion on networks (e.g., see excellent reviews by *Vega-Redondo 2007* and *Jackson 2010*) have demonstrated that small changes in the probability that a message is successfully transferred between two nodes can have dramatic effects on the spread of information.[1] Given this, it is somewhat surprising that little empirical research has sought to ascertain the extent to which individuals successfully share valuable information with each other. We know little about whether recipients actually read or believe the messages they receive and under which conditions they forward these messages to others. This lack of knowledge

[1]For instance, in Poisson random networks with n nodes, a giant component emerges when the link probability p rises above $\frac{1}{n}$ and it grows in size until p reaches $\frac{\log(n)}{n}$, at which point the network becomes fully connected. This means that if p represents the probability with which information is successfully transferred between two arbitrary nodes in a large network, when $p < \frac{1}{n}$ only a vanishingly small proportion of nodes will be informed, while if $p > \frac{\log(n)}{n}$, all nodes will be informed. It follows that small frictions in information sharing can have large consequences on information spread and thus on efficiency.

is particularly acute for information shared among strangers on social media – or, in lower income countries, on mobile phone platforms such as those introduced to share information among farmers (e.g., *Cole and Fernando 2020*) or between employers and jobseekers (e.g., *Kelley et al. 2020*).[2]

The purpose of this paper is to investigate these research questions formally using an original field experiment implemented through text messages on mobile phones in Africa. All the social diffusion processes mentioned at the onset of this paper share a common difficulty: the value of non-rival information varies across recipients in ways that are difficult if not impossible for senders to predict. Not only does this uncertainty disincentivize the sharing of non-rival information, it also creates variation in the willingness to share that depends on (unobserved) expectations about benefits to others. To sidestep this difficulty and maximize the power of our experiment, we standardize the value of information across all subjects: it is about a voucher for free money, the value of which is fixed, revealed to all senders, and verifiable by them.

In our baseline intervention, selected subjects receive an SMS voucher that they can redeem for mobile money. Having received the SMS, subjects can offer the same voucher opportunity to up to four other subjects who, in turn, can redeem it for cash and get the same voucher to others. This information transfer process goes on for several rounds. We focus our attention on whether people redeem the voucher and/or whether they pass it on to others. This experimental design mimics the process by which people share information by passing on or re-posting messages they have received on social media or on information platforms shared through mobile phones. We use redeeming behavior to measure the extent to which messages are read and believed. Sending behavior is used to measure the willingness to share valuable but non-rival information with strangers.

We study a sample consisting of heads of households or their spouses in rural areas of Mozambique. Subjects are only allowed to give the voucher to strangers selected by us from a different village in the sample. The purpose of the stranger matching is to avoid in-person communication and behavior coordination between subjects. In addition, all communication between subjects is done via text messages that go through the experimenter's switchboard and the identity (or phone number) of linked individuals is never revealed. Stranger matching also eliminates the correlation in preferences and behavior that characterize self-selected social networks as a result of homophily. We see these features as a strength of our study because they greatly facilitate causal inference in the study of information diffusion.[3] While information sharing among strangers is probably a lower bound on information sharing among socially connected individuals, it is nonetheless empirically relevant – first because it occurs frequently in practice (e.g., on

[2]For agricultural extension, other examples include the work of BRAC and of NGO Self Help Africa. For jobs, other examples include JobTalash in Pakistan, which is currently being studied by Erica Field, Rob Garlick, Nivedhitha Subramanian and Kate Vyborny.

[3]The direction of causality in the diffusion of information is always difficult to ascertain on social networks: linked individuals often share similar interests and, as a result, may simultaneously get new information from a third source instead of each other; they can also search for information by asking their contacts, possibly triggering the diffusion of the information itself. Our design abstracts from these difficulties.

social media and in casual conversation with strangers); and second because information from a distant stranger is less likely to repeat information already present in one's social circle, and is thus often more valuable (e.g., *Jackson and Wolinsky 1996; Jackson 2010*).

Since the vouchers can only be redeemed for mobile money, familiarity with mobile money is essential. For this reason, we recruit all the participants from a pool of individuals who were previously introduced to mobile money services, have used the services, and have an active mobile money account on their mobile phone. We find nevertheless that a surprisingly small proportion of recipients redeem the free-money voucher: 26 percent in the baseline intervention, and even fewer in most other treatments. This is an unexpected result given that redeeming the voucher is a low cost, high return action. This suggests that many subjects either ignore the messages they receive, or do not trust them. At the same time, we find that subjects often share the voucher message with others, even when they do not redeem it themselves. In other words, some people incur a cost to share information even though by not redeeming the voucher they reveal that they do not believe it. This type of behavior is consistent with a warm glow motivation (e.g., *Andreoni 1990*), rather than with pure altruism.[4] Information sharing remains limited, however, and many participants never get the opportunity to receive the free money.

We then introduce a number of treatments in an effort to increase the diffusion of the valuable non-rival information – i.e., making the voucher available to someone else. These treatments are divided into two batches of three and each group of baseline subjects is assigned to either of these two batches, with equal probability.

The first treatment of batch one is to give some information to subjects about the sender or recipient of the SMS. While this information is not sufficient for subjects to identify the other party, it nonetheless should facilitate information sharing if subjects identify more easily with similar people and, as a resut, behave in a more altruistic way towards them. Contrary to expectations, disclosing key characteristics of the sender or recipient *reduces* information sharing: both redeeming and sending vouchers fall. These patterns indicate that subjects behave in a more altruistic and trusting manner when uninformed about the specific characteristics of the sender or recipient. This could arise because revealing differences may induce some subjects to reduce their trust. This is not what the data shows, however: subjects are not more likely to redeem a voucher received from someone with similar characteristics – or to send it to someone similar. A more likely explanation is that processing the information contained in the SMS becomes cognitively more demanding when characteristics of the other party are added, leading some subjects to dismiss the SMS.

Next, we vary the costs of sending vouchers. We find that information sharing falls when the monetary cost of sending the SMS increases. This is in accordance with standard theory. We also experiment with a non-monetary cost, namely, (anonymously) shaming subjects who do not send the voucher to others. If subjects are concerned about their self-image, this treatment could increase sharing because it introduces a cue that not sharing violates a social norm. We do

[4]By definition an altruist cares about the utility of others, not just about the action of giving. An altruist who believes that paying to redeem the voucher is not beneficial would presumably not want to share it with others.

not, however, observe any significant effect of the shaming treatment. In the third treatment of batch one, we introduce the ability for subjects to circulate misleading information more cheaply than useful information. If subjects value their social image – i.e., they want to pretend doing the 'right thing' – but they do not care about others, they may be tempted to pay less and send information, which makes them look good since the recipient does not know a priori that the information is not useful. We see very little take-up in this case, indicating that most subjects do not purposefully set out to deceive others by sending misleading information.

In the second batch of treatments, we introduce the possibility for subjects to appropriate part or all the value of the vouchers destined for others. The motivation behind these treatments is that subjects may be more willing to share valuation information – i.e., the voucher – if they get a monetary compensation for doing so. To this effect, we design three treatments along the lines of the dictator, ultimatum, and reverse dictator games, and adapt them to our design. These are chosen because they resemble mechanisms that have been used in sharing a non-rival good or service. The reverse dictator mimics situations where the provider lets the user 'pay what they like' – an approach practiced online (e.g., shareware) and offline (e.g., alms giving when visiting a church). The ultimatum mimics situations where the provider sets a price for the service that is presumably below its value to the user, but the user can refuse. This resembles a simple market transaction: the information is non-rival and the sender bears little or no cost for sharing it, but nonetheless extracts a payment because the user is willing to pay for it. The dictator game corresponds to situations where the provider appropriates part of the value of the information to the user, but does not reveal the value of what has been appropriated. Here the comparison is slightly more tenuous, but this treatment bears some resemblance with the business model of Facebook, Google and others, which is to appropriate non-rival information they collect on users and sell it to third-parties. Surprisingly, we find evidence that, if anything, allowing senders to extract or solicit payment reduces information circulation. When the vouchers are used, however, the treatments have a large effect on how their value is split between sender and receiver. When we combine these findings to those from the treatments discussed above, the same pattern emerges: when SMS messages become more complex and cognitively challenging – as they do in all our treatments relative to the baseline intervention – they get more readily dismissed.

This paper contributes to the literature in several ways. First it complements a theoretical literature on diffusion that takes information transfer in human populations as a given (e.g., *Blochet al. 2008*; *Jackson et al. 2012*). Our results cast some doubts on the implementability of strategic mechanisms that rely on the near perfect sharing of non-rival information. Second, our work generalizes earlier findings by *Mobius, Phan, and Szeidl (2015)* who examine how relative strangers share and aggregate information that helps them win movie tickets. Like us, they find that the sharing of information is highly imperfect: signals travel only up to two links. It is however unclear how general their findings are, due to the strategic complexity of their design and the fact that information is partially rival. Our results confirm that information sharing is far from perfect even in the absence of such considerations.

Third, our results echo those of *Drexler et al. (2014)*, who find that teaching financial literacy using a simpler curriculum based on rule-of-thumb heuristics works better than relying on standard accounting training. They similarly interpret their results as suggesting that 'keeping it simple' makes external interventions more successful at reaching a less literate target population. Similar sentiments can be found in *Naeher and Schündeln (2021)* and in *McKenzie (2021)* regarding entrepreneurship training, and they tally well with the many studies showing that cognitive load can impede optimal decision making in humans *(e.g., Deck and Jahedi 2015; Drichoutis and Nayga 2020)*. Our study extends these insights to types of interventions that, a priori, could be conceived as unsophisticated and therefore unlikely to tax human cognitive abilities – namely, short SMS messages delivered on individual phones.

Our findings have far-reaching policy implications. Mobile telephony has revolutionized the way many interventions are conducted. This is particularly true in parts of the developing world – such as sub-Saharan Africa – where the penetration of mobile phones massively increased in recent decades. A growing number of policy interventions employ mobile phone messages to pursue a development objective. Some of these messages nudge recipients into taking a particular action – e.g., reminders regarding savings (*Karlan et al 2016*; *Blumenstock et. 2016*; *Abebe et al. 2016*); debt repayment (*Karlan et al. 2012*; *Afzal et al. 2018*); or preventive health (*Obermayer et al. 2004*; *Patrick et al. 2009*; *Raifman et al. 2014*). Other interventions have taken the form of information and awareness campaigns. Recent examples include information about: agricultural prices (*Fafchamps and Minten 2016*); water quality (*Okyere et al. 2017*); and the electoral process (*Aker et al. 2017*).[5]

Such interventions have the potential of reaching beyond the recipient of the original message. Indeed many policy interventions have long sought to increase their impact by relying on social diffusion. A number of recent studies have tested whether such interventions diffuse through existing social links (e.g., *Banerjee et al. 2013, 2019*; *Fafchamps and Vicente 2013*; *Comola and Prina 2017*; *Fafchamps et al. 2020*). But little work exists on information sharing in more anonymous settings now permitted by social media and information platforms based on mobile phones such as Whatsapp and similar. IT can potentially make diffusion much easier because messages (e.g., SMS, emails, tweets, Facebook or Whatsapp posts) can easily be re-posted or forwarded to others. Its potential could be further strengthened by using mobile money to incentivize diffusion. Firms sometimes reward customers for introducing them to new clients, for instance. Similar approaches have been discussed in public policy circles, e.g., whether HIV-positive individuals can be incentivized to identify possible carriers for testing from within their community or sector of activity, or whether slum dwellers can be incentivized to identify Covid-affected people at home for testing and treatment. More generally, most development actors recognize the potential for running inexpensive nudging or information campaigns through IT. Yet we know little about whether recipients actually read or believe the messages they receive, and whether they forward or post these messages to people they do not know. Our paper fills

[5]Mobile phones have also been used to conduct surveys (e.g., *Garlick, Orkin, and Quinn, 2016*).

this knowledge gap. It also shows that incentivizing the spread of non-rival information may backfire: the sharing of non-rival information between strangers is best helped by keeping things simple.

1 Baseline intervention

The purpose of our experimental design is to test two main assertions: whether people believe truthful and valuable information received from a stranger; and whether people are willing to transmit non-rival information that is valuable to strangers. The intervention to which subjects are exposed – i.e., receiving an SMS message that can be shared with others – is similar to many policy interventions in developing countries. We then introduce a number of treatments that, based on theory and past evidence, can be expected to increase information usage and circulation.

Unlike other studies of information sharing that rely on existing social networks, we randomly assign subjects to a set of strangers with whom they can share the SMS; they cannot share it with anybody else (e.g., *Centola 2010).* The purpose of this design choice is to eschew endogeneity concerns that affect causal inference about interventions that rely on pre-existing social links.[6] Exogenous peer assignment has been used in a number of recent RCTs (e.g., *Fafchamps and Quinn 2017, Cai and Szeidl 2018*) to eliminate confounds due to the self-selection of social links (e.g., *Berg et al. 2019, Bandiera et al. 2020*).

This design choice has one disadvantage: given that trust and altruism are likely to be lower between strangers than between socially connected individuals, our findings on information sharing should be seen as a lower bound on the propensity to make use of valuable information received by SMS (i.e., redeeming the voucher) and to share that information with others by SMS (i.e., sending the voucher). Our design does, however, offer a number of advantages in terms of external validity that experiments using existing social networks often do not have. First, it obviates some serious endogeneity concerns associated with using existing social networks, as discussed above. Second, information sharing among strangers is not rare. Messages uploaded on open forums or social media can be reposted and, as such, have a vocation to be shared with strangers. It is indeed common on social media for people to disseminate information that

[6]To illustrate, imagine that the experimenter 'seeds' an existing social network by giving a piece of information to one person, and then documents that individuals close to the seed are more likely have that information at endline (e.g., *Banerjee et al. 2013*). Can this be interpreted as evidence that information diffuses along the existing social network? Not necessarily. One possibility is that the original social network 'rewired' as individual interested in the information sought to access it (e.g., *Comola and Prina 2021, Banerjee et al. 2021*), such that information actually diffused among new links. To the extent that distance to the seed in the original network is correlated with distance to the seed along new links, it will 'predict' receiving the information without having channelled it. Another possibility is that the seed shares the received information to those who ask, and proximity to the seed in the original network is correlated to individual propensity to seek out information in general, and hence to obtain information from the seed. In this case, information is transferred directly from the seed to the respondent, but this transfer is triggered by the respondent. Again, distance from the seed in the original network predicts getting the information but, in this second example, there is no diffusion along any social network, old or new. Our design circumvents these difficulties since: (1) information can only pass from the seed to the target through an SMS transfer that we observe directly; and (2) subjects are assigned links exogenously and at random.

originates from an unknown source (e.g., *Allcott and Gentzkow 2017, Alatas et al. 2019*). Our findings throw new and valuable light on these processes.

In the remainder of this section we present the experimental design in detail. We first describe the link structure used throughout the experiment. We then discuss the baseline intervention and the anonymity treatment and present the main empirical results of this intervention.

1.1 Link assignment

Random assignment of links is organized as follows. After having selected 192 experimental participants among rural dwellers with experience of mobile money, we divided them into 12 groups of 16 individuals that we call squares. When assigning people to a square, we make sure that individuals in the same square are initially unrelated to each other. This minimizes the likelihood of communication outside the control of the experiment.

As illustrated in *Figure 1*, a square is a 4×4 grid of 16 subjects I_{rp}, where r denotes the round and p denotes the subject's position in the round. We build information sharing links between rows of the same square as follows: each element in row 1, i.e., subjects I_{11} to I_{14}, is allowed to transfer the SMS to each and every subject in row 2, I_{21} to I_{24}; each subject in row 2 is similarly to transfer the voucher to each and every subject in row 3, I_{31} to I_{34}; and each subject in row 3 is allowed to transfer to subjects I_{41} to I_{44}. Since subjects in row 1 receive SMS that originate directly from the experimenter, they may trust and share them more. Rows 3 and 4 are added to test this possibility by comparing the behavior of subjects in row 1 to that of subjects in rows 2 to 4.

Since subjects are randomly assigned to a square and to a position in that square, there is no self-selection possible across pairs. The fact that a subject in rows 2 to 4 receives a voucher is therefore random from their point of view. There may be characteristics that induce subjects in row 1 to send the voucher to others. But, by design, these characteristics are uncorrelated with the recipients of the voucher. This eliminates the risk that the characteristics of sender and receivers may be correlated with each other in some way. Put differently, selection into receiving a voucher is random since subjects are randomly assigned to a position that, in that square, receives a voucher.

All contacts between participants take place through text messages mediated by the experimenter, i.e., subjects pass information to each other by using text messages relayed by our switchboard from one subject to another. Subjects are never told the identity or phone number of the person with whom they are sharing information. All the messages received by participants come from the switchboard and are written in Portuguese – see *Appendix Tables A1 to A8* for the full list of original messages used in the experiment, together with their English translation. For each message sent, an experimental subject incurs at most a cost of 1-2 Meticais charged by the phone operator.[7] In compensation for this – and their participation time – each subject

[7]Virtually all subjects in our experiment use pay-as-you-go. Phone operators run occasional promotions of the form 'Earn X free SMS if you top up your account by Y Meticais'.

receives a participation fee of 70 Meticais paid in mobile money at the end of the experiment. When the experiment took place, 1 USD was approximately equivalent to 35 Meticais.

All interventions and treatments are implemented as a game played at the level of the square. Each game takes place over a period of a little less than a week each and is divided into rounds that each take approximately 24 hours, i.e., subjects in a round have 24 hours to redeem the voucher and to share it with up to four others. This basic structure applies to each game, with some differences across treatments as described below. We now describe with more detail the baseline intervention at the level of a square.

1.2 Intervention design

The baseline intervention (T0) starts with a seeding round, i.e., round 1. In this round, after an introductory message by the experimenter, each individual in the first row of the square – i.e., I_{11} to I_{14} – receives an SMS from the experimenter asking whether they want to receive 35 Meticais – approximately 1 USD – on their mobile money account. To receive the money, the subject has to send a message back with the word 'yes' or 'sim' (its Portuguese equivalent), upon which mobile money is automatically transferred to the respondent's mobile money account. No further action is required to receive the 35 Meticais. Subjects who fail to respond do not receive the transfer.

Each round 1 subject then receives messages asking if he/she wants us to give the same voucher to round 2 participants. Subjects receive four such messages, one for each of the four round 2 participants. To instruct us to send the voucher to this other person, the subject has to reply to each initial SMS with another SMS message containing the word 'yes/sim'. Since each of the four senders in round 1 can send the voucher to each of the receivers in round 2, subjects in round 2 can receive up to four vouchers. Those who do not receive any SMS voucher from round 1 participants are dropped from the game.

The remaining round 2 participants first receive an introductory message from the experimenter before receiving the SMS voucher itself. In round 2 the SMS voucher is worded slightly differently: it explicitly states that the voucher is sent at the request of another participant in the experiment. Since there are four round 1 subjects who could have sent the voucher, a round 2 subject can receive up to four times 35 Meticais. To receive the money, the subject has to reply to each of these messages with the word 'yes/sim'. After this, round 2 subjects receive messages asking if they want us to give a voucher to round 3 participants. As in round 1, they receive four such messages, one for each round 3 participant. Round 2 participants have to reply 'yes/sim' by SMS to each of those messages if they wish to send the voucher to the corresponding round 3 participant. Based on these responses, a list is drawn of those round 3 subjects who are to receive the SMS vouchers. Round 3 follows the same structure as round 2. Round 4 starts in the same way: subjects I_{41} to I_{44} receive the SMS voucher for each of the round 3 subjects who has instructed us to do so. But since this is the last round, they are not asked about sending the voucher to other players.

Each reply to the experimenter, i.e., both on willingness to receive the voucher and to share it, has to be answered within 24 hours to be admissible. Messages received after this deadline are ignored.[8] This deadline ensures that each square follows a similar sequencing – similar to what happens in a lab experiment. Using four separate phone numbers – one for each of the four receiving and four sending decisions – makes it possible for the experimenter to identify the sender and intended recipient of each of the messages received on our switchboard. Payoffs are paid on the mobile money account of each subject at the end of the game.

There are two variants of this baseline intervention: a no-information variant N and partial information variant P. Six of the twelve squares of 16 individuals are assigned to the no information variant N and the other half to variant P. Since subjects are randomly assigned to squares, this guarantees random assignment to variants.

In the no-information variant, no information on other participants is provided to either sender or receiver: all the sender knows is that another participant of the study will receive a SMS voucher similar to the one (s)he received; similarly, all that the receiver knows is that another study participant has instructed the experimenter to send him/her a SMS voucher. Individuals in the previous or following row are referred as 'Person p' with $p = 1, ..., 4$.

In the partial information variant, the sender is told about some characteristics of the receiver – namely gender, age, schooling, and income category. The receiver is given analogous information about the sender. Information on gender is implicitly conveyed through the first name of the sender or receiver (which is spelt out in the message); age is given in years; education is given in years of completed schooling (up to 12th grade) or as type of post-secondary education (e.g., bachelors or masters); and income is given as one of seven possible categories of monthly income.

In general we expect subjects to empathize more with senders and receivers for whom they have some information that enables them to 'put themselves in their shoes' (e.g., *Kirman and Teschl 2010*). As result, we expect more redeeming and more sending in the informed variant. In addition, subjects may empathize more with individuals with characteristics similar to themselves and with whom they identify (e.g.. *Akerlof and Kranton 2000, Bauer et al. 2018*). If this is true, we expect more sending of messages towards individuals with shared characteristics.

1.3 Sampling and implementation

We implemented the design as a field experiment in Mozambique from May to July, 2015. Participants were recruited among heads of households or their spouses who took part in an RCT entitled "Project mKesh" on the introduction of mobile money in rural Mozambique – a study that took place from June to August, 2012 and is described in *Batista and Vicente (2013, 2018)*.[9] Both the 2012 RCT and this study were conducted by NOVAFRICA, a development economics research center located at the Nova University in Lisbon, Portugal. The "mKesh

[8] At the time of the study, it was extremely unlikely to lose phone service for more than an hour in Mozambique. Very few attempts were made to redeem after the 24 hours window expired.

[9] mKesh is the name of a commercial mobile-money service provider in Mozambique.

NOVAFRICA" label was used throughout this study to build upon the confidence already gained from respondents in the anterior RCT study.

The sample for our field experiment is drawn from a representative sample of rural enumeration areas with mobile phone coverage in the Mozambican provinces of Northern Maputo Province, Gaza, and Inhambane. Within each of the 102 enumeration areas sampled for that study, an average of 19 households per enumeration area was selected through a random walk process – i.e., by walking from the center of the enumeration area in different directions and inviting each n-th house along the way to participate in the study. The original sample was selected in 2012 and was followed as a panel until 2015, with several survey rounds (the last of which in mid-2014). In half of the sample, i.e., in 51 randomly chosen enumeration areas, mobile money was introduced through the recruitment of a local agent and the organization of various dissemination activities at the enumeration area level. Within these locations, a random sub-sample was targeted for individual dissemination of mobile money. By design, participants to the experiment are more knowledgeable than the average Mozambican about mobile phone communication and mobile money services.

In this paper we focus on individually treated households from the original sample. This ensures that all participants had previously been introduced to mobile money, had used the service, and had an active mobile money account on their mobile phone at the time of the experiment.[10] Most of the 192 individuals in our study were recruited by phone or SMS message. Some were recruited through face-to-face contact. At the time of their recruitment for the study, subjects were told that, over a period of three weeks, they would receive SMS messages from Project mKesh and that paying attention to these messages would enable them to earn money on their mKesh mobile money account. They were also told they would receive a participation fee paid at the end of the experiment. To someone accustomed to paying or being paid with mobile money, like our subjects are, the idea of receiving a transfer of funds to their mobile money account is a natural one: this is how our respondents use their mobile money account on a regular basis, e.g., to send money to a distant relative or to pay for goods in a shop. Informed consent was obtained at the time of recruitment. Subjects were reminded of their participation in the experiment by an SMS message just before starting the base game.

Because the mobile phone operator sends marketing SMS's to individual subscribers on a regular basis, our messages may be misconstrued as spam. To minimize this concern, we label all our messages to subjects as coming from "Project mKesh NOVAFRICA". This identifier is associated with the 2012 "Project mKesh" RCT in our study area and it was also used to recruit subjects into this study. All the SMS messages sent to participants are short, to stay within the character limit of a single SMS in Mozambique. The actions required of subjects are reduced to their simplest expression, namely reply with 'yes/sim' to our message.[11] It remains that the

[10] *Batista and Vicente (2020)* show that mobile money adoption and usage over time among treated individuals in this sample does not depend on age, gender or expenditure. Mobile money users are, however, likely to be better educated than non-users within this sample of treated individuals.

[11] Entering "y" or "s" is considered as a yes, entering "no" or "n" is regarded as a no.

experiment takes place in a real-life environment where unsolicited SMS's are common. While this increases the possibility that our messages are seen as spam, it also raises the external validity of our findings, since any information campaign using SMS services in Africa is bound to face the same problem.

The split of the 192 participants into 12 squares follows a random procedure that ensures that no two subjects from the same enumeration area are allocated to the same square. This is done to avoid the possibility of direct communication between subjects. The last survey round held in mid-2014 is the source of the information on individual characteristics that is used in the partial information variant P of the baseline intervention. Funding for this research was provided by the International Growth Center. The experiment was implemented in collaboration with Carteira Móvel/Mkesh and the NOVAFRICA office in Mozambique. All SMS messages were sent and relayed by research assistants recruited for the project.

Key characteristics of the sample are presented in *Table 1*. Approximately 59 percent of participants are female, and the average participant is 40 years old. Non-college educated participants constitute 96 percent of our sample and have 6 years of education on average. Average monthly income is 3,445 Meticais, which is approximately equal to 98 USD per month.

Table 1 also presents balance tests across experimental treatments. It begins by comparing each pair of squares in terms of demographic characteristics. Across the 330 differences we tested (66 pairwise tests times 5 variables) we find a total of 19 that are statistically significant at the 10 percent level – well below what would be expected to occur by chance (10 percent). We additionally test for the joint significance of square dummies to check for systematic differences between squares, and we compare subjects in partial information and no information treatment squares. All these tests fail to reject the null hypothesis of no difference for each of the observable characteristics considered. Randomization thus appears to have achieved balance on key individual characteristics across squares.

We present in *Appendix Table B1* power calculations for the all the main tests presented in the empirical analysis. Although we do not reach the maximum achievable power allowed by our design due to the fact that not all subjects in later rounds receive a voucher, we nonetheless have sufficient power to detect effects of the magnitude uncovered by our analysis.

1.4 Experimental results in the baseline intervention

Figure 2 shows the average behavior of the experimental subjects in the baseline intervention. We find that the probability of a participant redeeming the voucher is 26 percent, while the probability of sending the voucher to any of the four subjects in the next row is 24 percent.

We interpret the 26 percent probability of redeeming vouchers as evidence that a large proportion of participants do not accept what is essentially a 'free lunch': by replying to the SMS voucher offer with a 'yes/sim' SMS message at a cost of 1-2 Meticais, they would have received 35 Meticais. Given that subjects are selected because of their familiarity with mobile phones and active usage of mobile money, this cannot be due to lack of familiarity. Furthermore,

the research team secured explicit agreement from each individual subject to participate in the experiment, and reminded each participant individually, shortly before the baseline intervention was implemented, that messages would follow containing opportunities to earn money. From this we conclude that not redeeming the voucher suggests a lack of trust or interest in SMS messages.[12]

In contrast, the propensity to share vouchers appears relatively high, given the cost of sending messages and the absence of a material benefit for the sender. One possible interpretation is that sending follows a 'warm glow' motivation: subjects seem keen to share with others a valuable opportunity, even if they themselves do not value it highly. Some evidence to this effect comes from observing that, among the players given the opportunity to both redeem and send vouchers, 11 percent send at least one voucher but do not redeem themselves. Together they represent 33 percent of the subjects who send any voucher. These findings are reminiscent of Allcott and Gentzkow (2017): fake news stories circulated widely on social media during the 2016 US election even though at least half of those who read them did not believe them.

Turning to the difference between the partial information and no information variants of the baseline intervention, we find that, contrary to our hypothesis, there is more redeeming and sending in the no information variant. Although this difference is not statistically significant in the baseline intervention taken in isolation, it becomes significant when we include observations from the other treatments introduced below. This point is revisited in detail later.

2 Exploring the reasons for low redeeming and sharing

The results from the baseline intervention show that most subjects do not take the mobile money vouchers seriously enough to redeem them, even though they share these vouchers with others. In addition, information sharing is reduced when subjects receive information on the characteristics of voucher senders and recipients. As a result, information diffusion fails to spread to all subjects in row 4 of each square. These findings demonstrate that simply allowing the transmission of valuable but non-rival information is insufficient to trigger an information cascade in our setting.

For this reason, we introduce a series of treatments intended to vary credibility and the cost of information sharing. These treatments are introduced to our subjects as additional games of the experiment, which are played in random order. We first present the experimental design and sequencing of these treatments, before discussing our testing strategy and examining our empirical results.

[12]Lack of interest may arise, for instance, because subjects do not want to be seen, e.g. for religious or cultural reasons, as someone who is in need of receiving gifts. This is conceivable but unlikely given that respondents knew that participating would enable them to earn money and their informed consent about this was solicited and obtained before their participation in the study. Moreover, all participants received a participation fee at the end of the study and no one returned the money to us.

2.1 Experimental design and sequencing of treatments 1/2/3

Half of our experimental subjects were invited to three additional games after the baseline intervention.[13] Each of these games shares many common features with the baseline intervention, but we vary the cost of sending SMS vouchers. If information sharing is hindered by cost considerations, we expect a dramatic drop in information circulation once we increase the cost of sharing vouchers. We also vary the type of cost – monetary or psychological – that subjects incur for sending (or not) SMS vouchers to other subjects. Lab experiments have suggested that subjects can be induced to undertake actions based on self-image considerations – e.g., is an action the 'right thing to do' based on shared social norm (e.g., *Tirole 2002, Akerlof and Kranton 2005, Johansson-Stenman and Svedsäter 2012*). To see whether this mechanism can be used to induce subjects to share valuable information, we introduce a treatment in which subjects are 'shamed' anonymously for not sharing the voucher.

In addition, we introduce a treatment in which subjects pay a lower cost for sharing misleading information. If subjects care about their social image (e.g., *Tirole 2002, Andreoni and Bernheim 2009, Bursztyn and Jensen 2017*) – i.e., they want to be seen to do the 'right thing' in the eyes of others – but are not altruistic towards them, sending a seemingly generous message to others may appeal to them. Senders may also circulate misleading messages if they have invidious or rival preferences – or are mischievous. In contrast, if information sharing is motivated primarily by altruism, we do not expect the sharing of untrue messages. By varying these experimental parameters, we aim to throw light on the role of cost and lack of credibility in the imperfect message transmission observed in the baseline intervention.

We now describe the design of each of the three treatments. As in the baseline intervention, each of them is played in four rounds within a square with 16 subjects as depicted in *Figure 1.* Treatment T1 (the *"variable sending cost" treatment*) introduces an additional cost of sending the voucher to another subject. This cost takes four possible values: 0 (as in the baseline intervention); 5; 10; or 15 Meticais per shared message. It is paid on top of the 1-2 Meticais that is charged per SMS by the phone provider. Each subject faces each of the four different cost levels in a randomized order, in each of the subsequent rounds. Incurred costs are deducted from the payoff sent to the subject's mobile money accounts at the end of the game. In all other respects, this treatment is the same as the baseline intervention. Varying the cost of sending the voucher allows us to infer subjects' willingness to pay for sending valuable information to others.

Treatment T2 (the *"fixed sending cost and shaming" treatment*) presents subjects with a different default option when sending vouchers to others. In the baseline intervention and in treatment T1, if the subject does not respond to the initial SMS sent by the experimenter, no action is taken – i.e., no voucher or message is sent to the potential recipient. In contrast, in treatment T2 the default is that, in the event that the subject takes no action (i.e., responds 'no' or does not reply), the experimenter sends a message to the recipient revealing that the

[13] The other half were assigned to a different batch of treatments, discussed below.

sender was given an opportunity to pass the voucher but failed to do so – as a consequence of which the recipient is unable to win 35 Meticais. In this treatment, the cost of sending is set to 5 Meticais – in addition to the phone operator's cost per SMS. The rest of the design is the same as in the baseline intervention. The purpose of this treatment is to increase the psychological cost of not sending the voucher to others. To put it more bluntly, it shames the sender for failing to send the voucher. As a result we expect it to increase sharing. To the extent that shame is related to social image within a group sharing a similar identity, we expect this treatment to be particularly effective in the partial information variant when experimental subjects know each other's characteristics.

Treatment 3 (the *"fixed sending cost and erroneous code message" treatment*) adds a second default option to treatment T2 when subjects are asked about the sending of vouchers. In the same way as in treatments T0 and T1, if the sender does not reply 'yes/sim' to the offer to share the voucher, no further action is taken by the experimenter. Similar to treatment T2, if the sender responds 'yes/sim' to the initial message sent by the system, the SMS voucher is sent to the recipient and a fixed price of 5 Meticais is deducted from the sender's payoff. If the sender responds 'no', the receiver gets an SMS containing an erroneous code that cannot be redeemed for money.[14] The remainder of the design is as in the baseline intervention. The purpose of this treatment is to disentangle an explicit decision not to share – e.g., motivated by rival or invidious preferences – from simple inaction. In treatment T2, these two motives are confounded. In treatment T3, if the sender sends an incorrect voucher to the recipient by responding 'no' (at the small cost of sending an SMS), this clearly manifests a desire not to share with the recipient – as opposed to inattention or inaction.

In the experiment, all the squares – i.e., group of 16 subjects – are first subjected to the baseline intervention. Half of the squares are then subjected to the three treatments T1, T2 and T3 in three separate games played a pre-specified order. This allows us to achieve identification within subjects. The six squares are divided in two sets of three squares: one set always plays the no information variant N; the other always plays the variant where the characteristics of senders and recipients (gender, age, education and income range) are provided. Within each of these groups of three squares, the order of treatments T1/2/3 is varied systematically, ensuring balance in the order in which they are played. The assignment structure of treatments to squares is depicted in the top panel of *Figure 3*, where T_i stands for treatment i and N/P stands for the no information and partial information variants, respectively.

2.2 Testing strategy

We split our analysis between the decision to receive mobile money from others, and the decision to send mobile money to others. In each case, we test for differences across treatments, whether no information is provided on sender and receiver, and whether sending and receiving vary

[14] To avoid deceiving the subject, this is made clear in the message sent to the recipient – see Appendix for details.

systematically with subject characteristics when information on these characteristics is provided.

In addition to reporting average choices for each treatment, we report results from a regression analysis. For receiving or redeeming vouchers, we use the following core specification:

$$R_{ijrt} = \alpha + \beta_1 G^1_{ijrt} + \beta_2 G^2_{ijrt} + \beta_3 G^3_{ijrt} + \gamma P_i + \delta_r + \varepsilon_{ijrt} \tag{1}$$

where the dependent variable R_{ijrt} is a binary variable taking value 1 in case subject i redeemed a voucher opportunity sent by subject j in round r and period t. Regressors are as follows: G^k_{ijrt} is a treatment k dummy variable; P_i is a binary variable equal to 1 in the partial information variant; and δ_r is a vector of round and period dummies, included to control for the possibility that experimental fatigue or loss of attention affects our findings. We also estimate a specification that adds prior redeeming in earlier games to see whether a positive experience with redeeming in an earlier game spurs more confidence in voucher messages.

To test the role of empathy due to a shared identity, we estimate a model that includes absolute differences $|X_i - X_j|$ in individual characteristics X between subject i and the subject j from whom i received the voucher.[15] We only use the four characteristics X_i that are revealed to i about j – and vice versa. Since pairwise characteristics are only revealed to subjects in the partial information variant, $|X_i - X_j|$ is interacted with the partial information dummy P_i. When estimating this regression we also include characteristics X_i and absolute differences $|X_i - X_j|$ as additional controls.[16] The estimated regression is thus of the form:

$$\begin{aligned} R_{ijrt} \;=\; & \alpha + \beta_1 G^1_{ijrt} + \beta_2 G^2_{ijrt} + \beta_3 G^3_{ijrt} + \gamma P_i \\ & + \theta |X_i - X_j| I_i + \mu X_i + \lambda |X_i - X_j| + \delta_r + \varepsilon_{ijrt} \end{aligned} \tag{2}$$

Empathy towards similar people implies $\theta < 0$ – i.e., the more dissimilar i and j are, the less i is willing to redeem a voucher from j.[17] When estimating regression (2), we only include redeeming decisions that apply to SMS vouchers received from another subject – i.e., we drop observations from round 1 subjects who receive the voucher from the experimenter.

To examine sending behavior, the baseline specification for treatments T1/2/3 takes the following form:

$$S_{ijrt} = \alpha + \beta_1 G^1_{ijrt} + \beta_2 G^2_{ijrt} + \beta_3 G^3_{ijrt} + \theta C_{ijt} + \gamma P_i + \delta_r + \varepsilon_{ijrt} \tag{3}$$

where the dependent variable S_{ijrt} is a dummy equal to 1 in case subject i sends a voucher opportunity to subject j in round r and period t. Variable C_{ijt} is the cost of sending the voucher to another subject which, in treatments T0/1/2/3, varies exogenously by subject pair ij. We also estimate a specification that includes the redeeming decision as additional control,

[15] To facilitate interpretation, when X_i is a dichotomous variable – e.g., gender – we replace the absolute difference with a dummy equal to one if i and j have the same gender, and 0 otherwise.

[16] For instance, $|X_i - X_j|$ may be systematically larger when X_i is large.

[17] When the regressor is a dummy equal to 1 if i and j share a characteristic – e.g., gender – the interpretation is reversed.

and a specification that adds $|X_i - X_j|$, and controls X_i, to test for empathy towards similar subjects in sending decisions. All the econometric specifications are estimated using a linear probability model and the reported standard errors are clustered at the individual level (i.e., across games/periods).

2.3 Empirical results on treatments T1/2/3

2.3.1 Treatment averages

Table 2 reports the average behavior of the subjects in the baseline intervention and in each of treatment T1/2/3. Columns (2)-(4) of *Table 2* present average redeeming and sending decisions in treatments T1/2/3. As explained earlier, the order of the treatments varies randomly across squares, i.e., they are not necessarily played in the order in which they appear in Table 2 – and hence the order in which treatments T1/2/3 were played should not drive the results. As in the baseline intervention, the number of redeeming observations is less than 192, the number of individuals in the squares, because many subjects in rounds 2-3-4 never receive any voucher they could redeem.[18] Since links are assigned exogenously, whether a subject receives a message or not from another subject cannot be correlated with any unobservable characteristic of the potential recipient – and hence can be regarded as random for the purpose of inference.

We observe a dramatic drop in both redeeming and sending behavior in treatments T1/2/3 relative to the baseline intervention. The voucher redemption rate falls by between 27 (T3) to 49 (T1) percent, even though the cost of redeeming is the same across treatments. Sending in treatments T1/2/3 falls relative to the baseline intervention by an even larger percentage (between 41 percent in T1 and 74 percent in T3), possibly because the cost of sending is higher in these treatments relative to the baseline intervention.

Contrary to expectations, sending is more common in T1 than in T2 and T3, even though the cost of sending is, on average, highest in T1. The propensity to send is lower in T2 than in T1 – suggesting that changing the no-reply default action to a shaming message did not create a psychological pressure to give. This is reminiscent of situations (e.g., *DellaVigna, List, and Malmendier, 2012*) in which individuals give because they perceive a moral pressure to do so but feel exonerated if a device (in our case, a default erroneous message) takes an action for them. In T3 subjects could either pay 5 Meticais to send an SMS voucher to the receiver, send an erroneous voucher message, or do nothing. In practice, we only observe two cases of a subject sending an erroneous voucher message, making this treatment similar to T1 with a slightly lower cost of sending on average. We nonetheless observe a further decrease in the sending probability, which now falls to 6 percent. One possible explanation is that the introduction of an irrelevant

[18] This happens even though several (up to four) vouchers could be potentially redeemed by each subject in rounds 2-4. The number of sending observations is higher than the number of redeeming observations because each subject who receives a voucher in rounds 1-3 is automatically given the option to send it to four other subjects, while these subjects can only redeem one voucher. Note that the variation in the number of observations is a consequence of our experimental design, which is aimed at investigating how far information diffuses among strangers.

but selfish alternative prompts subjects to act selfishly. Similarly to the baseline intervention, no information variants of treatments T1/2/3 yield higher redeeming and sending rates than their partial information variant.

2.3.2 Redeeming the voucher

To fully assess the determinants of redeeming vouchers in treatments T0/1/2/3, we regress the redeeming decision as specified in the testing strategy Section. The dependent variable is a binary variable taking value 1 if the subject sends a 'yes/sim' SMS in response to a voucher offer, and 0 otherwise. The results are shown in *Table 3*. Column (1) reports the results from regression model (1).[19] In column (2) we add a dummy variable with value 1 if the subject redeemed a voucher in a previous game: subjects who trust the SMS enough to redeem it in one game should also be more likely to trust it in a subsequent game. Column (3) reports the estimates for model (2) that tests for the effect of shared characteristics. In addition to regression coefficients, at the bottom of *Table 3* we report test statistics of the null hypothesis that there is no difference between pairs of treatments.

Regression analysis confirms that the probability of redeeming decreases between the baseline intervention and the other three treatments although, for T3, this is only significant in column (2). The reduction in redeeming is large relative to the counterfactual probability of redeeming in the baseline intervention: the probability of redeeming drops by 18 to 30 percentage points in T1 and T2 relative to T0, and by 21 percentage points in T3. Pairwise comparisons reported at the bottom of *Table 3* nonetheless indicate that we cannot reject the hypothesis that redeeming is equally likely under treatments T1, T2 and T3.

As already observed in *Table 2*, we find a large reduction in redeeming in the partial information variant: this difference is about 15 to 16 percentage points and is statistically significant in the main specification (columns 1 and 2). This confirms that subjects are more likely to redeem a voucher that comes from an individual on which they have no information. We also observe more redeeming in round 1, that is, when the voucher originates from the experimenter, than when the voucher comes from another subject. We do not find systematic treatment order effects.

Since payoffs are deposited on subjects' mobile money account at the end of each game, subjects who redeem in a given game receive the voucher money at the end of that game. This should make them more confident of receiving the voucher money in subsequent games. We therefore expect redeeming behavior to be persistent. This is indeed what we find: there is a strong positive correlation between redeeming now and redeeming in a previous game. We cannot, however, rule out the possibility that this captures differences in trusting behavior across subjects.

When adding pairwise regressors (column 3), point estimates suggest that subjects are more

[19] For the analysis of redeeming, the partial information dummy takes value 1 (partial information) in round 1 since subjects know that vouchers originate from the experimenter.

likely to redeem a voucher received from a person of the same gender and education level. But none of these effects is statistically significant.[20] From this we conclude that there is no conclusive evidence that shared characteristics matter in redeeming decisions. Perhaps this is not too surprising given that there is on average less trust in the partial information variant. From the estimated coefficients of individual characteristics X_i, we also note that older subjects redeem less and richer participants redeem more. This could be because individuals who are younger and richer are more familiar with mobile phones and more willing to risk 1-2 Meticais for the prospect of receiving 35 Meticais.

2.3.3 Sending the voucher

We report in *Table 4* a similar analysis for the decision to send the voucher to another participant in treatments T0/1/2/3. The dependent variable is a binary variable taking value 1 if the subject sends an SMS instructing the experimenter to send the mobile money voucher to another subject. Recall that there are four such decisions per voucher recipient, one for each of four possible recipients in the following round (i.e., to the next row in *Figure 1*). We control for the cost of sending the SMS, which varies between 0/5/10/15 Meticais across subject pairs ij in T1. This cost is set at 5 Meticais in T2 and T3, and 0 Meticais in the baseline intervention.

Column (1) of *Table 4* reports coefficient estimates for specification (3). In column (2) we add two redeeming dummies – one for the previous game, as in *Table 3*, and one for the current game, just before the decisions to send. The purpose of including these control variables is to test whether subjects are more likely to send a voucher that they themselves redeem – as would be the case if sharing is done primarily by those who trust the message enough to redeem it. Column (3) includes $|X_i - X_j|I_i$ and related controls as additional regressors to test for the role of shared characteristics in sending choices.

As already noted when discussing *Table 2*, we observe a strong reduction in sending probability between the baseline interventions and treatments T1/2/3. These differences are all large in magnitude and statistically significant, ranging between 9 and 22 percentage points depending on the specification. Given that sending is more costly in treatments T1/2/3 than in T0, these findings suggest that sharing information is cost sensitive. However, the cost of sending a message, which varies randomly in T1, has no significant effect on the probability of sending a voucher, casting some doubt on the hypothesis that cost differences is the only cause for the difference in sending probability between T0 and treatments T1/2/3.

The results further indicate that sending the voucher is less likely in T2 and T3 than in T1. In T2, when the sender chooses not to send the voucher, the recipient receives a message saying that the sender had the option to send something but did not. This can be interpreted as shaming the sender (for not sending valuable information) in the hope of increasing information sharing. This attempt appears to backfire: if anything, this treatment reduces sharing. The

[20] Similar results (not shown here) are obtained if we estimate an individual fixed effect model that compares redeeming behavior across different senders for the same receiver. Because the number of subjects who receive multiple SMS vouchers is relatively small, the number of observations is small and statistical power is limited.

difference between T1 and T2 is, however, only statistically significant in column (1), as shown at the bottom of *Table 4*. But we do find that, in all columns, sending the voucher is significantly less likely in T3 than in T1. To recall, treatment T3 is when the sender has the opportunity to alert the recipient that he/she chose not to share the voucher. While this almost never happens, senders may anticipate that information is less likely be trusted (even though there is no evidence of this in *Table 3*) and decide not to incur the cost of sending it. Alternatively, they may find the choices confusing and, perhaps, objectionable and opt not to participate. In any case, this treatment significantly reduces information sharing.

In column (2) we see that individuals who have redeemed a voucher in the past or current game are also significantly more likely to send it. The estimated coefficient is largest for those who redeem in the current game. Since subjects only find out whether the promised transfer was deposited in their account at the end of the game, this correlation cannot be driven by having received the voucher. Rather, it suggests either that those who redeem are more attentive to the experiment, or that those who trust our message are more likely to both redeem and share it.

We find that sending is less likely in the partial information variant, but this effect is not statistically significant – unlike what happens with redeeming behavior in *Table 3*. The magnitude of the effect is non-negligible, however: a 5 percentage point reduction in information sharing in column (1), compared to the no information probability of sharing of 30 percent in the baseline T0. This suggests that participants are more willing to share information in a fully anonymous setting. Because redeeming is also lower in the partial information variant, controlling for past and current redeeming behavior in column (2) absorbs the effect of the partial information dummy.

To investigate the role of anonymity further, we reestimate specification (3) with additional regressors to test for empathy towards similar people. If the reluctance to share information comes from the sender realizing that the prospective recipient is different from him/her, the partial information treatment effect should vanish for subject pairs who have similar characteristics. This is not what we find: differences or similarities between sender and receiver are never statistically significant although, as in Table 3, point estimates for same gender and same education are large in magnitude. If the reduction in information sharing is not due to a reluctance to share with dissimilar individuals, then it might be due to the sender's reluctance to have his/her characteristics revealed to the recipient – i.e., the fear of being recognized. This may be particularly problematic if senders are unsure of the value of the message. In any event, subjects seem more willing to share valuable information with complete strangers while remaining fully anonymous themselves.

Finally, we note that sending is more common among younger, better educated, and richer participants – consistent with these subjects being more familiar with the mobile phone technology, and being less concerned about the cost of sending a message to benefit others.

3 Incentivizing information transfer

We have established that information transmission by SMS is imperfect. Apart from demonstrating a sensitivity to the monetary cost of sending the SMS, none of the treatments introduced so far managed to improve information diffusion – either through self-image, social image, and empathy considerations. Since subjects react (negatively) to an increase in the cost of sending, we now seek to incentivize senders for sharing valuable information.

We could try simply paying subjects for sending the voucher. Such intervention, however, is likely to be costly for the policy maker, and subject to manipulation. It is also difficult to decentralize. Instead, our objective is to identify a suitable bargaining mechanism by which the broadcaster of a valuable message can seed a population and then offer a structured bargaining mechanism to encourage peer-to-peer transmission among strangers. This would enable the broadcaster of the message to reach a larger audience without the need to provide direct incentives to senders. To this effect, we investigate different forms of decentralized peer-to-peer transfers by which the sender can be rewarded directly by the recipient.

We first present the experimental design and sequencing of these new treatments, before discussing the testing strategy and the empirical results obtained with these additional treatments.

3.1 Experimental design and sequencing of treatments T4/5/6

It has often been noted that sharing valuable information with others generates a sense of gratefulness, and triggers a desire for the recipient to reciprocate. To capture these ideas in a stylized manner, we introduce treatments that allow the sender to impose, solicit, or receive a payment. We hypothesize that, if these payments are accepted by recipients on the basis of reciprocity, incentivizing senders should improve the dissemination of valuable information.

To test this hypothesis, we introduce three additional treatments – labelled T4/5/6 – and we apply them to the half of the sample that did not take treatments T1/T2/T3. Treatments T4/T5/T6 allow transfers between the sender and receiver of the voucher. To do this in a structured way over anonymous links, we adapt the standard dictator, ultimatum, and reverse dictator games to our setting. To streamline SMS communication, all three treatments have a default option that is implemented if the sender does nothing. We examine whether the type of default option matters. The details are as follows.

Treatment T4 (the *"dictator game with a default option"*) adapts a standard dictator game to our setting. Although it is perhaps the mechanism with the lowest intuitive appeal for information sharing, it is also the easiest to implement in our setting and it offers a well known benchmark: in general, laboratory subjects allocate around half of the 'pie' to the other player (e.g., *Camerer 1997, Andreoni and Bernheim 2009*).

In this treatment, a subject is asked to share a 35 Meticais voucher between themselves and one subject in the subsequent row of the square. Each row 1 subject does this four times, once for each subject in row 2. In other words, each subject in row 1 receives 35 Meticais four times and can share this amount with one subject from row 2. These decisions are then combined

to calculate the total payoff of the sender. If the sender does not respond to one of the four messages, this is treated as equivalent to sending nothing, in which case the sender keeps the 35 Meticais. This is different from a standard dictator game where there is no default option and the subject is forced to pick a division of the pie. If the subject does not respond to any of the four messages, he/she receives $35 \times 4 = 140$ Meticais.

The same decision structure is repeated in round 2: the experimenter sends 35 Meticais four times to each round 2 subject, and each time the round 2 subject can share part of it with a round 3 subject. The same is again repeated in round 3. Subjects in row 4 do not decide anything; they just receive what row 3 subjects choose to send them. As in the baseline intervention, subjects in rounds 2 to 4 do not receive any message if nothing is sent to them by previous participants. The idea behind this aspect of the design is again to investigate how far information diffuses.

In this treatment, the sender is given the opportunity to appropriate the entire value of each voucher. The purpose of this is to determine the extent to which subjects are willing to share something valuable - at their own cost - instead of simply appropriating it. If the subject does nothing, this is treated as not sharing. Furthermore, if the sender does nothing, the recipient is not informed that the sender had an opportunity to share. These differences with the standard dictator game are introduced into our design to capture the fact that, in practice, sharing information requires a deliberate action – doing nothing is the default – and if someone does not share valuable information, potential recipients typically do not learn about it. Whether T4 induces more or less sharing is unclear a priori. The fact that not sharing is financially attractive may reduce sharing, especially given that it is the default option. But allowing subjects to appropriate part of the voucher also rewards them for sharing the rest of the voucher, which may encourage sharing.

Treatment T5 (the *"ultimatum game with a default option"*) adapts an ultimatum game to our framework. It lets the sender set a price that the receiver has to pay in order to receive the voucher. If the receiver refuses, the sender receives nothing. In terms of implementation, this treatment is similar to treatment T4: each subject in rounds 1 to 3 is asked four times to share 35 Meticais between themselves and one subject in the next row. The difference is that, in this treatment, the designated recipient can refuse the share of the 35 Meticais that is proposed by the sender. If the recipient refuses the sender's offer, both sender and receiver get nothing.

Each receiver has to make this decision each time he/she receives an offer to share 35 Meticais. If the sender does not make any offer to a particular recipient – i.e., does nothing – this is treated as a rejection and both subjects receive nothing. This introduces an important difference relative to T4: in order for the recipient to have an opportunity to reject an offer, an offer has to be made. If the recipient does not agree with an offer – or does nothing – this is treated as a rejection by the recipient, and both subjects also receive nothing. Since this treatment is likely to create an entitlement effect in the mind of the sender (e.g., *Camerer 2003, Chapter 2*), it mimics a market for information in which the seller sets a take-it-or-leave-it price: if the potential buyer refuses the offer, the seller forfeits his profit. This design offers the advantage that it gives the recipient

of the information a veto: if the recipient does not believe/value the information provided, there is no reason to accept the offer.

Treatment T6 (the *"reverse dictator game with a default option"*) is similar to T4 except that it is the recipient who unilaterally decides how much to send back to the sender. This treatment mimics a 'pay what you want' approach, used for instance by shareware providers and, offline, used by many religious and philanthropic organizations. It has not really caught on as a method for selling non-rival content, however, probably because sellers can make a higher profit from direct sales (i.e., treatment T5).[21] But it still provides some incentive to the sender and may prove more egalitarian (e.g., *Gneezy et al. 2010*).

In this treatment, round 1 is exactly the same as in the baseline intervention: subjects choose whether to redeem the voucher and whether to send vouchers to each row 2 subjects. Subjects in round 4 only decide how much to send back. Subjects in rounds 2 and 3 first decide how much to send back to the sender from the previous row, and then whether to send a voucher to each of the receivers in the subsequent row. Unlike in the baseline intervention, subjects do not have to respond 'yes/sim' to the SMS voucher in order to receive it – they are only asked to determine how much they wish to send back. If a subject does not respond, he/she is assumed to send back nothing – which is the mirror image to the sender's decision in T4: doing nothing is equivalent to appropriating the whole voucher. As in the baseline intervention, a subject in rows 2 to 4 only participates if at least one subject from the previous row decided to send him/her a voucher. Importantly, T6 is not entirely equivalent to a standard reverse dictator game in the sense that the receiver knows that the voucher was sent by the sender. We hypothesize that this distinction may create a reciprocity effect.

Each treatment is played on a square – i.e., group of 16 subjects – as for the baseline intervention. We have already noted that six of the twelve squares that played the baseline intervention were randomly assigned to treatments T1, T2 and T3 for the subsequent three games. The other six are similarly assigned to play treatments T4, T5 and T6, in random order, over three games. These six squares are further divided into two groups of three: one is always assigned to the no information variant; the other to the partial information variant. The assignment structure of treatments to squares is depicted in the bottom panel of *Figure 3*, where T_i stands for treatment i and N/P stands for the no information and partial information variants, respectively.

Table 1 compares the two halves of our sample, namely those playing treatments T1/2/3 and those playing treatments T4/5/6. Within each of the two halves of the sample, balance across treatments is achieved by experimental design. All the tests that we performed fail to reject the null hypothesis of no difference for each of the observable characteristics. From this we conclude that randomization achieved balance on key individual characteristics across squares

[21] In 2007, rock band Radiohead famously let people download their In Rainbows album for free, inviting them to 'pay what you want'. It is believed that 1.2 million people downloaded the free album but gave little in return. The band never used this approach again, although In Rainbows remains one of their best selling albums in terms of CD sales.

and treatment blocks.

3.2 Experimental results

3.2.1 Treatment averages

In treatments T4/5/6 the primary emphasis is on sending decisions. Recall that in T4 and T5 senders decide an amount to be sent. In T6 they decide whether to send the voucher or not. In T4 receivers do nothing. In T5 receivers can either accept or reject the take-it-or-leave-it offer. In T6 receivers decide whether to redeem a voucher from the experimenter in round 1 and then whether and how much to send back to the sender. We report the average behavior of the subjects on all these choices in *Table 5*. Note that some actions are not relevant in some treatments, e.g., receiving is automatic in T4, and sending back is an action only possible in T6.

In T4 the sender appropriates the full value of the voucher by doing nothing. We see that introducing this possibility leads to a fall in the propensity to send something to the receiver: from 24 percent in the baseline intervention to 15 percent in T4. This difference is statistically significant. They suggest that when senders cannot appropriate the voucher, they are willing to spend some of their own money to benefit someone else, and when they can appropriate the voucher, many prefer doing so instead of sharing even a fraction of it. We also note that, even when they send something, subjects only give 27 percent of the average voucher value. Across all subjects and decisions, senders retain more than 96 percent of the voucher value. This suggests that adding the possibility of appropriating the value of the information crowds out altruistic motives, and that most subjects choose to do nothing when it is to their material advantage.

In T5, sharing the value of information entails the risk of rejection: the receiver may refuse the offer made – something that occurs in 43 percent of the cases. We observe an overall 18 percent probability of sending money to the receiver, lower than in T0 and only slightly higher than T4. This is a priori surprising because, in T4, the sender appropriates everything if no offer is made while in T5 the sender receives something only if making an offer. This suggests that subjects are reluctant to make an offer that can be rejected. We also note that the amount sent does not increase relative to T4, which may explain why many offers are rejected. This evidence indicates that introducing squabbling among subjects over how to share the value of information is detrimental to information diffusion.

In T6, the sender can only elect to send or not the full voucher value to the receiver, as in the baseline intervention. We find that the probability of sending in T6 is identical to that in T0. This suggests that the prospect of receiving something back from the receiver does not incentivize senders to send more. In 12 percent of the cases, the receiver elects to send something back, i.e., at a rate that is broadly similar to what senders do in T4. But when they do, they send back a much higher proportion of the voucher value – typically almost all of it, suggesting, among these subjects, a reciprocity motive. Senders in round 1 are also given the choice to redeem or not the voucher sent by the experimenter. 38 percent of subjects do so. Finally we note that, as in *Table 2*, the no information variants of the treatments T4 to T6 cause higher

sending rates.

3.2.2 Transfers

We now estimate a model of the decision to transfer any amount, i.e., employing as a dependent variable a binary variable taking value 1 if the sender sends a positive amount to the recipient, and 0 otherwise. For the decision to send or send back money in treatments T4/5/6, we estimate the following specification:

$$S_{ijrt} = \alpha + \beta_5 G^5_{ijrt} + \beta_6 G^6_{ijrt} + \beta_{6b} G^{6b}_{ijrt} + \gamma I_i + \delta_r + \varepsilon_{ijrt} \tag{4}$$

where the treatment dummy G superscript 6 refers to the decision to send in treatment T6 while $6b$ refers to the decision to send back in that same treatment. The specification is similar to (3), except that we do not include the cost of sending since it is constant. We also estimate a specification that adds absolute difference terms $|X_i - X_j|$ and controls X_i, again to test for the role of shared characteristics. These econometric specifications are estimated using linear probability models and, as before, reported standard errors are clustered across games at the individual level. The amount sent is examined in a separate regression.

Results for the decision whether to transfer are shown in *Table 6*. Column (1) follows specification (4); column (2) adds pairwise characteristics. Note that treatment T6 has two sending decisions, one made by the sender and another one made by the receiver. From *Table 5*, we already know that sending is on average less frequent in T4 and T5 than in the baseline intervention. The exception is T6 where the likelihood of sending money is higher. By comparing point estimates for T4 and T6, we see that the difference between them is large in magnitude: 16 to 18 percentage points. This makes sense: of the four sending actions taken in treatments T4/5/6, sharing by the sender in T6 is the one that is most similar to sending in T0. The fact that propensities to send are similar in both cases indicates that giving the sender an opportunity to receive something in return does not, by itself, increase willingness to send. In contrast, in T4, not sending anything lets the sender appropriate the full value of the voucher. This likely explains the significant difference between the two treatments.

Treatment T5 is similar to T6 regarding senders' decisions: not sending anything means forfeiting the voucher. We should thus observe a similar propensity to send in both T5 and T6. This is however not what we observe: the frequency of sending in T5 is similar to T4 where the sender appropriates the voucher by not sending anything, and lower than in T6 (sender's decision). This suggests that subjects prefer sending the information and letting the recipient decide whether to send something back, rather than making a take-it-or-leave it offer to the recipient and risking rejection: indeed, 43 percent of offers are rejected in T5. It follows that the fear of rejection seems to serve as a disincentive to share.

We also observe that the probability of sending *back* in T6 is not statistically different from *sending* in T4: sender and receiver are equally likely to appropriate everything. This arises even though, in T6, the recipient knows that the sender is aware that the recipient could send

something back while, in T4, the potential recipient is not aware that the sender could have sent anything. This suggests the absence of a reciprocity motive, at least in terms of sending anything at all as we discuss further below. We also note that in both T4 (sender) and T6 (receiver) the probability of sending is lower than what is often observed in dictator games.[22] This difference may be due to the fact that, in both cases, appropriating everything can be achieved by picking the default option, which is doing nothing. This exonerates subjects from the moral pressure that is present in a standard dictator or reverse dictator game, where there is no default option.

Column (1) also shows that the likelihood of sending in the no information variant is 5 percentage points higher than in the partial information variant (albeit not significant). Turning to column (2), we again find no statistical evidence that shared characteristics affect sending behavior – even if the point estimate on same gender is a large 11 percentage points. These results are similar to those we reported in *Table 5*. Taken together, this evidence confirms subjects' reluctance to share information in the partial information setting. Regarding other coefficient estimates (not reported in the Table to save space), we find that subjects who are male, young, educated, and poorer are more likely to send something.

Table 6 focused on the effect of treatment on the extensive margin – the likelihood of sending something. We complement these results by showing in *Table 7* the effect of treatment on the intensive margin. To this effect, we present a regression of the amount sent (conditional on sending) as a function of treatment. Given the small number of non-missing observations, we only include treatment dummies as regressors. The results show that, conditional on giving, the amount given is far larger for subjects who send something back in T6, suggestive of a reciprocity motive among the 12 percent of subjects who choose to send anything back.

4 Robustness

Before concluding, we investigate the robustness of our findings to the possibility that some subjects simply ignore all the messages originating from the experiment. This may still arise in spite of our efforts to the contrary: all the subjects are familiar with the research team, having participated in an earlier randomized controlled trial by the same researchers; we selected subjects who were already familiar and actively using text messages and mobile money; and we secured explicit informed consent from all the subjects shortly before the experiment began.

We start by noting that 31 percent of the subjects assigned to rounds 2-3-4 were never sent any voucher by subjects in earlier rounds. As a result, they never had the opportunity to redeem or send vouchers to other subjects. These subjects have already been omitted from the analysis. Of the remaining participants, 55 percent never actively participated in the experiment either by accepting a voucher or by sending a message to another subject. Our concern is that some

[22] Batista et al (2015) conducted a lab-in-the-field experiment among urban residents in Maputo, the capital city of Mozambique. In this experiment the average fraction of cash shared was 40%. The counterparts receiving the dictator's transfer were close relations from outside the own household, and hence not anonymous.

of these subjects may have failed to participate for reasons beyond their control – e.g., they lost access to the phone number that was used to contact them. We wish to ensure that our findings – e.g., low redeeming of vouchers – are not mechanically driven by their non-activity.

To this effect, we repeat the analysis of *Tables 3, 4* and *6* using only subjects who responded to at least one of our messages. We focus on the main specifications of the previous Tables, i.e., with a full list of controls, and with previous redeeming behavior when considering treatments T0/1/2/3. We omit the specifications with shared characteristics since they are never significant. Results are shown in *Table 8* for treatments T0/1/2/3 and in *Table 9* for treatments T4/5/6. Not surprisingly, estimated treatment effects are larger in magnitude – given that inactive subjects are omitted. But otherwise the findings are qualitatively similar to those reported in *Tables 3, 4* and *6*. In particular, the role of anonymity and previous redeeming have the same sign.

There are some small differences, however. We now find that sending back in T6 is significantly more likely than in T4 (see *Table 9*), consistent with reciprocity on the part of receivers in that treatment. We also find that sending in T2 is significantly lower than in T1 (see *Table 8*) and that high income subjects are less likely to send information to others across all treatments.

5 Concluding remarks

In this paper we followed a sample of rural Mozambicans with access to mobile money services. We investigated: (i) their willingness to believe valuable information they receive; and (ii) their willingness to share this valuable information with others. To this effect, we randomly assigned subjects four other participants to whom they could send a voucher, and we tested a number of experimental settings implemented through SMS messages containing vouchers redeemable for mobile money. By assigning links exogenously, we avoid endogeneity issues that arise in experiments on information sharing that rely on pre-existing social links that are context-specific.

We find that subjects have a relatively low propensity to redeem the voucher, but a comparatively high propensity to send it to others. People thus appear rather skeptical about the value of the message they receive, but this does not stop them from incurring a small cost to share it with others. Many subjects indeed share information that they do not use themselves, a behavior that can be interpreted as consistent with a warm glow motive. We nonetheless observe that both redeeming and sending are higher among subjects who previously redeemed the voucher. This behavior is consistent with the idea that subjects are more likely to share information if they find it trustworthy. Contrary to expectations, anonymity increases both receiving and sending, and there is no evidence that shared characteristics increase sharing. Why this is the case is unclear. One possibility is that senders are unsure of the value of the message and may worry others may think poorly of them for passing it on.

In terms of behavioral variation between treatments, we find that the sharing of information falls when we introduce an explicit cost of sharing – but we do not find that subjects respond to variation in that cost. We find no evidence that shaming helps information transfer: sharing falls when we reveal that senders send nothing, and subjects do not like to reveal that they

sent nothing. We also observe less sharing in treatments that allow subjects to appropriate the value of the shared information – irrespective of the system put in place to allow transfers between subjects. Allowing information recipients to send anything back to the sender achieves just the same amount of information diffusion as the baseline intervention without this option. Taken together, these findings indicate that sharing information is not motivated by the hope of reciprocation – at least in our setting.

In terms of policy, this research reveals the difficulty of using mobile phone messages to diffuse valuable information in a developing country. Even when participants have been sensitized beforehand and a substantial amount of money is at stake, many individuals fail to make use of the valuable information they receive. Our take-home lessons for policy-makers are: you can reach a lot of people cheaply via SMS; but do not think of it as a perfect substitute for other forms of information dissemination. When using SMS communication, think twice about doing it in a personalized manner, do not attempt to shame participants into sharing with others, and do not spend energy trying to reward information sharing. Keep it simple.

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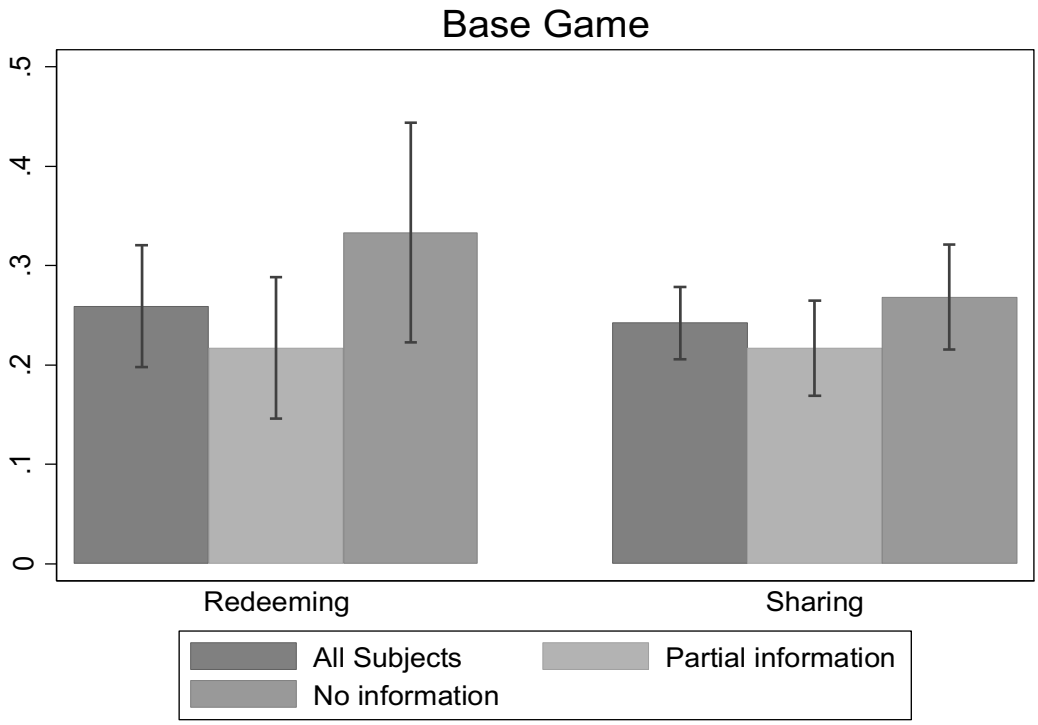
Figure 1. A square

	Position 1	Position 2	Position 3	Position 4
Round 1	I_{11}	I_{12}	I_{13}	I_{14}
Round 2	I_{21}	I_{22}	I_{23}	I_{24}
Round 3	I_{31}	I_{32}	I_{33}	I_{34}
Round 4	I_{41}	I_{42}	I_{43}	I_{44}

Notes: A square is a 4 × 4 grid of 16 subjects I_{rp}, where r denotes the round (or matrix row), and p denotes the subject's position in the row. Each subject in row 1, i.e., I_{11} to I_{14} , receives one SMS directly from the experimenter. Each of them is then separately allowed to transfer the SMS to each and every subject in row 2, that is, to I_{21} to I_{24}. Each subject in row 2 is similarly allowed to transfer the voucher to each and every subject in row 3, I_{31} to I_{34}; and each subject in row 3 is allowed to transfer it to each and every subject I_{41} to I_{44}. Subjects in row 4 cannot transfer the voucher to anyone. No direct communication is possible between subjects since all messages transit through our switchboard where the phone numbers of individual subjects are removed.

Figure 2. Redeeming and sharing behavior in the baseline intervention



Note: Redeeming the voucher means responding with a 'yes' SMS to our switchboard. Sending the voucher means responding with a 'yes' SMS to an SMS invitation to share information about the voucher with another randomly selected subject. The height of the bars represents the proportion of experimental subjects redeeming/sending mobile money vouchers. Confidence intervals are plotted for a 10% significance level.

Figure 3. Sequencing of treatments

Block 1:	Period 1	Period 2	Period 3	Period 4
Square 1	T0-N	T1-N	T2-N	T3-N
Square 2	T0-P	T1-P	T2-P	T3-P
Square 3	T0-N	T3-N	T1-N	T2-N
Square 4	T0-P	T3-P	T1-P	T2-P
Square 5	T0-N	T2-N	T3-N	T1-N
Square 6	T0-P	T2-P	T3-P	T1-P
Block 2:				
Square 7	T0-N	T4-N	T5-N	T6-N
Square 8	T0-P	T4-P	T5-P	T6-P
Square 9	T0-N	T6-N	T4-N	T5-N
Square 10	T0-P	T6-P	T4-P	T5-P
Square 11	T0-N	T5-N	T6-N	T4-N
Square 12	T0-P	T5-P	T6-P	T4-P

Notes: T0 to T6 refers to the type of treatment, T0 being the baseline intervention. Block 1 focuses on treatments T1-2-3 and block 2 on treatments T4-5-6. The baseline intervention is only played in period 1. In periods 2 to 4, the order of treatments is varied within blocks to ensure an equal number of squares playing each combination of treatments. N refers to the no information treatment in which no information is given about the recipient or the sender. P refers to the partial information treatment in which information on the gender, age, schooling, and income category is given about the recipient or the sender, but never his/her identity or phone number.

Table 1: Sample characteristics and balance

		Female	Age in years	Years of 0-12 education	Post-secondary education	Income in '000 Meticais/month
Sample characteristics:						
Sample mean		0.589	39.963	6.175	0.042	3.445
Sample standard error		(0.036)	(1.003)	(0.235)	(0.015)	(0.420)
Balance across squares:						
Proportion of pairwise comparisons between squares that are significant at the 10% level		2/66	2/66	7/66	8/66	0/66
Joint F-test of balance across all squares	*p-value*	*0.762*	*0.818*	*0.195*	*0.126*	*0.934*
Joint F-test of balance across the partial information and no information treatments	*p-value*	*0.189*	*0.358*	*0.126*	*0.481*	*0.963*
Joint F-test that games 1-2-3 = games 4-5-6	*p-value*	*0.662*	*0.632*	*0.813*	*0.481*	*0.417*

Note: Pairwise comparison tests are obtained by regressing the variable of interest on a square dummy, using only two squares at a time, and counting how many times the dummy is significant. There are 66 (i.e., N(N-1)/2) possible pairs of 12 squares. Using a 10 percent significance level, there should on average be 10 percent significant dummies (i.e., 6.6) if the null of perfect balance across all squares is true. Balance across all squares is tested by regressing the characteristic of interest on square dummies and performing a joint F-test of all dummies. Balance between games 1-2-3 and games 4-5-6 is tested by regressing the characteristic of interest on a games 4-5-6 dummy. Balance across the no information and partial information treatments is tested by regressing the characteristic of interest on the partial information dummy. P-values from these tests are reported in the Table. Standard errors displayed in parentheses.

Table 2: Average choices made by subjects in treatments T0/1/2/3

	Baseline intervention	Treatment 1: variable cost of sending	Treatment 2: shaming and fixed cost of sending	Treatment 3: erroneous message and fixed cost of sending
	(1)	(2)	(3)	(4)
Redeeming the voucher:				
All subjects	25.9%	13.3%	15.8%	18.8%
	(0.037)	(0.051)	(0.060)	(0.070)
Round 1 only (1)	27.1%	12.5%	12.5%	16.7%
	(0.065)	(0.069)	(0.069)	(0.078)
Rounds 2-4 (2)	25.3%	14.3%	21.4%	25.0%
	(0.045)	(0.078)	(0.114)	(0.164)
Partial information	21.7%	10.7%	12.5%	14.3%
	(0.043)	(0.060)	(0.069)	(0.067)
No information	33.3%	17.6%	21.4%	50.0%
	(0.067)	(0.095)	(0.114)	(0.289)
Number of observations	143	45	38	32
Sending the voucher:				
All subjects	24.2%	14.3%	10.1%	6.3%
	(0.022)	(0.029)	(0.026)	(0.021)
Partial information	21.7%	7.0%	0.0%	6.3%
	(0.029)	(0.034)	(0.000)	(0.030)
No information	26.8%	18.9%	14.7%	6.3%
	(0.032)	(0.041)	(0.037)	(0.030)
Number of observations	392	147	139	128

Note: Each number in the Table is the percentage of decisions falling in the relevant category, with standard errors reported in parentheses. Redeeming the voucher means responding with a 'yes' SMS to our switchboard. Sending the voucher means responding with a 'yes' SMS to an SMS invitation to share information about the voucher with another randomly selected subject. In Treatment 3, the zero value includes both alternatives to sending. Only two subjects sent the erroneous voucher. (1) In round 1 the voucher SMS is sent by the experimenter. (2) In rounds 2-4 the voucher SMS is sent at the request of a subject. Standard deviation shown in parentheses.

Table 3: The decision to redeem the voucher in treatments T0/1/2/3				
		(1)	(2)	(3)
Treatment dummies (T0 is omitted category):				
Treatment 1 dummy (variable cost)		-0.192***	-0.284***	-0.244**
		(0.069)	(0.092)	(0.110)
Treatment 2 dummy (shaming and fixed cost of sending)		-0.194***	-0.286***	-0.302*
		(0.063)	(0.083)	(0.167)
Treatment 3 dummy (erroneous message and fixed cost of sending)		-0.128	-0.199*	-0.164
		(0.088)	(0.104)	(0.120)
Partial information dummy		-0.162*	-0.149*	-0.343
		(0.087)	(0.083)	(0.262)
Dummy=1 if subject redeemed a voucher in a previous period			0.309***	
			(0.115)	
Pairwise differences in individual characteristics times the partial information dummy:				
Same gender				0.194
				(0.136)
Same post-secondary education dummy				-0.018
				(0.163)
Absolute difference in age				0.007
				(0.008)
Absolute difference in income (in '000 Meticais/month)				-0.006
				(0.012)
Round dummies		yes	yes	yes
Period dummies		yes	yes	yes
Treatment sequence dummies		yes	yes	yes
Individual characteristics:		no	yes	yes
Pairwise differences in individual characteristics (uninteracted):		no	no	yes
Intercept		0.467***	0.613***	0.996**
		(0.104)	(0.193)	(0.409)
Adjusted R-squared		0.017	0.146	0.045
Number of observations		258	244	117
Joint coefficient tests:				
Test that T1 ($\beta 1$) = T2 ($\beta 2$)	*p-value*	*0.960*	*0.975*	*0.688*
Test that T1 ($\beta 1$) = T3 ($\beta 3$)	*p-value*	*0.407*	*0.293*	*0.427*
Test that T2 ($\beta 2$) = T3 ($\beta 3$)	*p-value*	*0.263*	*0.144*	*0.440*

Note: All regressions are OLS. The dependent variable is a binary variable defined as 1 if, when given the chance, the subject sends an SMS accepting the voucher. In column 3 we only include observations from rounds 2-3-4 since, in round 1, all SMS originate from the experimenters and thus differences in individual characteristics are not defined; we also include as controls the pairwise differences in individual characteristics uninteracted with the partial information dummy. Individual characteristics include a female dummy, age, a post-secondary education dummy, and income in Meticais/month. Clustered standard errors, at the level of the individual, reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: The decision to send the voucher in treatments T0/1/2/3				
		(1)	(2)	(3)
Treatment dummies (T0 is omitted category):				
Treatment 1 dummy (variable cost)		-0.110*	-0.085	-0.152**
		(0.056)	(0.053)	(0.075)
Treatment 2 dummy (shaming and fixed cost of sending)		-0.170***	-0.133**	-0.166**
		(0.063)	(0.066)	(0.072)
Treatment 3 dummy (erroneous message and fixed cost of sending)		-0.189***	-0.184***	-0.222**
		(0.072)	(0.065)	(0.087)
Partial information dummy		-0.050	0.025	-0.115
		(0.057)	(0.040)	(0.084)
Additional cost of sending the voucher		-0.001	0.001	0.000
		(0.004)	(0.003)	(0.004)
Dummy=1 if subject redeemed a voucher in the current period			0.450***	
			(0.068)	
Dummy=1 if subject redeemed a voucher in a previous period			0.137**	
			(0.059)	
Pairwise differences in individual characteristics times the partial information dummy:				
Same gender				0.036
				(0.037)
Same post-secondary education dummy				0.058
				(0.058)
Absolute difference in age				0.000
				(0.002)
Absolute difference in income (in '000 Meticais/month)				-0.001
				(0.004)
Round dummies		yes	yes	yes
Period dummies		yes	yes	yes
Treatment sequence dummies		yes	yes	yes
Individual characteristics		no	yes	yes
Pairwise differences in individual characteristics (uninteracted):		no	no	yes
Intercept		0.159	0.249***	0.524***
		(0.109)	(0.092)	(0.163)
R-squared		0.070	0.391	0.168
Number of observations		806	770	731
Joint coefficient tests:				
Test that T1 ($\beta 1$) = T2 ($\beta 2$)	*p-value*	*0.066*	*0.280*	*0.806*
Test that T1 ($\beta 1$) = T3 ($\beta 3$)	*p-value*	*0.016*	*0.050*	*0.035*
Test that T2 ($\beta 2$) = T3 ($\beta 3$)	*p-value*	*0.611*	*0.162*	*0.286*

Note: All regressions are OLS. The dependent variable is a binary variable defined as 1 if, when given the chance, the subject sends an SMS giving the voucher to another subject. In game 3, sending the false message (only 2 observations) is assimilated to not sending the voucher. The additional cost of sending the voucher is 0 in the baseline intervention, 5 Meticais in treatments 2 and 3, and varying between 0/5/10/15 Meticais in treatment 1. There is no sending in round 4. In column 3, we also include as controls the pairwise differences in individual characteristics uninteracted with the partial information dummy. Individual characteristics include a female dummy, age, a post-secondary education dummy, and income in Meticais/month. Clustered standard errors, at the level of the individual, reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Average choices made by subjects in games 0/4/5/6

	Baseline intervention	Treatment 4: dictator game	Treatment 5: ultimatum game	Treatment 6: reverse dictator	
	(1)	(2)	(3)	(4)	(5)
Sending the voucher:	**Sender sent**	**Sender sent**	**Sender sent**	**Sender sent**	**Receiver sent back**
All subjects	24.2%	14.8%	17.9%	24.2%	11.8%
	(0.022)	(0.033)	(0.036)	(0.029)	(0.046)
Partial information	21.7%	10.9%	15.9%	19.4%	9.5%
	(0.029)	(0.042)	(0.044)	(0.038)	(0.066)
No information	26.8%	18.3%	20.8%	28.8%	13.3%
	(0.032)	(0.050)	(0.059)	(0.043)	(0.063)
Share sent		3.9%	4.3%		11.6%
Share sent conditional on sending		26.5%	23.9%		98.6%
Number of observations	392	115	117	219	51

Redeeming/accepting the voucher:	**Receiver redeemed**	**Receiver accepted**	**Sender redeemed**
All subjects	25.9%	57.1%	37.5%
	(0.037)	(0.202)	(0.101)
Round 1 only (1)	27.1%	n.a.	37.5%
	(0.065)	n.a.	(0.101)
Rounds 2-4 (2)	25.3%	57.1%	n.a.
	(0.045)	(0.202)	n.a.
Number of observations	143	7	24

Note: Except for the 'Share sent' and the 'Share sent conditional on sending', each number is the proportion of decisions for which the relevant decision was made, e.g., sending something. Standard errors are reported in parentheses. In treatment T4, senders can send up to 35 Meticais to receivers. 'Sender sent' is the proportion of senders sending positive amounts. The 'share sent' is the average amount sent divided by 35, the value of the voucher. Receiving is automatic in this game. Treatment T5 is analogous, except that receivers decide whether to accept offers sent by senders. 'Receiver accepted' is the proportion of accepted take-it-or-leave-it offers. In treatment T6, senders in round 1 have the choice of redeeming the voucher sent by the experimenter by responding with a 'yes' SMS to our switchboard. 'Sender redeemed' shows the proportion of senders doing so. In this treatment senders can send vouchers to receivers like in the baseline intervention: 'sender sent' is the proportion of vouchers sent. Receiving after round 1 is automatic. Receivers can then send back to senders up to the full amount of the voucher received (35 Meticais). 'Receiver sent back' is the proportion of receivers sending back positive amounts. The 'share sent' is the average amount sent back divided by 35, the value of the voucher. (1) In round 1 the voucher SMS is sent at the initiative of the experimenter. (2) In rounds 2-4 the voucher SMS is sent at the request of another subject. Standard errors are displayed in parentheses.

Table 6: The decision to send in treatments T4/5/6				
			(1)	(2)
Treatment dummies (T4 is omitted category):				
	Treatment T5 dummy (ultimatum)		0.051	0.050
			(0.041)	(0.045)
	Treatment T6 dummy (reverse dictator -- sender)		0.159***	0.180***
			(0.058)	(0.061)
	Treatment T6 dummy (reverse dictator -- receiver)		0.072	0.094
			(0.070)	(0.068)
Partial information dummy			-0.049	0.026
			(0.075)	(0.110)
Pairwise differences in individual characteristics times partial information dummy:				
	Same gender dummy			0.113
				(0.073)
	Absolute difference in age			0.002
				(0.004)
	Absolute difference in income (in '000 Meticais/month)			-0.015
				(0.013)
Round dummies			yes	yes
Period dummies			yes	yes
Treatment sequence dummies			yes	yes
Individual characteristics:			no	yes
Pairwise differences in individual characteristics (uninteracted):			no	yes
Intercept			0.216*	0.517***
			(0.114)	(0.169)
R-squared			0.062	0.147
Number of observations			502	465
Joint coefficient tests:				
	Test that T5 ($\beta 5$) = T6 -- sender ($\beta 6$)	*p-value*	*0.073*	*0.033*
	Test that T5 ($\beta 5$) = T6 -- receiver ($\beta 6b$)	*p-value*	*0.776*	*0.524*
	Test that T6 sender ($\beta 6$) = T6 receiver ($\beta 6b$)	*p-value*	*0.095*	*0.091*

Note: All regressions are OLS. The dependent variable is a binary variable defined as 1 if, when given the chance, the subject sends an SMS sharing the voucher with another subject. In column 2 we also include as controls the pairwise differences in individual characteristics uninteracted with the non-anonymous dummy. The absolute difference in education level is omitted due to multicollinearity. Individual characteristics include a female dummy, age, a post-secondary education dummy, and income in Meticais/month. Clustered standard errors, at the level of the individual, reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Amount sent in treatments T4/5/6, conditional on sending

	(1)
Treatment variables (T4 is omitted category):	
Treatment 5 dummy (ultimatum)	-0.911
	(4.448)
Treatment 6 dummy (reverse dictator -- receiver)	25.214***
	(4.577)
Intercept	9.286
	(4.557)
R-squared	0.646
Number of observations	44
Joint coefficient tests:	
Test that game 5 ($\beta 5$) = game 6 -- receiver ($\beta 6b$) *p-value*	*0.000*

Note: All regressions are OLS. The dependent variable is the amount sent to another subject in Meticais, conditional on an amount being sent. This decision is only relevant in T4 (sender), T5 (sender), and T6 (receiver). Due to the small number of observations, other regressors are not included. Clustered standard errors, at the level of the individual, reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8: The decisions to redeem and send in treatments T0/1/2/3 - omitting inactive subjects

			Redeem	Send
			(1)	(2)
Treatment dummies (T0 is omitted category):				
	Treatment 1 dummy (variable cost)		-0.484**	-0.367***
			(0.231)	(0.135)
	Treatment 2 dummy (shaming and fixed cost of sending)		-0.466**	-0.485***
			(0.185)	(0.135)
	Treatment 3 dummy (erroneous message and fixed cost of sending)		-0.287	-0.568***
			(0.254)	(0.127)
Partial information dummy			-0.255	0.106
			(0.174)	(0.087)
Additional cost of sending the voucher				0.004
				(0.008)
Dummy=1 if subject redeemed a voucher in the current period				0.300***
				(0.078)
Dummy=1 if subject redeemed a voucher in a previous period			0.091	0.267***
			(0.147)	(0.087)
Round dummies:			yes	yes
Period dummies:			yes	yes
Treatment sequence dummies			yes	yes
Individual characteristics:			yes	yes
Intercept			1.035***	0.437**
			(0.362)	(0.210)
R-squared			0.125	0.341
Number of observations			107	337
Joint coefficient tests:				
	Test that T1 ($\beta 1$) = T2 ($\beta 2$)	*p-value*	*0.899*	*0.187*
	Test that T1 ($\beta 1$) = T3 ($\beta 3$)	*p-value*	*0.297*	*0.040*
	Test that T2 ($\beta 2$) = T3 ($\beta 3$)	*p-value*	*0.197*	*0.338*

Note: All regressions are OLS. In redeem the voucher, the dependent variable is a binary variable defined as 1 if, when given the chance, the subject sends an SMS accepting the voucher. In send the voucher, the dependent variable is a binary variable defined as 1 if, when given the chance, the subject sends an SMS giving the voucher to another subject. In treatment 3, sending the false message (only 2 observations) is assimilated to not sending the voucher. The additional cost of sending the voucher is 0 in the baseline intervention, 5 Meticais in treatments 2 and 3, and varying between 0/5/10/15 Meticais in treatment 1. Individual characteristics include gender, age, a post-secondary education dummy, and monthly income. Clustered standard errors, at the level of the individual, reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9: The decision to send in treatments T4-5-6 - omitting inactive subject

			send any amount
Treatment dummies (T4 is omitted category):			
	Treatment 5 dummy (ultimatum)		0.087
			(0.069)
	Treatment 6 dummy (reverse dictator -- sender)		0.350***
			(0.088)
	Treatment 6 dummy (reverse dictator -- receiver)		0.277*
			(0.140)
Partial information dummy			0.072
			(0.137)
Round dummies:			yes
Period dummies:			yes
Treatment sequence dummies			yes
Individual characteristics:			yes
Intercept			0.431
			(0.281)
R-squared			0.151
Number of observations			245
Joint coefficient tests:			
	Test that T5 ($\beta 5$) = T6 -- sender ($\beta 6$)	*p-value*	*0.007*
	Test that T5 ($\beta 5$) = T6 -- receiver ($\beta 6b$)	*p-value*	*0.195*
	Test that T6 sender ($\beta 6$) = T6 receiver ($\beta 6b$)	*p-value*	*0.577*

Note: All regressions are OLS. The dependent variable is a binary variable defined as 1 if, when given the chance, the subject sends an SMS sharing the voucher with another subject. Individual characteristics include gender, age, a post-secondary education dummy, and monthly income. Clustered standard errors, at the level of the individual, reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table A1: Introductory messages

Version	Language	Introductory messages		
		All subjects/days		
Anonymous and non-anonymous	Original Portuguese	Msg d project mKesh NOVAFRICA. Enviaremos sms em breve. Respond pra ganhar bonus mKesh. Respond a cada numero que lhe enviar SMS. Duvidas ligue ou SMS-821783387	NOVAFRICA. Nossas SMS NAO SAO ENVIADAS por 823131. SAO ENVIADAS por varios NUMEROS NORMAIS. Respond a cada numero. So custa SMS ou 2 meticais quando nao tem SMS	Senhor(a) fez parte do estudo mKesh. Daremos oportunidade de ganhar dinheiro em mKesh. No fim tera um bonus por participar de 70Mts. Responder custa 1sms ou 2Mts
	English translation	Message from project mKesh NOVAFRICA. We will soon send SMS. Answer to earn bonus mKesh. Answer to each number sending SMS. Any doubts call or send SMS to 821783387.	NOVAFRICA. Our SMS ARE NOT SENT through 823131. They ARE SENT through several REGULAR NUMBERS. Answer to each of those numbers. It only costs SMS or 2 Meticais when you do not have SMS.	You took part in the mKesh study. We will give you the opportunity to earn money in mKesh. In the end you will have a bonus of 70 Meticais for participating. Responding costs 1 SMS or 2 Meticais.

Table A2: Messages in the baseline intervention

Version	Language	Redeeming messages		Sending messages	
		day 1			
Anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35Mts a pessoa [1-4]? Responda SIM se quiser.
	Original Portuguese	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Responda SIM se quiser.
Non-anonymous	**English translation**	You can earn 35 Meticais in your mKesh account. For that purpose, you need to respond to this message with the word YES in the next 24 hours.		You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are 4 messages, one for each person.]
		days 2 and 3			
Anonymous	**Original Portuguese**	Ate quatro pessoas deram-t possibilidade d ganhar 35Mts na sua conta mKesh. Pra aceitar deve responder cada mensagem seguinte com a palavra SIM nas proximas 24h	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35Mts a pessoa [1-4]? Responda SIM se quiser.
	Original Portuguese	Ate quatro pessoas deram-t possibilidade d ganhar 35Mts na sua conta mKesh. Pra aceitar deve responder cada mensagem seguinte com a palavra SIM nas proximas 24h	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35Mts a pessoa 1? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser.
Non-anonymous	**English translation**	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are up to 4 messages, one for each person.]	You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are 4 messages, one for each person.]
		day 4			
Anonymous	**Original Portuguese**	Ate quatro pessoas deram-t possibilidade d ganhar 35Mts na sua conta mKesh. Pra aceitar deve responder cada mensagem seguinte com a palavra SIM nas proximas 24h	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser.		
	Original Portuguese	Ate quatro pessoas deram-t possibilidade d ganhar 35Mts na sua conta mKesh. Pra aceitar deve responder cada mensagem seguinte com a palavra SIM nas proximas 24h	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser.		
Non-anonymous	**English translation**	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are up to 4 messages, one for each person.]		

Table A3: Messages in treatment T1

Version	Language	Redeeming messages		Sending messages	
		day 1			
Anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? Se quiser responda SIM. O custo sera [0/5/10/15]Mts em conta mKesh.
Non-anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Se quiser responda SIM. O custo sera [0/5/10/15]Mts em conta mKesh.
	English translation	You can earn 35 Meticais in your mKesh account. For that purpose, you need to respond to this message with the word YES in the next 24 hours.		You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours. You may also have to pay a fee.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. The cost will be [0/5/10/15] Meticais in the mKesh account. [These are 4 messages, one for each person, with random price between the four levels.]
		days 2 and 3			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? Se quiser responda SIM. O custo sera [0/5/10/15]Mts em conta mKesh.
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Se quiser responda SIM. O custo sera [0/5/10/15]Mts em conta mKesh.
	English translation	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are up to 4 messages, one for each person.]	You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours. You may also have to pay a fee.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. The cost will be [0/5/10/15] Meticais in the mKesh account. [These are 4 messages, one for each person, with random price between the four levels.]
		day 4			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser.		
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser.		
	English translation	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are up to 4 messages, one for each person.]		

Table A4: Messages in treatment T2

Version	Language	Redeeming messages		Sending messages	
		day 1			
Anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35Mts a pessoa [1-4]? Se quiser resp/a SIM. O custo sera 5Mts em mKesh. Em alternativa enviaremos um codigo errado a pessoa.
Non-anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Se quiser resp/a SIM. O custo sera 5Mts em mKesh. Em alternativa enviaremos um codigo errado a pessoa.
	English translation	You can earn 35 Meticais in your mKesh account. For that purpose, you need to respond to this message with the word YES in the next 24 hours.		You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours. You may also have to pay a fee.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. The cost will be 5 Meticais in the mKesh account. [These are 4 messages, one for each person.]
		days 2 and 3			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35Mts a pessoa [1-4]? Se quiser resp/a SIM. O custo sera 5Mts em mKesh. Em alternativa enviaremos um codigo errado a pessoa.
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Se quiser resp/a SIM. O custo sera 5Mts em mKesh. Em alternativa enviaremos um codigo errado a pessoa.
	English translation	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [OR] Person [1-4] sent you a wrong code, which does not let you win 35 Meticais. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income.	You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours. You may also have to pay a fee.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. The cost will be 5 Meticais in the mKesh account. [These are 4 messages, one for each person.]
		day 4			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts.		
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes.		
	English translation	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [OR] Person [1-4] sent you a wrong code, which does not let you win 35 Meticais. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income.		

Table A5: Messages in treatment T3

Version	Language	Redeeming messages		Sending messages	
		day 1			
Anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35Mts a pessoa [1-4]? Se quiser resp/a SIM. O custo sera 5Mts em mKesh. 2 altern/as: enviarmos codigo errado -resp/a NAO. enviarmos nada -nao resp/a.
	Original Portuguese	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Se quiser resp/a SIM. O custo sera 5Mts em mKesh. 2 altern/as: enviarmos codigo errado -resp/a NAO. enviarmos nada -nao resp/a.
Non-anonymous					
	English translation	You can earn 35 Meticais in your mKesh account. For that purpose, you need to respond to this message with the word YES in the next 24 hours.		You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours. You may also have to pay a fee.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. The cost will be 5 Meticais in the mKesh account. 2 alternatives: we send a wrong code - respond NO; we do not send anything - do not respond. [These are 4 messages, one for each person.]
		days 2 and 3			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35Mts a pessoa [1-4]? Se quiser resp/a SIM. O custo sera 5Mts em mKesh. 2 altern/as: enviarmos codigo errado -resp/a NAO. enviarmos nada -nao resp/a.
	Original Portuguese	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h. Pode tambem ter de pagar uma comissao.	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Se quiser resp/a SIM. O custo sera 5Mts em mKesh. 2 altern/as: enviarmos codigo errado -resp/a NAO. enviarmos nada -nao resp/a.
Non-anonymous					
	English translation	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [OR] Person [1-4] sent you a wrong code, which does not let you win 35 Meticais. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. [These are up to 4 messages, one for each person.]	You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours. You may also have to pay a fee.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. The cost will be 5 Meticais in the mKesh account. 2 alternatives: we send a wrong code - respond NO; we do not send anything - do not respond. [These are 4 messages, one for each person.]
		day 4			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa [1-4]? Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts.		
	Original Portuguese	Ate quatro pessoas enviaram-lhe a possibilidade de ganhar 35 Mts na sua conta mKesh. Para aceitar deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h.	Quer receber 35Mts da pessoa 3? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Responda SIM se quiser. [OR] A pessoa [1-4] enviou-lhe um codigo errado. o que nao lhe deixa ganhar 35 Mts. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes.		
Non-anonymous					
	English translation	Up to four different people gave you the opportunity to earn 35 Meticais in your mKesh account. To accept you need to respond to each of the following messages with the word YES in the next 24 hours.	Do you want to receive 35 Meticais from person [1-4]? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [OR] Person [1-4] sent you a wrong code, which does not let you win 35 Meticais. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. [These are up to 4 messages, one for each person.]		

Table A6: Messages in treatment T4

Version	Language	Redeeming messages		Sending messages
		day 1		
Anonymous	**Original Portuguese**			Ganhou 35Mts em mKesh. Deste valor pode dar ate 35Mts a pessoa [1-4]. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.
Non-anonymous	**Original Portuguese**			Ganhou 35Mts em mKesh. Deste valor pode dar ate 35Mts a pessoa 1. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.
	English translation			You have earned 35 Meticais in your mKesh account. From this value you can give up to 35 Meticais to person [1-4]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond with the value you want to give to this phone number in the next 24 hours. The difference to the 35 Meticais will be in your mKesh account. [These are 4 messages, one for each person.]
		days 2 and 3		
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe algum dinheiro para a sua conta mKesh.	Recebeu [up to 35]Mts da pessoa [1-4].	Ganhou 35Mts em mKesh. Deste valor pode dar ate 35Mts a pessoa [1-4]. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe algum dinheiro para a sua conta mKesh.	Recebeu [up to 35]Mts da pessoa [1-4]. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes.	Ganhou 35Mts em mKesh. Deste valor pode dar ate 35Mts a pessoa 1. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.
	English translation	Up to four different people sent you some money to your mKesh account.	You have received [up to 35] Meticais from person [1-4]. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. [These are up to 4 messages, one for each person.]	You have earned 35 Meticais in your mKesh account. From this value you can give up to 35 Meticais to person [1-4]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond with the value you want to give to this phone number in the next 24 hours. The difference to the 35 Meticais will be in your mKesh account. [These are 4 messages, one for each person.]
		day 4		
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe algum dinheiro para a sua conta mKesh.	Recebeu [up to 35]Mts da pessoa [1-4].	
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe algum dinheiro para a sua conta mKesh.	Recebeu [up to 35]Mts da pessoa [1-4]. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes.	
	English translation	Up to four different people sent you some money to your mKesh account.	You have received [up to 35] Meticais from person [1-4]. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. [These are up to 4 messages, one for each person.]	

Table A7: Messages in treatment T5

Version	Language	Redeeming messages		Sending messages
		day 1		
Anonymous	**Original Portuguese**			Pode ganhar com outra pessoa 35Mts em mKesh. Proponha q/tos Mts de 35 devem ir p/pessoa 1: se ela aceitar. ambos recebem prop/a. senao nada. Resp/a n/o de 0-35 em 24h.
Non-anonymous	**Original Portuguese**			Pode ganhar com outra pessoa 35Mts em mKesh. Proponha q/tos Mts de 35 devem ir p/pessoa 1: se ela aceitar. ambos recebem prop/a. senao nada. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Resp/a n/o de 0-35 em 24h.
	English translation			You can earn 35 Meticais in mKesh together with another person. Propose how many Meticais out of 35 should de given to person [1-4]: if he/she accepts, you both earn the amounts you propose; if he/she does not accept, nobody earns any money. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond with the value between 0 and 35 Meticais in the next 24 hours. [These are 4 messages, one for each person.]
		days 2 and 3		
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe propostas de divisao de 35Mts em conta mKesh. Para cada proposta/pessoa: se aceitar. ambos recebem os valores da proposta. se nao aceitar. ninguem recebe nada.	A pessoa [1-4] propoe dar-lhe [up to 35]Mts e ficar com o resto (de 35Mts). Se quiser aceitar esta proposta responda SIM.	Pode ganhar com outra pessoa 35Mts em mKesh. Proponha q/tos Mts de 35 devem ir p/pessoa 1: se ela aceitar. ambos recebem prop/a. senao nada. Resp/a n/o de 0-35 em 24h.
	Original Portuguese	Ate quatro pessoas enviaram-lhe propostas de divisao de 35Mts em conta mKesh. Para cada proposta/pessoa: se aceitar. ambos recebem os valores da proposta. se nao aceitar. ninguem recebe nada.	A pessoa [1-4] propoe dar-lhe [up to 35]Mts e ficar com o resto (de 35Mts). S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Se quiser aceitar esta proposta responda SIM.	Pode ganhar com outra pessoa 35Mts em mKesh. Proponha q/tos Mts de 35 devem ir p/pessoa 1: se ela aceitar. ambos recebem prop/a. senao nada. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Resp/a n/o de 0-35 em 24h.
Non-anonymous	**English translation**	Up to four different people sent you proposals to divide 35 Meticais in your mKesh account. For each proposal/person: if you accept, both you and that person receive the values in the proposal; if you do not accept, nobody earns any money.	Person [1-4] proposes to give you [up to 35] Meticais and keep the remainder (out of 35 Meticais). His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. If you want to accept this proposal, respond YES. [These are up to 4 messages, one for each person.]	You can earn 35 Meticais in mKesh together with another person. Propose how many Meticais out of 35 should de given to person [1-4]: if he/she accepts, you both earn the amounts you propose; if he/she does not accept, nobody earns any money. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond with the value between 0 and 35 Meticais in the next 24 hours. [These are 4 messages, one for each person.]
		day 4		
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe propostas de divisao de 35Mts em conta mKesh. Para cada proposta/pessoa: se aceitar. ambos recebem os valores da proposta. se nao aceitar. ninguem recebe nada.	A pessoa [1-4] propoe dar-lhe [up to 35]Mts e ficar com o resto (de 35Mts). Se quiser aceitar esta proposta responda SIM.	
	Original Portuguese	Ate quatro pessoas enviaram-lhe propostas de divisao de 35Mts em conta mKesh. Para cada proposta/pessoa: se aceitar. ambos recebem os valores da proposta. se nao aceitar. ninguem recebe nada.	A pessoa [1-4] propoe dar-lhe [up to 35]Mts e ficar com o resto (de 35Mts). S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Se quiser aceitar esta proposta responda SIM.	
Non-anonymous	**English translation**	Up to four different people sent you proposals to divide 35 Meticais in your mKesh account. For each proposal/person: if you accept, both you and that person receive the values in the proposal; if you do not accept, nobody earns any money.	Person [1-4] proposes to give you [up to 35] Meticais and keep the remainder (out of 35 Meticais). His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. If you want to accept this proposal, respond YES. [These are up to 4 messages, one for each person.]	

Table A8: Messages in treatment T6

Version	Language	Redeeming messages		Sending messages	
		day 1			
Anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35Mts a pessoa [1-4]? Responda SIM se quiser.
Non-anonymous	**Original Portuguese**	Pode ganhar 35Mts na sua conta mKesh. Para isso deve responder a esta mensagem com a palavra SIM nas proximas 24h.		Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Responda SIM se quiser.
	English translation	You can earn 35 Meticais in your mKesh account. For that purpose, you need to respond to this message with the word YES in the next 24 hours.		You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are 4 messages, one for each person.]
		days 2 and 3			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe 35 Mts (cada uma) para a sua conta mKesh. Pode recompensar cada uma delas de volta.	Recebeu 35Mts em mKesh da pessoa [1-4]. Deste valor pode dar de volta ate 35Mts. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35Mts a pessoa [1-4]? Responda SIM se quiser.
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe 35 Mts (cada uma) para a sua conta mKesh. Pode recompensar cada uma delas de volta.	Recebeu 35Mts em mKesh da pessoa [1-4]. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Deste valor pode dar de volta ate 35Mts. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.	Pode dar possibilidade de outras 4 pessoas ganhar 35Mts cada uma. Para isso deve responder a cada uma das seguintes mensagens com a palavra SIM nas proximas 24h	Quer dar a ganhar 35 Mts a pessoa [1-4]? S/nome e [e.g., JOSE]. tem [e.g., 30]. a [e.g., 8a cl.]. e tem rend/os de [e.g., 661-1320]Mts/mes. Responda SIM se quiser.
	English translation	Up to four different people sent you 35 Meticais in your mKesh account. You can compensate each one of them back for that.	You have received 35 Meticais from person [1-4]. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. From this value you can give back up to 35 Meticais to person [1-4]. Respond with the value you want to give to this phone number in the next 24 hours. The difference to the 35 Meticais will be in your mKesh account. [These are up to 4 messages, one for each person.]	You can give the opportunity to 4 other people of winning 35 Meticais each. For that purpose, you need to respond to each one of the following messages with the word YES in the next 24 hours.	Do you want to give person [1-4] the opportunity to earn 35 Meticais? His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. Respond YES if you want. [These are 4 messages, one for each person.]
		day 4			
Anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe 35 Mts (cada uma) para a sua conta mKesh. Pode recompensar cada uma delas de volta.	Recebeu 35Mts em mKesh da pessoa [1-4]. Deste valor pode dar de volta ate 35Mts. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.		
Non-anonymous	**Original Portuguese**	Ate quatro pessoas enviaram-lhe 35 Mts (cada uma) para a sua conta mKesh. Pode recompensar cada uma delas de volta.	Recebeu 35Mts em mKesh da pessoa [1-4]. S/nome e [e.g., JOSE]. tem [e.g., 30]. a [8a cl.]. e tem rend/os de [661-1320]Mts/mes. Deste valor pode dar de volta ate 35Mts. Resp/a valor que quer dar p/este n/o em 24h. A dif/a p/os 35 caira na s/ conta mKesh.		
	English translation	Up to four different people sent you 35 Meticais in your mKesh account. You can compensate each one of them back for that.	You have received 35 Meticais from person [1-4]. His/her name is [first name of recipient in capital letters]. He/she is [age] years old, has [level of education], and has [income band in Meticais]/month in income. From this value you can give back up to 35 Meticais to person [1-4]. Respond with the value you want to give to this phone number in the next 24 hours. The difference to the 35 Meticais will be in your mKesh account. [These are up to 4 messages, one for each person.]		

Table B1. Power calculations for all the main regression tests

Variable	Control category	Compared with	n1	n2	delta
For Table 3					
Redeeming	T0	T1	143	45	-0.16
	T0	T2	143	38	-0.17
	T0	T3	143	32	-0.18
	no information (T0)	partial information	71	71	-0.18
	no information (T0/1/2/3)	partial information	134	134	-0.13
For Table 4					
Sending	T0	T1	392	147	-0.10
	T0	T2	392	139	0.10
	T0	T3	392	128	-0.10
	no information (T0)	partial information	196	196	-0.10
	no information (T0/1/2/3)	partial information	403	403	-0.07
For Table 6					
Sending	T4	T5	115	117	0.13
	T4	T6	115	219	0.12
	T4	T6b	115	51	0.17
	no information (T4/5/6/6b)	partial information	251	251	0.10
For Table 7					
Amount sent	T4	T5	17	21	8.39
in Meticais	T4	T6b	17	6	9.27

All calculations are based on actual sample sizes and are centered on average of the control category. n1 is the number of control observations; n2 is the number of observations in the comparison category. Parameters are: alpha=10% significance, power=80% probability to detect. For dichotomous variables (Tables 3, 4 and 6), the option 'twoproportions' is selected and no standard deviation is required. For Table 7 the option 'twomeans' is used since the dependent variable is a continuous variable. Since the amount sent can only take values between 0 and 35 Meticais, we set the standard deviation equal to that of a uniform distribution over the [0,35] interval, which corresponds to random play. It is a conservative (i.e., large) value since, conditional on sending, subjects are likely to send more than 0 Meticais, which is the default value if they don't send anything.