

# **Evaluating the Effects of Entrepreneurship Edutainment in Egypt**

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## **Abstract**

We measured the impact of an edutainment program designed to promote entrepreneurship in young adult viewers and broadcast on one of the most popular Egyptian television channels. To this end, 6,836 young individuals interested in entrepreneurship were selected using a Random-Digit-Dialing method, and 2,441 of their friends were also added to the sample to study the importance of spillover effects. We implemented a randomized controlled trial following a non-symmetric encouragement design. We found that while the show had a limited impact on entrepreneurship-related outcomes, the good performance of some contestants throughout the show changed viewers' opinions in relation to entrepreneurship, in particular gender-related ones. We also found some evidence of spillover effects within clusters of friends.

# 1. Introduction

Television is a powerful instrument of communication all around the world and is especially important in many developing countries where access to other means of communication, such as newspapers, the radio and the internet remains more limited. The place of television is particularly important in Egypt, the most populated country in the Middle East and North Africa (MENA) region where, in 2014, 97.0% of households owned at least one television set while only 45.3% owned a computer and 31.7% used the internet according to the World Bank.<sup>1</sup> Furthermore, Egyptians spend a considerable amount of time watching television: in 2011, 40% reported that they watched television more than four hours a day (PwC, 2012).<sup>2</sup> In parallel to this trend, mainstream programs, such as talent, reality and game shows, have become increasingly popular as a major source of entertainment over the past decades.

As such, television and, in particular, mainstream programs have been increasingly seen as a potential public policy tool, a trend bolstered by recent empirical evidence (La Ferrara, 2015). Indeed, recent studies have shown that exposure to television or radio programs had some crucial long-term societal impacts, particularly on gender-related norms. For instance, Jensen and Oster (2009) showed that the introduction of cable television in India was associated with an increase in women empowerment, materialized by a decrease in the reported acceptability of domestic violence towards women, an increase in women's autonomy and a reduction of son preference. Similarly, Chong and La Ferrera (2009) found that the introduction of television increased the proportion of women either separated or divorced in Brazil, in addition to a decrease in the fertility rate (La Ferrara, Chong and Duryea, 2012), and provided evidence that this effect was partly driven by an increased exposure to telenovelas. Finally, Berg and Zia (2013) found in South Africa that the delivery of educational content on debt management embedded in a popular soap opera increased viewers' knowledge on the subject and modified their borrowing behaviors.

In Egypt, youth unemployment rate is particularly high, as are inequalities of opportunity in the labor market, which are believed to be one of the causes for the current unrest in the country.

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<sup>1</sup> World Development Indicators' information society data for the year 2014.

<sup>2</sup> This observation is more generally true for the whole MENA region (as well as for other regions) where the share of households owning a television set is close to 100% in many countries: for instance, it was at 98% in Algeria, 98% in Iraq, 98% in Lebanon and 100% in Morocco in 2013 (World Development Indicators, information society data). The average number of hours spent watching television was calculated to be of 3.11 hours every day in 17 MENA countries (PwC, 2012).

According to the International Labour Organization (ILO),<sup>3</sup> 13.2% of the economically active population was unemployed in 2013 in Egypt and stark differences existed across gender and age groups: while the overall unemployment rate already exhibited differences across gender with 27.0% of the female actives being unemployed and only 8.8% of the male actives, these numbers peaked to 61.3% and 33.7% respectively for individuals aged between 15 and 24 years old. While these problems are critically high in Egypt, they are widely shared by many countries in the MENA region, as detailed in *Table 1*. Overall, while 12.8% of the economically active population was unemployed in 2013 in the MENA region (excluding high income countries), 22.4% of the female actives were unemployed versus only 10.1% of the male actives. Furthermore, these numbers peaked to 47.6% and 26.3% respectively for individuals aged between 15 and 24 years old.

**Table 1: Unemployment rates in the MENA region (2013)**

	Total	Female	Male	Youth, Total	Youth, Female	Youth, Male
<i>Algeria</i>	9.8	17.3	8.3	20.4	33.0	17.9
<i>Egypt</i>	13.2	27.0	8.8	41.7	61.3	33.7
<i>Jordan</i>	12.6	22.1	10.5	33.3	55.2	27.7
<i>Lebanon</i>	6.2	11.1	4.6	20.2	25.0	17.8
<i>Morocco</i>	9.2	8.9	9.2	18.4	17.5	18.7
<i>Tunisia</i>	13.3	15.7	12.3	31.3	32.2	29.5
<i>MENA (excl. high income countries)</i>	12.8	22.4	10.1	31.2	47.6	26.3

*Notes:* 2013 World Development Indicators. The year 2013 was the last year for which statistics were available for all reported countries. Youth are understood as individuals aged between 15 and 24 years old.

Several piece of evidence also suggest that fostering entrepreneurship may be an adequate policy in the Egyptian context to bypass the problems youths are facing on the labor market to secure a job. In particular, a recent study by Roushdy and Sieverding (2015) showed that 37.2% of young Egyptians express a preference for having their own business over a salaried job, although only 4% are self-employed.<sup>4</sup> The same study also revealed that credit constraints and a lack of appropriate

<sup>3</sup> See ILO's estimates reported in the World Development Indicators' database.

<sup>4</sup> Similarly, 77.7% of the Egyptian adult population considers entrepreneurship a desirable career option according to the GEM Egypt 2010 report (Hattab, 2012).

training and information are perceived as among the main barriers to starting a business. Qualitative work by Sieverding (2012) suggests that these barriers, as perceived by the youths, may actually induce them to reconsider entrepreneurship as either a supplemental income-generating activity or as an option they could pursue later in life once they have established themselves financially or professionally rather than as a conceivable main career option. Instead, many of them seek employment in the public sector.

In this study, we evaluate the impact of an intervention which was specifically designed to promote entrepreneurship to young adults by changing their perception of it and providing them with some basic knowledge, as well as introducing them to local partners delivering more advanced entrepreneurship training, mentorship, financial and technology services. Its main component consisted in a mainstream television program broadcast on one of the major Egyptian channels and featuring 14 young contestants competing in a series of both entertaining and educating challenges to become “Egypt’s most promising entrepreneur.” In parallel to the show, support activities were carried out to create a bridge between the show and the real world: networking events were held in collaboration with partner organizations throughout the country and a website was launched providing information on the show and its partner organizations.

In order to evaluate the impact of the program, we carried out a randomized controlled trial using an encouragement design. We did so because there were strong reasons to expect selection bias with respect to the type of young people who would watch the show and participate in the support activities, and it was impossible to restrict who would watch given that it was broadcast nationwide on a channel available to almost all Egyptians. The same applied to the show’s support activities (its networking events and website). Hence, a subset of our sample, a representative set of young individuals interested in entrepreneurship, was randomly selected to receive a set of encouragements (in the forms of text messages and calls) incentivizing them to watch the show. This induced an exogenous variation in respondents’ exposure to the intervention between respondents who received the encouragements and those who did not, allowing us to interpret any observed differences across groups at endline as the causal impact of the intervention.

In doing so, we contribute to the literature on the impact of the media, as well as the literature on entrepreneurship. First, this is to our knowledge one of the first times (if not the first) a mainstream television program purposely designed to have an impact of public policy interest is evaluated with a large-scale randomized controlled trial. Second, we add to the literature on the impact of

entrepreneurship programs on labor market outcomes by evaluating an innovative program using an alternative method to raise awareness of entrepreneurship. Third, we investigate the importance of peer effects in the context of this intervention and, more generally, in media and entrepreneurship studies. Fourth, we look at the impact of the show on self-employment outcomes, as well as entrepreneurship-related opinions and whether these results vary depending on respondents' gender and employment status at baseline.

We found that the impact of the intervention was limited on self-employment outcomes but was important on respondent's opinions in relation to self-employment, in particular gender-related ones. These effects were driven by male respondents and respondents who were not self-employed at baseline. Furthermore, there was some evidence of spillover effects.

The rest of the article is organized as follows: in section 2, we provide contextual information, including a description of the intervention; in section 3, we describe our empirical strategy; in section 4, we provide a description of our sample; in section 5, we detail our estimation strategy; in section 6, we present our study results; in section 7, we conclude and discuss policy implications.

## **2. Background**

Television has held an increasingly important role in the Egyptian society since its introduction in the late 1950s, influencing or accompanying societal changes (Abu-Lughod, 1993). This movement was favored by the constant increase in Egyptian households' access to a television set as well as in the average number of hours spent daily watching television: as stated previously, according to the World Bank, 97% of the Egyptian households owned at least one television set in 2011 and 40% watched television more than four hours a day (PwC, 2012). This evolution was also favored by the development of an important television industry producing hugely popular mainstream television programs and their broadcasting on national television.

In Egypt and elsewhere, governments and non-profit organizations have tried to use the huge popularity of these mainstream programs to achieve goals of public policy interest by imbedding educational content in entertaining programs – creating so-called “edutainments” (Singhal et al., 2003). For instance, Kearney and Levine (2015) found that *Sesame Street*, an edutainment program introduced in 1969 in the US with the explicit goal of preparing preschool-age children for school entry, improved school readiness. In a developing country setting, Berg and Zia (2013) found in

South Africa that the delivery of educational messages on debt management embedded in the popular soap opera *Scandal!* increased viewers' knowledge on the subject and modified their borrowing behaviours. In Egypt, an oral rehydration therapy campaign taking the form of television spots was launched in 1983 and is believed to have successfully reduced infant mortality caused by diarrhea-related diseases (Abdulla, 2004).

La Ferrara (2015) suggests three potentially concomitant channels through which edutainment programs can have an impact on viewers. First, these shows can have an impact on viewers through the *information* they deliver; second, they can have an impact on viewers' preferences through their observation of the behaviors of characters they can relate to – in line with Bandura's Social Learning Theory (1977) according to which viewers are influenced by the observation of models' behaviors and the consequences of their actions; third, they can have an impact on viewers by changing their time allocation and, more specifically, by increasing the time they dedicate to watching TV and reducing the time they allocate to carrying out other activities. DellaVigna and Gentzkow (2010) consider the first two channels as part of a broad category of "persuasion effects", which can be further fostered when shows appeal to viewers' emotions (Lewin, 1951).

In line with those findings, Bamyán Media<sup>5</sup> produced an innovative mainstream television program, *El Mashroua*, specifically designed to tackle the high youth unemployment rate in Egypt by promoting entrepreneurship to young adults (18-35 years old). The show consisted in 13 episodes involving 14 contestants from various backgrounds.<sup>6</sup> It started with a series of ten challenges<sup>7</sup> (one challenge per episode) opposing two teams of contestants, which aimed at testing contestants' entrepreneurial skills – the least performing contestant of the losing team being eliminated by a set of three judges at the end of each episode.<sup>8</sup> In the last three episodes, the remaining three contestants presented their own business project in front of a panel of judges made up of successful

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<sup>5</sup> Bamyán Media is a social enterprise created in 2010 and registered in the US as a 501c3 non-profit organization. The goal of its edutainment is to "create riveting and compelling content that can spark social movements to improve lives and communities."

<sup>6</sup> Contestants were selected so as to ensure that a maximum number of viewers would be able to relate to at least one contestant: half of the contestants were women; although most of the candidates lived in Cairo, their region of origin varied and all strata of the population were represented among them; contestants belonged to different ethnic and religious groups (some were explicit about their group membership, others were not); some had years of experience as an entrepreneur, others had just had their idea; some had a focus on social entrepreneurship, others did not, and so on.

<sup>7</sup> As part of these challenges, two teams of contestants of equal size were opposed. Such challenges varied from designing an awareness campaign to producing and selling fruit juice in the street and organizing a tourist trip.

<sup>8</sup> Members of the losing team had to vote to eliminate the teammate they thought had underperformed the most and should leave. Ultimately, the decision to eliminate a contestant fell in the hands of a panel of three judges (two of which stayed on throughout the whole TV show, the remaining one being a celebrity guest judge who changed from episode to episode) based on their own opinion and the contestants' vote.

entrepreneurs, each finalist having to prove capable of applying everything they had learnt throughout the show.

In producing this show, Bamyán hoped to change young adults' perception of self-employment, increase viewers' basic knowledge on entrepreneurship and link interested viewers, through its networking events and online activities, to local partners delivering more advanced entrepreneurship training, mentorship, financial and technology services.<sup>9</sup> The show also aimed to change viewers' aspirations related to their favored professional career options and induce more of them to start their own business.

The first episode of the TV show *El-Mashroua* was broadcast on December 21<sup>st</sup>, 2013. An episode aired every Saturday evening from that day on<sup>10</sup> until March 29<sup>th</sup>. For the purpose of this research project, it is interesting to note that female contestants performed particularly well throughout the show, the best ranking first and third. This allowed us to test the specific impact the show had on gender-related opinions, in particular those related to self-employment.

### **3. Empirical strategy**

#### **A. Sampling strategy**

From December 30<sup>th</sup> 2013 to January 4<sup>th</sup> 2014, a randomly generated set of mobile phone numbers<sup>11</sup> were called to select a sample and collect baseline information. In order to have a sample that was as representative as possible of the intervention's target group, only individuals who matched the following inclusion criteria were included: a/ age between 18 and 35 years old; b/ who watched TV at least from time to time; c/ interested in starting a business.<sup>12</sup> A sample of 6,836 individuals was

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<sup>9</sup> In parallel to the TV show, Bamyán Media also organized a series of events throughout the country before, during and after the broadcasting of the show with the objective of connecting viewers with organizations which could help them start a business. A website containing information about the show and partner organizations was also launched. The organization was also very active on various social media. These support activities' objectives were to make it possible for young individuals interested in starting their own business and financial, training and mentoring organizations dedicated to helping young entrepreneurs to come together.

<sup>10</sup> With the exception of the 6<sup>th</sup> episode, originally scheduled to air on January 21<sup>st</sup>, which was postponed to the following week due to the multiple bombings which happened on that day in Egypt and received extensive coverage from the channel on which *El-Mashroua* was broadcast.

<sup>11</sup> According to the Demographic and Health Survey, over 90% of the Egyptian households owned a cell phone in 2014 and, according to the International Telecommunication Union's World Telecommunication/ICT Development Report and database, there were 114 mobile cellular subscriptions per 100 inhabitants in Egypt in 2014.

<http://data.worldbank.org/indicator/IT.CEL.SETS.P2>

<sup>12</sup> It was also implicit that respondents also had to own a mobile phone and accept to answer our baseline questionnaire.



constituted. As part of the baseline survey, data was also collected on a limited set of background characteristics such as respondents’ gender, education, location, asset ownership etc.

Importantly for the design of this experiment, these 6,836 respondents (referred to as “*prime* respondents” hereafter) were asked to provide the contact details of up to three of their friends meeting our inclusion criteria. 5,268 prime respondents did not share any of their friends’ contact details, 913 shared the contact details of one of their friends, 437 of two of their friends, and 218 of three of their friends. In total, 2,441 additional respondents (referred to as “*secondary* respondents” hereafter) were added to our sample, within which clusters of friends were created.

In *Figure 1* below, we describe the structure of our sample.

Whole sample	Prime respondents	Secondary respondents
	Group 1 (with friends) <b>R1</b>	Group 3 <b>R3</b>
	Group 2 (without friends) <b>R2</b>	

**Figure 1 - Sample structure**

## **B. Identification strategy**

### **a. Set up**

Measuring the impact of the intervention entails finding a comparison group mimicking what would have happened to respondents who were exposed to the intervention had they *not* been exposed to it (the counterfactual). Finding a good comparison group is at the core of any impact evaluation and represents the main challenge for those attempting to measure the effect of the incidence of mass media programs on individuals’ life. Indeed, one needs to identify a group of individuals who were not exposed to the intervention but resemble as much as possible the ones who were: the larger the differences between the groups compared, the higher the chances that one confounds the impact of the intervention and those of pre-existing differences between groups. For instance, a *naïve* comparison of individuals who watched the show with those who did not is likely to yield biased estimates if the decision to watch the show is somehow correlated with their prior level of interest in starting a business, which in turn is likely to be correlated with the outcomes we are interested in,

such as respondents' perceptions of entrepreneurship, knowledge about self-employment, professional career aspirations and behaviors.

In the search for a comparison group, an option is to find an exogenous source of variation in the probability of individuals to be exposed to mass media programs – the comparison group being then constituted by the individuals who could have been exposed to the program but were not. This identification strategy has recently been used quite extensively in studies aiming to measure the overall impact of access to television and/or radio programs. For instance, Jensen and Oster (2009), Olken (2009), Chong and La Ferrara (2009), La Ferrara, Chong and Duryea (2012), and Farré and Fasani (2013) all use as a mean of identification variations in signal reception, used as a source of variation in exposure to television programs, which they argue is exogenous in the context of their studies.

However, studies evaluating the impact of a specific program usually cannot rely on such natural source of exogenous variation in individuals' exposure to the program. An alternative that has been used consists in artificially creating this source of variation by encouraging some individuals but not others to gain exposure to the program. For instance, Palluck and Green (2009) exposed Rwandan villagers to a radio program aimed at discouraging blind obedience and reliance on direction from the authorities following the genocide by sending research assistants to villages where they played each month four 20-minute episodes on a portable stereo for a group of listeners. Berg and Zia (2013) provided financial incentives to treatment respondents which were conditional on the passing of a questionnaire testing respondents' knowledge of the show. The impact of the program was then estimated on the set of individuals who responded to the encouragements by gaining exposure to the program.

## **b. Study design**

As the show was broadcast nation-wide on a channel available to all and, naturally, there were strong reasons to expect significant selection with respect to the type of individuals who would gain exposure to the intervention, we implemented a randomized controlled trial following an encouragement design to generate the counterfactual for our treatment group. Individuals were randomly allocated to either a treatment or a control group, differing only by the level of encouragement they received to gain exposure to the intervention. This design guarantees that the two groups were comparable prior to the roll-out of the intervention (or that respondents' treatment

status was not correlated with their baseline characteristics) and allows us to measure unbiased causal estimates of the intervention impact.

Our study design differs from the one used in Palluck and Green (2009) and Berg and Zia (2013) in a crucial way. Indeed, both relied on a *symmetric* encouragement design: control villages in Palluck and Green (2009) and control respondents in Berg and Zia (2013) also received similar incentives to respectively listen to an alternative radio program and watch an alternative TV program. A practical advantage of symmetric encouragement designs lies in their greater statistical power, achieved through a reduction in the exposure to the relevant show of the control group. Hence, these symmetric designs estimate the impact of a program *conditional* on listening to or watching a program. Unfortunately, this impact is arbitrarily conditional on the choice of the alternative program the control group is exposed to and cannot capture the (potentially negative) consequences of a likely increase in the amount of time allocated to watching television or listening to the radio – see Zavodny (2006) and Olken (2009) for discussions on the possible negative impact of mass media programs.<sup>13</sup>

As part of this experiment, we opted for a *non-symmetric* encouragement design, in which the control group received no encouragement whatsoever. People in our sample were randomized at the *individual* level after a stratification by gender, whether an individual was a prime or a secondary respondent (in the latter case, whether the respondent was the first, second or third name provided was also taken into account) and whether or not an email address was provided at baseline (a proxy for respondents' access to the internet). This divided the sample into two broad categories of respondents:

- ❖ T0: Individual *i* did *not* receive the encouragement her/himself
- ❖ T1: Individual *i* received the encouragement her/himself

However, in the context of our sample containing groups of friends, this individual-level randomization mechanically split the sample in the following four groups of respondents:

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<sup>13</sup> To our knowledge, the only other experiment using a non-symmetric encouragement design in order to assess the impact of a media program is Bjorvatn et al. (2015). In this study, the authors evaluated the impact of a TV show promoting entrepreneurship broadcast in Tanzania. The randomization was carried out at the (secondary) school level. However, the limited number of schools involved in the study failed to create comparable control and treatment groups.

- ❖ G0: Individual  $i$  did not receive the encouragement her/himself and none of their friends (if any) did either (*pure control group*)
- ❖ G1: Individual  $i$  received the encouragement her/himself but none of their friends (if any) did
- ❖ G2: Individual  $i$  did not receive the encouragement her/himself but at least one of their friends did (conditional on belonging to a cluster containing at least one friend)
- ❖ G3: Individual  $i$  received the encouragement her/himself and at least one of their friends did too (conditional on belonging to a cluster containing at least one friend)

So as to increase the policy relevance of our findings, we relied on a cheap and easily replicable encouragements (although weaker than those provided in other studies): encouragements were provided in the form of text messages written in Arabic and sent to the phone of treatment respondents from the fifth episode<sup>14</sup> on January 18<sup>th</sup>, 2014 onwards. One or two text messages were sent every week to encourage *treatment* respondents to watch the TV show and browse the show's website until the 13<sup>th</sup> and final episode was broadcast on March 29<sup>th</sup> (encouragements are reported in *Annex D*). In order to make up for the late start and further increase the differential take-up rate across the groups, we provided additional encouragements during the month following the end of the TV show: treatment respondents were all called and encouraged to watch the show's episodes online and take a quiz testing their knowledge of the show. As part of these calls, respondents were also told about the content of the website. In order to satisfy the exclusion restriction required for instrumental variable (IV) estimations, the content of the encouragements merely reminded treatment respondents of the date and time of the show and aimed to spark receivers' interest by providing them with the main topic covered in the upcoming episode. Hence it is unlikely that the encouragements had any *direct* impact on respondents – at least not on the set of outcomes we focus on in this article. In particular, encouragements did not contain any gender-related information.

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<sup>14</sup> Unfortunately, the collection of the baseline survey encountered several delays and was only finalized at the beginning of January 2014, which meant that encouragements could only be sent from the fifth episode onwards.

## **4. Data collection and sample description**

### **A. Data collection**

As already mentioned, background information was collected over the phone on each prime respondent included in the study sample. In particular, information was collected on their gender, age, governorate of residence, professional occupation and highest level of education. Finally, assets ownership data was collected as well and used to calculate a wealth index based on which respondents were ranked and sub-divided into quartiles. Unfortunately, secondary respondents could not be contacted prior to the roll-out of the encouragements, and we could only obtain their age and gender via their prime respondent.

The endline survey<sup>15</sup> was carried out over the phone from April, 30<sup>th</sup> 2015 to January, 31<sup>st</sup> 2016 and designed so as to detect but also understand any change in respondents' professional aspirations and any professional-related decisions they may have taken since the beginning of the intervention. In order to do so, the questionnaire aimed to assess whether or not the intervention had any impact on respondents' conceptions of entrepreneurship. In particular, the questionnaire asked about respondents' perceived importance of various barriers to starting a business (such as the lack of funding, appropriate skills or the complexity of the regulation, etc.) and of their conception of what it would be like for them to start and run a business (how many hours they thought they would work, the monthly income they thought they earn, how much financial risk they thought they would bear, etc.). Also, the questionnaire collected information on respondents' knowledge of the Egyptian entrepreneurial eco-system.

Finally, questions were also asked to investigate whether or not the good performance of the female contestants throughout the show had induced changes in some of the viewers' gender-related opinions, and measure the extent to which respondents were exposed to the encouragements and the intervention. Information as also gathered so as to detect any other changes in respondents' opinions.

In total, 60% of all individuals could be successfully surveyed as part of the endline survey, 16 to 24 months after the completion of the baseline survey. Among the group of respondents who could be surveyed at endline, 2,777 received the encouragements and 2,743 did not. Out of those, 1,915

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<sup>15</sup> In total, the completion of the endline questionnaire took between 15 and 20 minutes.

belonged to G0, 1,875 to G1, 862 to G2 and 868 to G3. The attrition rate was balanced across groups irrespective of the specification considered (whether or not baseline covariates were added to the regression), as detailed in *Table 2*: the differential attrition rate was always small and non-significant.

**TABLE 2: ATTRITION RATE**

	(1)	(2)
G1	0.015 (0.012)	0.004 (0.007)
G2	0.021 (0.020)	-0.001 (0.005)
G3	0.015 (0.021)	-0.005 (0.005)
Pure control mean	0.420	0.420
F-test	0.624	1.176
Prob > F	0.599	0.317
SPI F-test	0.626	1.299
SPI Prob > F	0.535	0.273
Strata FE	YES	YES
Add. Con.	NO	NO
Sample size	9,277	9,277

*Notes:* In this table, we regress a dummy variable, taking to value "1" when a respondent completed the endline questionnaire and "0" otherwise, on a constant, treatment group variables and strata fixed effects. We do so without (column (1)) and with the standard set of covariates (column (2)). Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

## B. Sample description

In *Table 3.a*, we describe the average baseline characteristics of the individuals included in our sample who could also be surveyed at endline (5,520 respondents i.e. 59.5% of the total sample). We also provide the characteristics of individuals belonging to the three following groups: 1/ prime respondents who provided the contact details of at least one of their friends (R1); 2/ prime respondents who did not provide the contact details of any of their friends (R2); and 3/ secondary respondents (R3) – for whom only gender, age and email address could be collected. In *Table 3.b*, we compare the average characteristics of the individuals included in our sample with those of the *whole* Egyptian population using two different and independent data sources (CAPMAS 2013 population statistics and the 2014 Demographic and Health Survey).

Our sample was overwhelmingly constituted of young adult males: they represented 83.5% of the respondents reached at endline and the average age was 27 years old,<sup>16</sup> which may explain some of the discrepancies observed between our sample and the Egyptian population. Indeed, 26.1% of the respondents included in our sample lived in one of the four city governorates Cairo, Alexandria, Port Said and Suez, while these Governorates only represent 17.7% of the total Egyptian population according to CAPMAS. As a consequence, individuals living in Lower or Upper Egypt were under-represented in our sample. In addition, respondents appeared more educated than the overall Egyptian population: only 4.7% of our respondents had no education at all and 30.5% graduated from secondary school, as opposed to 32.5% and 11.2% respectively in the overall population. However, asset ownership data tend to suggest that our respondents' level of wealth was comparable to that of the average Egyptian. In particular, 98.4% of respondents declared to own a TV set and 91.7% declared to have access to cable television, which largely confirms that respondents were to a very large extent exposed to mass media and had the means to gain exposure to the intervention.

Finally, our sample displayed two important features for the design of this evaluation. First, 22.5% of respondents were already self-employed at baseline. This allowed us to draw comparisons between self-employed and non-self-employed respondents and assess whether the show induced respondents to have a more accurate vision of entrepreneurship. Second, there appeared to be some

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<sup>16</sup> Our inclusion criteria may provide a first explanation for the over-representation of males in our sample. Indeed, females appear to be less interested in entrepreneurship than males according to the 2009 Survey of Young People in Egypt. However, qualitative evidence gathered throughout the project also suggests that women were significantly more difficult to survey over the phone than men.

differences between R1 and R2 respondents. In particular, male prime respondents shared the contact details of at least one of their friends more frequently than female prime respondents. The R1 group also appeared less educated and more frequently engaged in home duties than employed in the private sector. As mentioned earlier, we accounted for these differences across types of respondents by including respondents' type fixed effects in our regression model specification.

As expected given the design of the experiment, the characteristics of the individuals included in our sample appeared largely uncorrelated with whether or not they received the encouragements, as displayed in *Table 4*. Coefficients displayed in this table were obtained by regressing each of the baseline characteristics displayed in the left column on a constant, our treatment variables G1, G2 and G3 and the set of *R1/R2/R3 x cluster size* strata fixed effects. Differences remained small and non-significant, suggesting again that respondents' treatment status was uncorrelated with respondents' baseline characteristics: out of the 99 reported coefficients, 4 were significant at the 10% level and only one was significant at the 5% level.



**TABLE 3.a: SAMPLE CHARACTERISTICS**

Variables	Total			R1			R2			R3				
	N	Mean	Sd	N	Mean	Sd	N	Diff.	Pv	Sig	N	Diff.	Pv	Pv
Male	5,517	0.835	0.372	1034	0.852	0.355	2921	-0.042	0.019	**	1562	0.106	0.000	***
Age	4,781	26.995	4.700	1034	26.822	4.644	2185	0.517	0.021	**	1562	-0.426	0.057	*
Email address shared	4,781	0.176	0.381	1034	0.333	0.471	2185	-0.124	0.000	***	1562	-0.254	0.000	***
<b>Schooling level</b>														
<i>Never went to school</i>	4,470	0.030	0.172	1034	0.021	0.144	1874	0.020	0.017	**				
<i>Primary school</i>	4,470	0.147	0.354	1034	0.130	0.336	1874	0.029	0.088	*				
<i>Secondary education</i>	4,470	0.475	0.499	1034	0.479	0.500	1874	-0.015	0.539					
<i>Higher education</i>	4,470	0.348	0.476	1034	0.370	0.483	1874	-0.034	0.131					
<i>Missing</i>	5,520	0.190	0.393	1034	0.000	0.000	2924	0.359	0.000	***				
<b>Location</b>														
<i>Urban Gov.</i>	4,475	0.261	0.439	1034	0.269	0.444	1879	-0.019	0.372					
<i>Lower Egypt</i>	4,475	0.378	0.485	1034	0.373	0.484	1879	0.010	0.653					
<i>Upper Egypt</i>	4,475	0.339	0.473	1034	0.334	0.472	1879	0.016	0.463					
<i>Frontier Gov.</i>	4,475	0.022	0.147	1034	0.024	0.154	1879	-0.008	0.296					
<i>Missing</i>	5,520	0.189	0.392	1034	0.000	0.000	2924	0.357	0.000	***				
<b>Status</b>														
<i>Employee, private sect.</i>	4,475	0.381	0.486	1034	0.395	0.489	1879	-0.019	0.417					
<i>Self-employed</i>	4,475	0.220	0.414	1034	0.219	0.413	1879	0.003	0.886					
<i>Unpaid fam. Worker</i>	4,475	0.019	0.136	1034	0.019	0.138	1879	0.002	0.756					
<i>Apprentice/intern</i>	4,475	0.006	0.076	1034	0.008	0.088	1879	-0.004	0.245					
<i>Student</i>	4,475	0.203	0.402	1034	0.206	0.405	1879	-0.007	0.705					
<i>Unempl., looking</i>	4,475	0.066	0.247	1034	0.067	0.250	1879	-0.004	0.714					
<i>Unempl., home duties</i>	4,475	0.083	0.276	1034	0.068	0.251	1879	0.023	0.090	*				
<i>Unempl., not looking</i>	4,475	0.022	0.148	1034	0.019	0.138	1879	0.006	0.335					
<i>Missing</i>	5,520	0.189	0.392	1034	0.000	0.000	2924	0.357	0.000	***				
<b>Dwelling</b>														
<i>Apartment</i>	4,475	0.373	0.484	1034	0.381	0.486	1879	-0.032	0.172					
<i>House</i>	4,475	0.616	0.486	1034	0.607	0.489	1879	0.029	0.213					
<i>Other</i>	4,475	0.012	0.107	1034	0.012	0.107	1879	0.003	0.512					
<i>Missing</i>	5,520	0.189	0.392	1034	0.000	0.000	2924	0.357	0.000	***				
<b>Assets ownership</b>														
<i>Livestock</i>	4,473	0.216	0.411	1033	0.232	0.423	1879	-0.028	0.158					
<i>Radio</i>	4,475	0.571	0.495	1034	0.567	0.496	1879	-0.020	0.400					
<i>Clock</i>	4,472	0.809	0.393	1034	0.806	0.396	1876	0.008	0.673					
<i>Refrigerator</i>	4,473	0.957	0.202	1034	0.957	0.202	1877	-0.004	0.692					
<i>Personal Computer</i>	4,473	0.273	0.445	1034	0.287	0.453	1877	-0.040	0.059	*				
<i>Water Heater</i>	4,474	0.660	0.474	1034	0.657	0.475	1878	0.001	0.958					
<i>Washing Machine</i>	4,473	0.468	0.499	1034	0.466	0.499	1877	0.007	0.770					
<i>Fan</i>	4,472	0.915	0.280	1034	0.922	0.269	1876	-0.014	0.272					
<i>Television</i>	4,471	0.980	0.141	1033	0.976	0.154	1877	0.003	0.697					
<i>Satellite Dish</i>	4,467	0.906	0.293	1032	0.908	0.289	1876	-0.010	0.442					

*Notes:* In this table, we present the average characteristics of our sample, as well as those of three sub-groups: Subset R1 includes prime respondents who provided the contact details of at least one of their friends at baseline; Subset R2 includes prime respondents who did not provide any contact details of their friends at baseline; Subset R3 includes all secondary respondents (prime respondents' friends). We compare the average characteristics of the last two groups with those of the first. Standard errors are clustered at the group of friends' level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels, respectively.

**TABLE 3.b: SAMPLE CHARACTERISTICS, REPRESENTATIVENESS**

Variables	N	Sample		CAPMAS 2014	DHS 2014
		Mean	Sd	Mean	Mean
Male	5,517	0.835	0.372		
Age	4,781	26.995	4.700		
Email address shared	5,520	0.152	0.359		
Schooling level					
<i>Never went to school</i>	4,470	0.030	0.172		0.247
<i>Primary school</i>	4,470	0.147	0.354		0.236
<i>Secondary education</i>	4,470	0.475	0.499		0.402
<i>Higher education</i>	4,470	0.348	0.476		0.116
<i>Missing</i>	5,520	0.190	0.393		
Location					
<i>Urban Gov.</i>	4,475	0.261	0.439	0.177	
<i>Lower Egypt</i>	4,475	0.378	0.485	0.429	
<i>Upper Egypt</i>	4,475	0.339	0.473	0.376	
<i>Frontier Gov.</i>	4,475	0.022	0.147	0.018	
<i>Missing</i>	5,520	0.189	0.392		
Status					
<i>Employee, private sect.</i>	4,475	0.381	0.486		
<i>Self-employed</i>	4,475	0.220	0.414		
<i>Unpaid fam. worker</i>	4,475	0.019	0.136		
<i>Apprentice/intern</i>	4,475	0.006	0.076		
<i>Student</i>	4,475	0.203	0.402		
<i>Unempl., looking</i>	4,475	0.066	0.247		
<i>Unempl., home duties</i>	4,475	0.083	0.276		
<i>Unempl., not looking</i>	4,475	0.022	0.148		
<i>Missing</i>	5,520	0.189	0.392		
Dwelling					
<i>Apartment</i>	4,475	0.373	0.484		0.385*
<i>House</i>	4,475	0.616	0.486		0.597*
<i>Other</i>	4,475	0.012	0.107		0.174*
<i>Missing</i>	5,520	0.189	0.392		
Asset ownership					
<i>Livestock</i>	4,473	0.216	0.411		0.217*
<i>Radio</i>	4,475	0.571	0.495		0.912*
<i>Clock</i>	4,472	0.809	0.393		0.889*
<i>Refrigerator</i>	4,473	0.957	0.202		0.969
<i>Personal computer</i>	4,473	0.273	0.445		0.326
<i>Water heater</i>	4,474	0.660	0.474		0.540
<i>Washing machine</i>	4,473	0.468	0.499		-
<i>Fan</i>	4,472	0.915	0.280		0.968
<i>Television</i>	4,471	0.980	0.141		0.975
<i>Satellite dish</i>	4,467	0.906	0.293		0.966

*Notes:* In this table, we provide the average characteristics of our sample. \* denotes information collected as part of the 2008 edition of the DHS

**TABLE 4: BALANCE CHECKS, SPILLOVERS ALLOWED**

Variables	Control		G1		G2		G3	
	Mean	pv	Diff.	pv	Diff.	pv	Diff.	pv
Male	0.831	0.000	-0.002	0.855	-0.019	0.277	-0.021	0.278
Age	26.99	0.000	0.01	0.932	0.25	0.294	0.13	0.648
Email address shared	0.326	0.000	-0.013	0.353	-0.031	0.103	-0.012	0.546
Schooling level								
<i>Never went to school</i>	0.027	0.000	-0.008	0.157	0.003	0.709	0.007	0.493
<i>Primary school</i>	0.151	0.000	0.007	0.559	-0.028	0.185	-0.029	0.236
<i>Secondary education</i>	0.491	0.000	-0.013	0.407	-0.007	0.804	-0.009	0.799
<i>Higher education</i>	0.341	0.000	-0.006	0.697	0.022	0.397	0.020	0.526
<i>Missing</i>	-0.010	0.000	0.020	0.139	0.010	0.140	0.010	0.140
Location								
<i>Urban Gov.</i>	0.271	0.000	-0.004	0.741	0.034	0.170	-0.009	0.771
<i>Lower Egypt</i>	0.390	0.000	-0.024	0.117	-0.041	0.135	-0.014	0.666
<i>Upper Egypt</i>	0.319	0.000	0.006	0.679	-0.002	0.944	0.020	0.531
<i>Frontier Gov.</i>	0.030	0.000	0.001	0.903	-0.002	0.854	-0.008	0.430
<i>Missing</i>	-0.010	0.000	0.022	0.110	0.011	0.111	0.011	0.111
Status								
<i>Employee, private sect.</i>	0.375	0.000	0.002	0.895	-0.005	0.868	-0.034	0.305
<i>Self-employed</i>	0.225	0.000	-0.005	0.712	-0.006	0.786	0.013	0.656
<i>Unpaid fam. Worker</i>	0.014	0.000	0.007	0.088 *	0.005	0.393	0.000	0.998
<i>Apprentice/intern</i>	0.008	0.000	-0.002	0.350	-0.002	0.643	-0.002	0.712
<i>Student</i>	0.208	0.000	-0.005	0.704	0.007	0.767	0.015	0.591
<i>Unempl., looking</i>	0.082	0.000	-0.011	0.153	-0.024	0.100 *	-0.027	0.118
<i>Unempl., home duties</i>	0.079	0.000	-0.004	0.657	0.012	0.335	0.028	0.100 *
<i>Unempl., not looking</i>	0.019	0.000	-0.005	0.273	0.002	0.741	-0.003	0.662
<i>Missing</i>	-0.010	0.000	0.022	0.110	0.011	0.111	0.011	0.111
Dwelling								
<i>Apartment</i>	0.391	0.000	-0.001	0.975	0.006	0.821	0.001	0.987
<i>House</i>	0.607	0.000	-0.018	0.296	-0.005	0.846	-0.002	0.954
<i>Other</i>	0.013	0.000	-0.004	0.242	-0.011	0.115	-0.009	0.279
<i>Missing</i>	-0.010	0.000	0.022	0.110	0.011	0.111	0.011	0.111
Wealth								
<i>1st Quartile</i>	-0.005	0.000	0.021	0.128	0.009	0.198	0.010	0.184
<i>2nd Quartile</i>	0.204	0.000	-0.003	0.810	-0.015	0.509	0.006	0.827
<i>3rd Quartile</i>	0.273	0.000	-0.018	0.200	-0.037	0.150	-0.029	0.343
<i>4th Quartile</i>	0.262	0.000	-0.017	0.192	-0.012	0.613	-0.043	0.127
<i>Missing</i>	0.266	0.000	0.017	0.202	0.055	0.022 **	0.056	0.061 *
Assets ownership								
<i>Television</i>	0.981	0.000	-0.006	0.302	-0.010	0.207	-0.001	0.902
<i>Satellite Dish</i>	0.919	0.000	0.003	0.805	0.001	0.947	-0.005	0.818

*Notes:* In the table, we provide the average characteristics of the respondents who completed the endline questionnaire and test whether the attrition induced any imbalance between groups of respondents, allowing for the existence of spillovers. In order to do so, each variable displayed in the left column are regressed on a constant, treatment dummy variables and strata fixed effects - as displayed by equation (2). Standard errors are clustered at the group of friends' level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels, respectively.

## 5. Estimation strategy

In order to estimate the impact of the intervention ( $y_i$ ), we estimated the following equation:

$$y_i = \alpha + \beta_1 * G_{1i} + \beta_2 * FC_i * G_{2i} + \beta_3 * FC_i * G_{3i} + CS_i * \mu_1 + X_i * \mu_2 + \varepsilon_i \quad (1)$$

$G_{1i}$  is a dummy variable indicating whether individual  $i$  received the encouragement her/himself but none of his/her friends (if any) did,  $G_{2i}$  is a dummy variable indicating whether individual  $i$  did not receive the encouragement her/himself but at least one of his/her friends did (conditional on belonging to a cluster containing at least one friend) and  $G_{3i}$  is a dummy variable indicating whether individual  $i$  received the encouragement her/himself and at least one of his/her friends did too (conditional on belonging to a cluster containing at least one friend).

$FC_i$  is a dummy variable indicating whether or not individual  $i$  belongs to a cluster of friends containing at least another respondent.  $CS_i$  contains our strata fixed effects: a set of dummy variables indicating the size of the cluster respondent  $i$  belongs to (1, 2, 3 or 4) interacted with dummy variables indicating whether individual  $i$  is a prime respondent who provided us with the contact details of at least one of their friends, a prime respondent who did not provide us with the contact details of at least one of their friends, or a secondary respondent. While the cluster size dummies allowed us to control for variation in the probability of having at least one friend receiving the encouragements across clusters of different sizes, the second group of dummy variables allowed us to control for differences across types of respondents.

A vector of baseline covariates  $X_i$  is also added to the regression. It contains information on the prime respondent of each cluster. In particular, it contains information on their gender, region of residence (city, Lower Egypt, Upper Egypt or frontier governorates), highest level of education and relative level of wealth calculated based on assets ownership data. Given the substantial duration of the data collection,  $X_i$  also contains dummy variables indicating whether the respondent was part of the first, second, third or fourth batch of respondents randomly selected to be contacted first as part of the endline survey.<sup>17</sup>

When estimating equation (1), two statistical tests were carried out for each outcome. First, we tested whether the intervention had any impact:

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<sup>17</sup> We randomly selected respondents to be included in the first, second, third or fourth batch of endline data collection.

**H1:**  $\beta_1 = \beta_2 = \beta_3 = 0$

Second, we investigated the existence of spillover effects. We did so by testing the following joint hypothesis:

**H2:**  $\beta_{R1,2} = \beta_{R2,2} = \beta_{R3,2} = 0$  and  $\beta_{R1,1} = \beta_{R2,3}$ ,  $\beta_{R1,1} = \beta_{R2,3}$ ,  $\beta_{R3,1} = \beta_{R3,3}$

Where  $\beta_{Rg,}$  are the parameters obtained from the estimation of equation (1) for type  $R_r$  respondents only, with  $r \in \{1, 2, 3\}$ .

Finally, we adjusted p-values to account for multiple hypotheses testing by calculating sharpened two-stage q-values whenever required, as described in Anderson (2012).

In order to estimate of the impact of having been exposed to the intervention and having had friends exposed to it, we instrumented the endogenous variables indicating whether or not individual  $i$  had been exposed to the intervention (E1) and whether or not individual  $i$  had at least one friend (as per our knowledge) exposed to it (E2) by G1, G2 and G3. While E1 and especially E2 may be imprecisely estimated and the associated measurement error may be correlated with respondents' treatment status, LATE estimates were nevertheless provided so as to offer an assessment of the size of the effects.

## 6. Results

### A. Take-up rate

As a preliminary check, we investigated whether respondents randomly selected to receive the encouragements did indeed receive these encouragements.<sup>18</sup> We did so for two reasons: first, the technology available in Egypt at the time of the study did not allow us to receive delivery notices that would have enabled us to monitor the good implementation of the encouragements; second, this allowed us to assess the extent to which respondents paid attention to the encouragements we sent. While this aspect is important to all studies relying on encouragement designs, it is of particular importance in countries, such as Egypt, where individuals can receive numerous advertisements via

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<sup>18</sup> In order to limit potential sources of measurement error which may be correlated with the intervention, all questions related to the encouragements and exposure rate were asked at the very end of the interview.

text message on a daily basis and, as a consequence, pay a limited attention to them. This can also provide additional evidence on the effectiveness of text messages as encouragements.

In columns *A.* and *B.* of *Table 5.a*, we report on the impact of the encouragements on the probability of declaring having received at least one text message related to *El Mashroua*, as well as on the number of such text messages received. First, it is reassuring to observe that the share of *control* respondents who declared having received at least one encouragement was small (around 4%) and, on average, they reported having received 0.06 text message advertising *El Mashroua*. Second, the share of treatment respondents who remembered having received at least one encouragement was 20 percentage points higher and, on average, they declared having received 0.5 text message (conditional on remembering to have received at least one encouragement, they reported they had received 3.43 text messages). This suggests both that text messages can be effective encouragements but that only a fraction of the population is receptive to them.

In columns *C.* to *I.* of *Table 5.a*, we analyze the impact of the encouragements on a range of indicators describing respondents' exposure to the intervention and show that receiving the encouragements had a positive impact on almost all take-up indicators. Indeed, receiving the encouragements increased by 6 percentage points the overall exposure rate (column *C.*), defined as the probability for a respondent to have watched at least one episode, visited *El Mashroua*'s website at least once, followed one of their social media or attended at least one of their events. This represented a 66% increase with respect to the exposure rate of the control group and suggests that roughly one respondent in three who remembered having received the encouragements watched at least one episode of the show. This differential exposure rate was largely explained by the large impact encouragements had on the probability of treatment respondents to watch the show: while 7.9% of the control respondents declared they had watched at least one episode of the show, encouragements increased this probability by 5.0 percentage points. Receiving the encouragements also had an impact on the number of episodes watched, however the effect was purely mechanical and entirely driven by the fact that a higher share of individuals who received the encouragements watched the show (the average number of episodes watched conditional on having watched at least one episode was 3.21), which suggests that the show may have had some problems retaining viewers.

However, while the encouragements had a positive and almost always statistically significant impact on all other take-up indicators, the magnitude of these effects was much more limited.

Indeed, their impact was small on the probability of respondents to have visited *El Mashroua*'s website or followed *El Mashroua* on social media,<sup>19</sup> and no impact could be found whatsoever on the probability of respondents to attend an event organized by *El Mashroua*. These results are consistent with the nature of the encouragements sent, primarily designed to increase the TV show viewing rate, as well as with the fact that these other components of the intervention were unfortunately not (or only rarely) advertised as part of the show. However, it is worth reminding that endline data were collected one to two years after the end of the broadcasting of the show and, as a consequence, the magnitude of the first-stage estimates may be slightly underestimated.

In columns J. and K., we estimated the impact of G1, G2 and G3 on the probability for a respondent to have at least one friends exposed to the intervention and on the probability for a respondent to be exposed to the intervention and have at least one friend exposed as well. As expected, to have at least one friend receiving the encouragements increases the probability to have at least one friend exposed to the intervention by 4.0 percentage points for G2 respondents and 5.0 percentage points for G3 respondents. Unfortunately, the G1, G2 and G3 variables do not have any impact on the probability for a respondent to be exposed to the intervention and have at least one friend exposed as well: the attrition rate is too high and the impact of the encouragements too limited. For this reason, we cannot attempt to instrument this variable by G1, G2 and G3 to measure any specific interaction effect.

We then investigated the characteristics of the respondents who responded the most to the encouragements. First, having friends who received the encouragements did not have any impact on any of the take-up indicators: the  $\beta_2$  coefficient was never statistically different from zero and  $\beta_3$  was almost always very similar to  $\beta_1$  (column J.). This suggests that peer effects were at best limited in relation to respondents' exposure to the intervention, potentially limiting the importance of peer effects. Second, we turned to the limited set of background information collected at baseline to estimate the degree of exposure to the intervention by gender, highest level of education and location (*Table 5.b* below). We found that the differential exposure rate was particularly high for female respondents (despite the fact that their level of exposure to the show was considerably higher than the one of the male respondents). The impact of the encouragements was also greater

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<sup>19</sup> Note that the positive impacts found on these secondary indicators may be both a direct consequence of the encouragements received (as some of them advertised *El Mashroua*'s website) and an indirect effect of an increased exposure to the show (for instance the social media were not advertised as part of the encouragements). We lack the data to disentangle the relative importance of both factors but it is of no consequence for what follows.

for more educated respondents, as well as for respondents living in the four city governorates (Alexandria, Cairo, Port Said and Suez), the most urban areas.

Finally, we performed two robustness checks to test the robustness of our first-stage results. First, we checked whether the encouragements had any impact on respondents' exposure to other shows and found no impact. In order to do so, respondents were asked as part of the endline survey to answer the exact same set of exposure-related questions about *El Mashroua* and another TV show ("*The Voice*") broadcast around the same time as *El Mashroua* (questions were first asked about the placebo show, then about *El Mashroua*).<sup>20</sup> We display the results of this placebo test in *Table 5.c* and found no difference between treatment and control respondents' exposure to the placebo show in any of the dimensions investigated, suggesting that the observed differential exposure rate cannot be attributed to any sort of response bias. Second, we investigated whether the magnitude of the first-stage coefficients varied when covariates were added to the regressions and found that it did not (not shown), suggesting again that the randomization was successful in creating two groups of similar composition.

While the size of these coefficients appear large with respect to both the relatively small share of control respondents who have been exposed to the show and the limited share of treatment individuals who remembered having received the encouragements, the differential exposure rate remains small in magnitude. Consequently, it is very likely that the study's statistical power is limited and, therefore, only allows us to detect large effects. In what follow, we report the standard deviation of the outcome variables we investigate in the pure control group (G0) so as to assess the study's statistical power.<sup>21</sup>

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<sup>20</sup> These questions were placed at the very end of the questionnaire in order not to influence the way respondents answered our other questions.

<sup>21</sup> The formula for estimating the minimum detectable effect (in standard deviation) can be expressed as  $MDE=2.83*(s.e./s.d.)$ , with  $\alpha=0.05$  and  $\beta=0.80$  and, where s.e. is the standard error associated with the treatment coefficient and s.d. is the standard deviation of the outcome variable in the pure control group.



**TABLE 5.a: TAKE-UP RATE, EL MASHROUA**

	<i>Encouragements</i>			<i>El Mashroua</i>						<i>Friends</i>	<i>Both</i>
	A.	B.	C.	D.	E.	F.	G.	H.	I.		
	Received enc.	Number of enc. Received	Overall take-up rate	Heard of the show	Watched the show	Number of episodes watched	Visited website	Followed social media	Attended events	Overall take-up rate	Overall take-up rate
G1	0.207*** (0.012)	0.448*** (0.034)	0.059*** (0.010)	0.152*** (0.015)	0.050*** (0.010)	0.111*** (0.029)	0.013*** (0.003)	0.014*** (0.004)	-0.001 (0.001)	0.001 (0.005)	0.001 (0.003)
G2	-0.012 (0.016)	-0.028 (0.044)	0.002 (0.017)	-0.015 (0.025)	0.001 (0.016)	-0.024 (0.046)	-0.005 (0.005)	0.005 (0.007)	0.001 (0.001)	0.040** (0.018)	0.002 (0.009)
G3	0.186*** (0.020)	0.393*** (0.059)	0.061*** (0.018)	0.180*** (0.026)	0.050*** (0.018)	0.071 (0.049)	0.012* (0.007)	0.008 (0.007)	-0.001 (0.000)	0.050*** (0.019)	0.010 (0.011)
Pure control mean	0.039	0.057	0.084	0.248	0.079	0.163	0.003	0.010	0.001	0.019	0.004
F-test	149.4	78.73	15.25	59.44	11.98	6.965	9.117	3.942	0.670	2.873	0.352
Prob > F	0	0	7.23 <sup>e</sup> -10	0	8.28 <sup>e</sup> -08	0.000113	5.17 <sup>e</sup> -06	0.00806	0.571	0.0349	0.788
SPI F-test	1.282	1.762	0.951	0.114	0.641	0.289	0.205	1.300	0.348	2.417	0.843
SPI Prob > F	0.275	0.134	0.433	0.978	0.633	0.885	0.936	0.268	0.846	0.0466	0.497
Strata FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Add. Con.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sample size	4,862	4,644	5,512	5,511	5,511	5,360	5,510	5,512	5,510	5,520	5,520

*Notes:* In this table, we describe both the intensity of the treatment and its impact on the probability that a respondent followed El Mashroua using a range of indicators. We test *no impact of the encouragements hypothesis* (H1), as well as the *no spillover hypothesis* (H2). The results of the former test are displayed in the *F-test* and *Prob>F* rows, while those of the latter are displayed in the *SPI F-test* and *SPI Prob>F* rows. Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 5.b: TAKE-UP RATE, EL MASHROUA**

	<i>Gender</i>		<i>SE Status</i>		<i>Education</i>			<i>Location</i>	
	A.	B.	C.	D.	E.	F.	G.	H.	I.
	Male	Female	Self-employed	Not self-employed	Prim. Educ. and below	Sec. Educ.	High. Educ.	Urban	Rural
G1	0.056*** (0.011)	0.073** (0.030)	0.051** (0.024)	0.060*** (0.011)	0.027 (0.022)	0.060*** (0.018)	0.099*** (0.025)	0.109*** (0.027)	0.050*** (0.014)
G2	0.011 (0.017)	-0.074 (0.067)	0.010 (0.030)	0.000 (0.020)	0.063* (0.037)	-0.013 (0.025)	0.024 (0.032)	0.054 (0.041)	-0.013 (0.019)
G3	0.063*** (0.018)	0.084 (0.071)	0.069** (0.033)	0.059*** (0.022)	0.089** (0.038)	0.036 (0.026)	0.113*** (0.035)	0.115*** (0.043)	0.049** (0.020)
Pure control mean	0.065	0.167	0.066	0.088	0.053	0.092	0.114	0.086	0.093
F-test	12.89	4.234	3.003	12.47	2.453	5.674	8.323	6.552	7.950
Prob > F	2.27e-08	0.00555	0.0298	4.15e-08	0.0623	0.000729	1.78e-05	0.000221	2.83e-05
SPI F-test	0.378	1.071	2.603	0.273	1.874	0.951	3.418	0.758	0.828
SPI Prob > F	0.824	0.369	0.0349	0.895	0.113	0.433	0.00868	0.553	0.507
Strata FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Add. Con.	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sample size	4,598	911	983	4,529	791	2,120	1,553	1,167	3,302

*Notes:* In this table, we describe both the overall exposure rate to the intervention by sub-groups of respondents. We test *no impact of the encouragements* hypothesis (H1), as well as the *no spillover* hypothesis (H2). The results of the former test are displayed in the *F-test* and *Prob>F* rows, while those of the latter are displayed in the *SPI F-test* and *SPI Prob>F* rows. Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 5.c: TAKE-UP RATE, THE VOICE**

	A.	B.	C.	<i>Self</i> D. Number of episodes watched	E.	F.	G.	<i>Friends</i> H.	<i>Both</i> I.
	Overall take-up rate	Heard of the show	Watched the show		Visited website	Followed social media	Attended events	Overall take-up rate	Overall take-up rate
G1	-0.013 (0.014)	0.004 (0.015)	-0.017 (0.014)	0.017 (0.112)	0.000 (0.004)	-0.006 (0.006)	-0.001 (0.001)	-0.006 (0.007)	-0.005 (0.006)
G2	-0.017 (0.024)	0.003 (0.025)	-0.020 (0.023)	-0.066 (0.185)	0.006 (0.007)	0.009 (0.012)	-0.001 (0.000)	-0.031 (0.023)	-0.016 (0.017)
G3	-0.015 (0.025)	-0.010 (0.027)	-0.016 (0.025)	-0.018 (0.195)	0.000 (0.006)	0.004 (0.011)	-0.001 (0.000)	-0.006 (0.026)	0.002 (0.021)
Pure control mean	0.267	0.409	0.262	1.388	0.014	0.043	0.001	0.059	0.026
F-test	0.340	0.133	0.591	0.0719	0.278	0.736	0.668	0.819	0.606
Prob > F	0.796	0.940	0.621	0.975	0.841	0.530	0.572	0.483	0.611
SPI F-test	0.730	0.376	0.861	1.204	1.144	0.548	0.236	0.672	0.603
SPI Prob > F	0.571	0.826	0.487	0.307	0.334	0.700	0.918	0.612	0.661
Strata FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Add. Con.	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sample size	5,512	5,512	5,512	5,189	5,512	5,512	5,512	5,520	5,520

*Notes:* In this table, we describe both the intensity of the treatment and its impact on the probability that a respondent followed The Voice using a range of indicators. We test *no impact of the encouragements hypothesis* (H1), as well as the *no spillover hypothesis* (H2). The results of the former test are displayed in the *F-test* and *Prob>F* rows, while those of the latter are displayed in the *SPI F-test* and *SPI Prob>F* rows. Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

## B. Impact on self-employment outcomes

### a. Final outcomes

We first investigated the impact of the TV show on self-employment-related outcomes. More specifically, we measured the impact of the intervention on the probability for respondents to have taken any decision with respect to their professional career since January 2014 (month during which encouragements started being sent), on the probability for respondents to have taken any steps towards the creation of a business, as well as on the probability for respondents to report self-employment as their primary activity at endline. The impact of the intervention was also measured on respondents' aspirations related to self-employment – more precisely on the probability for respondents to choose self-employment as their favorite present and future professional career option,<sup>22</sup> as well as on the probability for them to still plan to start a business or a new business in the future.

As reported in *Table 6.a*, 36.3% of the *pure control* respondents (G0) reported that they had made a decision with respect to their professional career since the beginning of the broadcasting of the show, 19.2% reported they had made a decision related to the creation of a business and 25.3% reported to be self-employed at endline (only slightly more than at baseline – 22.5%). Furthermore, in *Table 7a*, 38.9% of the *pure control* respondents chose “self-employment” as the professional career option they would like best for themselves *now*, significantly less than the share of respondents who chose “working as a public employee” (48.0%, not shown in the table). This is consistent with existing evidence on the relative attractiveness of the public sector over other professional career options. Also consistent with prior findings (Sieverding, 2012), the share of respondents who chose “self-employment” as the professional career option they would like best for themselves *in 20 years from now* is significantly higher: over 15% percentage points higher (54.5%). Finally, 76.3% of them reported to be still planning to start a business in the future.

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<sup>22</sup> In order to identify respondents' aspirations, they were asked to rank the following four professional career options: “working as an employee in the *private* sector”, “working as an employee in the *public* sector”, “working as a self-employed person” and “not working.” As a first step towards measuring respondents' aspirations, respondents were first asked to rank these options based on how frequent they were among their family in order to limit possible social desirability and/or anchoring biases (in line with what Bernard and Taffesse (2014) tried to achieve in their Ethiopian study). As a second step, respondents were then asked to rank the same options according to what they would like best for themselves *presently*, and, finally, according to what they would like best for themselves *in 20 years from now*. Given the high number of respondents who only reported their favorite or favorite two options, we only look at the impact of the intervention on respondents' favorite professional career option. Note that respondents could rank several options *ex-aequo*. This explains in what follows why the shares of respondents picking each of these options do not add up exactly to one.

The overall impact of the intervention on self-employment-related outcomes appears limited, as detailed in *Tables 6.a* and *7.a*. No impact could be found on the probability for a respondent to have made a decision with respect to their professional career or to have taken any steps towards the creation of a business since January 2014. Consequently, no impact could be found on the share of self-employed respondents either. Coefficients are negative and very close to zero. Similarly, we could not find any impact of the intervention on respondents' aspirations to be self-employed or even their willingness to start a business, although in this case some point estimates are positive. This suggests that the overall impact of the intervention may have been more limited than initially expected.

In *Tables 6.b* and *7.b*, we looked at the specific impact of the intervention on four subsets of respondents: male respondents, female respondents, respondents who reported self-employment as their primary occupation at baseline and respondents who did not. Most of the indicators appeared unaffected by the intervention for all three groups of respondents (G1, G2 and G3). If anything, we found some limited evidence that the intervention may have had some impact on the first three groups of respondents making some subsets of these groups less likely to have made any decisions with respect to their professional career since January 2014.

## **b. Intermediate outcomes**

Then, we investigated the impact of the TV show on a more intermediate set of outcomes, so as to understand whether the intervention may have had an impact on more malleable outcomes and assess the extent to which the absence of observed impact on final outcomes was due to an inadequate content of the intervention itself or merely to the study's limited statistical power. In particular, we measured whether or not the intervention had any impact on the following groups of outcomes: respondents' knowledge of organizations helping entrepreneurs to start their business,<sup>23</sup> respondents' perceptions of the importance of the existing barriers to starting a business,<sup>24</sup> as well

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<sup>23</sup> In order to do so, respondents were asked whether they knew any organization which could provide them with mentoring services, training and financial support.

<sup>24</sup> In order to do so, respondents were asked to assess the importance of a set of eleven barriers to starting a business on a 1 to 10 scale (10 standing for "extremely preventive barriers"), such as the lack of access to funding, the legislation, the lack of skills and the fear of failure, which all obtained an average score above 6 out of 10 among our *control* respondents. These 11 outcomes were later regrouped into three indexes using the methodology described in Anderson (2012): a resource constraint index (funding, skills, information etc.), an economic structure index (laws and the level of competition) and a societal index (negative perception by society, resistance to change and discrimination based on gender).

as respondents' perceptions of what it would be like for them to run a business<sup>25</sup> – three sets of outcomes on which the intervention was designed to have an impact on.

In *Tables 8, 9 and 10*, we described the level of these intermediate outcomes (at endline) in the group of *pure control* respondents (G0). First, their knowledge of the entrepreneurial eco-system and, in particular, of the organizations providing support to entrepreneurs (among which financial organizations) appeared very limited (*Table 8*): only 14.4% of control respondents knew of an organization providing financial services (such as a loan); 6.36% knew of an organization providing mentoring services; and 3.37% knew of an organization providing training services. Consequently, it was not surprising to find that they reported the lack of funding as the most important barrier to starting a business (*Table 9*). Complicated government laws and the lack of required skills are a distant second, and the fear of failure, negative perception by society and resistance to changes a distant third. Interestingly, *pure control* respondents also believed starting a business to be harder than keeping it running and they also appeared to have a quite positive perception of what it would be like for them to be self-employed in terms of level of interest, autonomy and happiness – which is consistent with our sampling strategy. However, *pure control* respondents did not expect self-employment to be a particularly easy career option: they expected to work over 10 hours a day and to earn 4,500 EGP per month on average (or about 250 USD – a bit less than the monthly GDP per capita at around 300 USD in 2015).

Despite the significant room for improvement in this dimension and the TV show's explicit objective to increase viewers' knowledge of the Egyptian entrepreneurial eco-system, we did not find that the intervention had any impact on the knowledge indicators respondents were asked about. One possible explanation is that this information was often provided too indirectly through either the TV show's website or its networking events, and too rarely as part of the TV show itself. Consequently, no impact could be found either on the perceived importance of funding constraints as a barrier to starting a business. However, some effects of the intervention could be detected on respondents' perception of the importance of several barriers to starting a business. The most

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<sup>25</sup> In order to do so, respondents were asked a series of nine 1 to 10 questions (converted to 0 to 1 questions) designed to capture their perception of what it would be like for them to start a business: the extent to which respondents thought they had the appropriate set of skills to run their own business, how hard it would be for them to start a business, to run a business, how volatile their income would be from one month to another, the level of stress they would face, etc. Respondents were also asked to assess how much they would earn each month, as well as the number of hours they would have to work daily. These 11 outcomes were later regrouped into three indexes using the methodology described in Anderson (2012): a hardship index (appropriate set of skills, how hard it would be to start a business, how hard it would be for them to keep it running), a financial security index (how much their income would vary from one month to another and how much financial risk they would have to bear) and a working condition index (how interesting the work would be, the number of hours of worked, the level of stress, level of income etc.).

significant and robust of these impacts is the one which could be found on treatment respondents' perception of the importance of gender discrimination as a barrier to starting a business. Indeed, it seems that the good performance of female contestants throughout the show led viewers to believe that gender discrimination is a lesser problem. However, it is not clear whether this change is positive from a welfare point of view. Finally the intervention did not have any impact on respondents' conception of what it would be like for them to start a business.

**TABLE 6.a: RESULTS ON RESPONDENTS' BEHAVIORS**

Steps taken towards the creation of a business (since Jan. 2014)

Variables	A. Any important decisions taken with respect to your professional career?			B. Any steps taken towards the creation of a business?			C. Self-employed		
	<i>Effect</i>	<i>Naive p- value</i>	<i>FDR q- value</i>	<i>Effect</i>	<i>Naive p- value</i>	<i>FDR q- value</i>	<i>Effect</i>	<i>Naive p- value</i>	<i>FDR q- value</i>
G1	-0.012 (0.015)	0.438	1	-0.011 (0.013)	0.368	1	-0.002 (0.013)	0.879	1
G2	-0.045* (0.026)	0.086	1	-0.003 (0.022)	0.894	1	-0.016 (0.023)	0.495	1
G3	-0.029 (0.026)	0.269	1	0.008 (0.022)	0.725	1	0.000 (0.023)	1.000	1
Pure control mean	0.363			0.192			0.253		
Pure control s.d.	0.481			0.394			0.435		
F-test	1.006			0.425			0.244		
Prob > F	0.389			0.735			0.866		
SPI F-test	2.709			1.333			0.498		
SPI Prob > F	0.0286			0.255			0.737		
Strata FE	YES			YES			YES		
Add. Con.	YES			YES			YES		
Sample size	5,511			5,511			5,500		

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.



**TABLE 6.b: RESULTS ON RESPONDENTS' STEPS TAKEN TOWARDS BUSINESS CREATION**

Steps taken towards the creation of a business (since Jan. 2014)

Variables	A. Any important decisions taken with respect to your professional career?		B. Any steps taken towards the creation of a business?		C. Self-employed	
	<i>Effect</i>	<i>Naive p-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>Effect</i>	<i>Naive p-value</i>
<i>Not self-employed</i>						
G1	-0.007 (0.017)	0.683	-0.009 (0.014)	0.516	-0.002 (0.014)	0.859
G2	-0.020 (0.029)	0.483	0.011 (0.024)	0.656	-0.015 (0.024)	0.542
G3	-0.004 (0.030)	0.893	0.028 (0.024)	0.260	-0.022 (0.026)	0.394
# Obs.:	4,528		4,528		4,518	
<i>Self-employed</i>						
G1	-0.031 (0.039)	0.429	-0.018 (0.033)	0.579	0.001 (0.041)	0.973
G2	-0.139** (0.061)	0.024	-0.039 (0.047)	0.403	-0.032 (0.058)	0.584
G3	-0.131** (0.060)	0.029	-0.069 (0.046)	0.136	0.067 (0.057)	0.244
# Obs.:	983		983		982	
<i>Males</i>						
G1	0.000 (0.017)	0.979	-0.006 (0.014)	0.663	0.002 (0.016)	0.904
G2	-0.049* (0.028)	0.082	0.008 (0.023)	0.734	-0.012 (0.025)	0.638
G3	-0.030 (0.028)	0.288	0.015 (0.023)	0.507	0.004 (0.026)	0.868
# Obs.:	4,596		4,596		4,589	
<i>Females</i>						
G1	-0.065** (0.033)	0.049	-0.031 (0.026)	0.239	-0.015 (0.015)	0.330
G2	0.015 (0.076)	0.847	-0.066 (0.056)	0.239	-0.035 (0.040)	0.377
G3	0.015 (0.078)	0.851	-0.039 (0.060)	0.513	-0.032 (0.038)	0.399
# Obs.:	912		912		908	
Strata FE	YES		YES		YES	
Add. Con.	YES		YES		YES	

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 7.a: RESULTS ON RESPONDENTS' CURRENT ASPIRATIONS**

Share of respondents choosing self-employment  
as their favorite professional option for  
themselves

Variables	A.			B.			C.		
	Now			In 20 years from now			Plan to start a business in the future		
	<i>Naive</i>	<i>FDR</i>		<i>Naive</i>	<i>FDR</i>		<i>Naive</i>	<i>FDR</i>	
	<i>Effect</i>	<i>p-</i> <i>value</i>	<i>q-</i> <i>value</i>	<i>Effect</i>	<i>p-</i> <i>value</i>	<i>q-</i> <i>value</i>	<i>Effect</i>	<i>p-</i> <i>value</i>	<i>q-</i> <i>value</i>
G1	0.019 (0.016)	0.244	0.681	0.020 (0.018)	0.279	0.681	-0.005 (0.015)	0.721	0.681
G2	0.012 (0.026)	0.652	0.681	-0.023 (0.029)	0.427	0.681	0.033 (0.022)	0.135	0.681
G3	0.040 (0.027)	0.132	0.681	-0.032 (0.029)	0.280	0.681	0.040* (0.022)	0.068	0.681
Pure control mean	0.389			0.545			0.763		
Pure control s.d.	0.488			0.498			0.426		
F-test	1.099			1.181			1.535		
Prob > F	0.348			0.315			0.203		
SPI F-test	0.268			0.836			1.597		
SPI Prob > F	0.898			0.502			0.172		
Strata FE	YES			YES			YES		
Add. Con.	YES			YES			YES		
Sample size	5,427			4,487			4,920		

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 7.b: RESULTS ON RESPONDENTS' CURRENT ASPIRATIONS (HETEROGENEITY)**

Share of respondents choosing self-employment as their favorite professional option for themselves

Variables	A. Now		B. In 20 years from now		C. Plan to start a business in the future	
	Effect	Naive p-value	Effect	Naive p-value	Effect	Naive p-value
<i>Not self-employed</i>						
G1	0.019 (0.021)	0.359	0.031 (0.024)	0.200	-0.023 (0.019)	0.241
G2	0.028 (0.030)	0.350	-0.021 (0.034)	0.528	0.021 (0.025)	0.401
G3	0.039 (0.031)	0.197	-0.040 (0.034)	0.243	0.034 (0.025)	0.174
# Obs.:	3,441		2,881		3,099	
<i>Self-employed</i>						
G1	0.049 (0.041)	0.237	0.024 (0.045)	0.593	-0.003 (0.034)	0.923
G2	-0.026 (0.058)	0.651	-0.013 (0.063)	0.840	0.064 (0.048)	0.183
G3	0.054 (0.059)	0.361	0.014 (0.062)	0.826	0.025 (0.050)	0.612
# Obs.:	970				903	
<i>Males</i>						
G1	0.029 (0.018)	0.112	0.017 (0.020)	0.392	-0.005 (0.016)	0.769
G2	0.006 (0.028)	0.826	-0.028 (0.031)	0.374	0.029 (0.022)	0.202
G3	0.040 (0.029)	0.166	-0.028 (0.031)	0.379	0.033 (0.023)	0.152
# Obs.:	4,530		3,771		4,198	
<i>Females</i>						
G1	-0.013 (0.035)	0.704	0.033 (0.042)	0.429	0.008 (0.041)	0.847
G2	0.121* (0.070)	0.082	0.022 (0.083)	0.792	0.090 (0.084)	0.281
G3	0.094 (0.070)	0.177	-0.081 (0.086)	0.347	0.169** (0.079)	0.034
# Obs.:	894		713		719	
Strata FE	YES		YES		YES	
Add. Con.	YES		YES		YES	

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 8: RESULTS ON RESPONDENTS' KNOWLEDGE***Whether or not respondents know of any organization of the following type:*

	A. Mentoring Org.			B. Financial Org.			C. Training Org.			D. Any		
	<i>Effect</i>	<i>Naive p-value</i>	<i>FDR q-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>FDR q-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>FDR q-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>FDR q-value</i>
G1	0.011* (0.006)	0.087	1.000	-0.001 (0.013)	0.969	1.000	0.001 (0.008)	0.910	1.000	0.001 (0.014)	0.929	1.000
G2	0.002 (0.011)	0.844	1.000	0.015 (0.022)	0.488	1.000	0.006 (0.015)	0.689	1.000	0.005 (0.023)	0.814	1.000
G3	0.004 (0.011)	0.696	1.000	-0.013 (0.021)	0.534	1.000	-0.010 (0.014)	0.481	1.000	-0.028 (0.022)	0.212	1.000
Pure control mean	0.033			0.195			0.065			0.236		
Pure control s.d.	0.180			0.396			0.247			0.425		
F-test	0.996			0.689			0.510			1.009		
Prob > F	0.394			0.559			0.675			0.387		
SPI F-test	0.383			0.243			0.618			0.531		
SPI Prob > F	0.821			0.914			0.650			0.713		
Strata FE	YES			YES			YES			YES		
Add. Con.	YES			YES			YES			YES		
Sample size	5,512			5,509			5,512			5,513		

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 9: RESULTS ON RESPONDENTS' CONCEPTION OF ENTREPRENEURSHIP, PERCEIVED BARRIERS**

*Perceived barriers to starting a business*

		G1		G2		G3		Pure Control
		<i>Effect</i>	<i>Naive p-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>Effect</i>	<i>Naive p-value</i>	Mean & Sd
<b>Index 1</b>	Lack of required skills	-0.007 (0.009)	0.426	0.008 (0.015)	0.599	-0.010 (0.015)	0.478	0.629 0.278
	No access to funding	0.003 (0.008)	0.726	0.022* (0.012)	0.068	0.013 (0.012)	0.281	0.825 0.234
	Lack of access to information	0.000 (0.010)	0.969	-0.001 (0.016)	0.943	0.001 (0.015)	0.945	0.495 0.292
	Lack of access to foreign language training	-0.002 (0.010)	0.806	0.007 (0.016)	0.655	0.008 (0.016)	0.609	0.514 0.303
	Lack of access to technology	-0.012 (0.010)	0.225	-0.015 (0.017)	0.361	-0.010 (0.016)	0.554	0.507 0.303
	<b>Resource Index</b>	-0.006 (0.021)	0.789	0.048 (0.033)	0.146	0.010 (0.032)	0.762	0.013 0.591
	Government laws	-0.008 (0.010)	0.404	-0.035** (0.016)	0.032	-0.021 (0.016)	0.198	0.631 0.301
<b>Index 2</b>	Tough Competition	-0.018* (0.010)	0.061	-0.005 (0.015)	0.721	-0.027* (0.015)	0.085	0.471 0.296
	<b>Economy Index</b>	-0.048* (0.025)	0.055	-0.066 (0.041)	0.107	-0.087** (0.040)	0.030	-0.003 0.777
	Fear of failure	0.012 (0.010)	0.205	0.021 (0.015)	0.160	0.014 (0.015)	0.356	0.606 0.293
<b>Index 3</b>	Negative perception by society	-0.015 (0.009)	0.109	-0.003 (0.015)	0.857	-0.002 (0.015)	0.903	0.585 0.278
	Resistance to change	-0.008 (0.009)	0.386	0.008 (0.014)	0.590	-0.010 (0.015)	0.493	0.566 0.281
	Discrimination based on gender	-0.042*** (0.010)	0.000	-0.035** (0.016)	0.027	-0.024 (0.016)	0.138	0.490 0.301
	<b>Societal Index</b>	-0.041** (0.021)	0.050	-0.004 (0.032)	0.911	-0.016 (0.032)	0.607	0.002 0.634
	<b>Global Index</b>	-0.030* (0.016)	0.057	0.003 (0.024)	0.891	-0.018 (0.024)	0.448	0.005 0.480

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 10: RESULTS ON RESPONDENTS' CONCEPTION OF ENTREPRENEURSHIP, EXPECTATIONS**

*Respondents' expectations of what it would be like for them to start a business*

		G1		G2		G3		Pure Control
On a 1 to 10 scale		<i>Effect</i>	<i>Naive p-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>Effect</i>	<i>Naive p-value</i>	Mean & Sd
<b>Index 1</b>	To what extent do you believe you have the appropriate set of skills to work as a s.e. person?	-0.006 (0.007)	0.390	-0.012 (0.011)	0.304	-0.003 (0.011)	0.817	0.757 0.216
	Taking into account your skills and the existing barriers in the economy, how hard would it for you to start a business of your own?	-0.006 (0.009)	0.531	-0.008 (0.015)	0.613	-0.015 (0.015)	0.292	0.669 0.277
	Taking into account your skills and the existing barriers in the economy, how hard would it for you to keep your business running?	-0.012 (0.010)	0.199	-0.012 (0.015)	0.422	-0.021 (0.016)	0.183	0.495 0.288
	<b>Difficulty Index</b>	-0.010 (0.021)	0.640	-0.000 (0.033)	0.998	-0.033 (0.033)	0.314	-0.003 0.659
<b>Index 2</b>	How much do you think your income would vary from one month to another as a s.e. person?	0.002 (0.008)	0.826	-0.001 (0.013)	0.941	0.006 (0.013)	0.662	0.677 0.241
	How much financial risk do you think you would have to bear as a s.e. person?	-0.005 (0.009)	0.550	0.005 (0.015)	0.721	-0.039*** (0.015)	0.007	0.612 0.270
	<b>Financial risk Index</b>	0.004 (0.026)	0.891	0.003 (0.042)	0.940	-0.065 (0.042)	0.121	0.008 0.778
	How interesting do you think it would to work as a s.e. person?	0.002 (0.006)	0.771	-0.007 (0.010)	0.498	-0.001 (0.010)	0.878	0.857 0.187
<b>Index 3</b>	How much autonomy do you think you would have as a s.e. person?	-0.002 (0.007)	0.780	-0.003 (0.011)	0.751	0.004 (0.011)	0.699	0.826 0.200
	How stressed do you think you would be as a s.e. person?	0.006 (0.009)	0.473	0.038*** (0.014)	0.005	0.027** (0.014)	0.048	0.691 0.270
	How happy would you be as a s.e. person?	-0.000 (0.006)	0.936	0.010 (0.010)	0.313	-0.011 (0.009)	0.257	0.871 0.186
	On average, how much do you think you would earn each month as a s.e. person?	102.336 (256.402)	0.690	478.003 (415.841)	0.250	226.419 (346.277)	0.513	4,515.399 5820
	How many hours do you think you would work in a regular day as a s.e. person?	-0.064 (0.104)	0.535	-0.252 (0.172)	0.142	0.036 (0.174)	0.838	10.547 3.049
<b>Working conditions Index</b>	-0.005 (0.015)	0.742	-0.005 (0.025)	0.849	-0.028 (0.024)	0.229	-0.005 0.463	

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

### C. Impact on opinions related to self-employment

Finally, we investigated whether or not the show had any impact on respondents' opinions related to self-employment. In particular, we took advantage of the good performance of female contestants throughout the show to investigate further whether the intervention had any impact on viewers' gender-related opinions in relation to self-employment. In order to do so, respondents were asked whether they "strongly agreed", "somewhat agreed", "somewhat disagreed" or "strongly disagreed" with a set of statements investigating respondents' gender-related opinions.<sup>26</sup> One of these statements explicitly tested respondents' opinions related to women's ability to successfully run a business. The other two investigated dimensions which were not directly related to the content of the intervention and were added to the questionnaire so as to check whether or not the intervention triggered broader changes in respondents' gender-related opinions. Furthermore, in order to test whether or not the show may have triggered changes in respondents' opinions beyond those related to gender, respondents were asked about two additional statements measuring their perception of the importance of being wealthy and highly educated to successfully run a business.<sup>27</sup>

The share of *pure control* respondents who strongly agreed with each of the five statements were reported in *Table 11.a* and provide a snapshot of potential Egyptian entrepreneurs' mindset. These figures put in evidence the complex position of women in the Egyptian society and the perceived importance of education over wealth: 56.7% of the *pure control* respondents strongly agreed that it is possible for women to successfully run a business, 70.3% strongly agreed that when jobs are scarce, men should have more right to a job than women and 19.3% strongly agreed that a university education is more important for a boy than for a girl. Furthermore, 61.5% strongly agreed that it is possible for individuals without a higher education to successfully run their own business and 49.6% that it is possible for individuals who do not have wealthy parents to successfully run their own business.

We found that the intervention had an impact on some of viewers' opinions and, in particular, on viewers' gender-related opinions in relation to self-employment. In particular, we found that the intervention increased by 4.6 percentage points the share of respondents who received the

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<sup>26</sup> These three statements were the following ones: "In Egypt, it is possible for women to successfully run their own business," "In Egypt, when jobs are scarce, men should have more rights to a job than women," and "In Egypt, a university education is more important for a boy than for a girl."

<sup>27</sup> These two statements were the following ones: "In Egypt, it is possible for individuals without a higher education to successfully run their own business" and "In Egypt, it is possible for individuals who do not have wealthy parents to successfully run their own business."

encouragements but not their friends (G1) who reported to strongly agree that it is possible for women to successfully run their own business. Surprisingly, the effect disappeared when encouragements were sent as well to at least one of their friends (G3). However, the impact of the intervention did not extend to gender-related opinions beyond those related to self-employment.

The intervention also seemed to have had an impact on non-gender related opinions, those related to one's capacity to successfully run their own business without wealthy parents. However, as for the first gender-related outcome, the effect appears quite different across respondents who received the encouragements depending on whether or not at least one of their friends received them as well (G1 and G3 respondents). Indeed, the intervention seemed to have increased by 3 percentage points the share of G1 respondents who reported to strongly agree that it is possible for individuals without wealthy parents to successfully run their own business, but it decreased that share by 5.7 percentage points among G3 respondents.

These patterns tend to suggest that there may have been some spillover effects across respondents within clusters of friends and, indeed, the null hypothesis of the statistical test investigating the existence of spillover effects is rejected for these two outcomes at the 5% threshold (columns A. and E.).<sup>28</sup> Furthermore, it also suggests that increasing the exposure rate of several individuals within a cluster of friends tend to mitigate the effects on respondents who received the encouragements but not their friends. Unfortunately, limited information is available to shed some light on the possible mechanisms behind the observed pattern. However, a working hypothesis is that friends discussing together the content of the show may have emphasized the entertaining aspect of the show at the expense of its educational aspect. In any case, this suggests that peer effects may be an important parameter to take into consideration when explaining the impact of media programs.

In *Table 11.b*, we looked at the specific impact of the intervention on the same four subsets of respondents: males, females, respondents who reported self-employment as their primary occupation at baseline and respondents who did not. Interestingly, the changes in gender-related opinions were more pronounced among male respondents and those who were not self-employed at baseline. The impact of the intervention on respondents' opinions related to the importance of education for entrepreneurs displayed more heterogeneity across groups, although it is at this point not clear why.

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<sup>28</sup> Qualitative work confirmed that the content of the show was discussed within groups of friends.



**TABLE 11.a: RESULTS ON RESPONDENTS' OPINIONS**

Variables	A. In Egypt, it is possible for women to successfully run their own business.			B. In Egypt, when jobs are scarce, men should have more rights to a job than women.			C. In Egypt, a university education is more important for a boy than for a girl.			D. In Egypt, it is possible for individuals without a higher education to successfully run their own business.			E. In Egypt, it is possible for individuals who do not have wealthy parents to successfully run their own business.		
	<i>Effect</i>	<i>Naive p-value</i>	<i>FDR q-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>FDR q-value</i>	<i>Effect</i>	<i>p-value</i>	<i>FDR q-value</i>	<i>Effect</i>	<i>p-value</i>	<i>FDR p-value</i>	<i>Effect</i>	<i>Naive p-value</i>	<i>FDR p-value</i>
G1	0.046*** (0.015)	0.003	0.048	0.003 (0.015)	0.815	1.000	-0.006 (0.013)	0.650	1.000	0.003 (0.015)	0.815	1.000	0.030* (0.016)	0.063	0.376
G2	0.022 (0.026)	0.404	1.000	-0.015 (0.024)	0.526	1.000	0.011 (0.021)	0.596	1.000	-0.015 (0.024)	0.526	1.000	-0.011 (0.027)	0.691	1.000
G3	0.004 (0.026)	0.864	1.000	-0.034 (0.023)	0.147	0.546	0.002 (0.021)	0.932	1.000	-0.034 (0.023)	0.147	0.546	-0.057** (0.026)	0.031	0.278
E1 (LATE)	0.478** (0.242)	0.048	0.316	-0.014 (0.216)	0.949	1.000	-0.121 (0.181)	0.504	1.000	0.185 (0.279)	0.506	1.000	-0.032 (0.237)	0.893	1.000
E2(LATE)	-0.386 (0.516)	0.454	1.000	-0.618 (0.476)	0.195	0.902	0.207 (0.389)	0.595	1.000	-1.295** (0.644)	0.044	0.316	-0.625 (0.528)	0.237	0.902
Pure control mean	0.567			0.703			0.193			0.615			0.496		
Pure control s.d.	0.496			0.457			0.395			0.487			0.500		
F-test	3.174			0.876			0.245			0.588			4.017		
Prob > F	0.0232			0.453			0.865			0.623			0.00726		
SPI F-test	3.024			1.740			0.204			1.192			2.891		
SPI Prob > F	0.0167			0.138			0.936			0.312			0.0210		
Strata FE	YES			YES			YES			YES			YES		
Add. Con.	YES			YES			YES			YES			YES		
Sample size	5,519			5,518			5,520			5,518			5,519		

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

**TABLE 11.b: RESULTS ON RESPONDENTS' OPINIONS (HETEROGENEITY)**

Variables	A. In Egypt, it is possible for women to successfully run their own business.		B. In Egypt, when jobs are scarce, men should have more rights to a job than women.		C. In Egypt, a university education is more important for a boy than for a girl.		D. In Egypt, it is possible for individuals without a higher education to successfully run their own business.		E. In Egypt, it is possible for individuals who do not have wealthy parents to successfully run their own business.	
	Effect	Naive p-value	Effect	Naive p-value	Effect	Naive p-value	Effect	Naive p-value	Effect	Naive p-value
<i>Not self-employed</i>										
G1	0.051*** (0.017)	0.002	-0.006 (0.016)	0.698	-0.000 (0.014)	0.999	0.003 (0.017)	0.851	0.050*** (0.018)	0.005
G2	0.029 (0.029)	0.325	-0.029 (0.027)	0.273	0.007 (0.023)	0.766	-0.023 (0.029)	0.424	-0.011 (0.030)	0.724
G3	0.012 (0.029)	0.671	-0.034 (0.026)	0.197	-0.005 (0.023)	0.826	-0.033 (0.030)	0.266	-0.041 (0.030)	0.170
# Obs.:	4,534		4,534		4,535		4,533		4,534	
<i>Self-employed</i>										
G1	0.017 (0.040)	0.667	0.057* (0.034)	0.100	-0.033 (0.034)	0.322	-0.031 (0.039)	0.435	-0.072* (0.041)	0.081
G2	-0.032 (0.058)	0.581	0.045 (0.053)	0.396	0.023 (0.049)	0.640	-0.054 (0.058)	0.352	-0.021 (0.056)	0.711
G3	-0.029 (0.055)	0.597	-0.024 (0.051)	0.636	0.020 (0.049)	0.683	-0.034 (0.056)	0.549	-0.127** (0.057)	0.025
# Obs.:	985		984		985		985		985	
<i>Males</i>										
G1	0.054*** (0.018)	0.003	0.018 (0.016)	0.249	-0.004 (0.015)	0.790	0.009 (0.018)	0.623	0.029 (0.018)	0.106
G2	0.030 (0.029)	0.302	-0.019 (0.024)	0.442	0.011 (0.023)	0.642	-0.018 (0.027)	0.498	-0.018 (0.028)	0.520
G3	0.005 (0.029)	0.869	-0.039 (0.024)	0.107	-0.001 (0.023)	0.968	-0.036 (0.028)	0.189	-0.066** (0.028)	0.020
# Obs.:	4,604		4,604		4,605		4,603		4,604	
<i>Females</i>										
G1	0.008 (0.027)	0.767	-0.058 (0.038)	0.125	-0.014 (0.019)	0.452	-0.038 (0.036)	0.295	0.037 (0.037)	0.326
G2	-0.045 (0.056)	0.428	0.033 (0.084)	0.696	0.019 (0.041)	0.640	-0.056 (0.081)	0.491	0.054 (0.079)	0.491
G3	-0.003 (0.051)	0.953	0.039 (0.083)	0.639	0.026 (0.039)	0.506	0.041 (0.076)	0.586	0.034 (0.080)	0.673
# Obs.:	912		911		912		912		912	
Strata FE	YES		YES		YES		YES		YES	
Add. Con.	YES		YES		YES		YES		YES	

*Notes:* Standard errors are clustered at the group of friends level. \*, \*\*, \*\*\* denote significance at the 10, 5 and 1 percent levels respectively.

## **7. Conclusion and policy implications**

In this article, we measured the impact of an edutainment program designed to promote entrepreneurship in young adult viewers and broadcast on a popular cable channel in Egypt using a randomized controlled trial following a non-symmetric encouragement design. Our findings have several implications. First, we provided additional evidence that cheap encouragements, such as simple text messages, can be used effectively by policymakers to induce desirable behavioral changes. Second, we put in evidence that the edutainment-based intervention induced changes in respondents' entrepreneurship-related opinions. In particular, the good performance of female contestants throughout the show seems to have had a large impact on some of viewers' gender-related opinions, with a higher share of viewers who reported strongly agreeing that women are capable of running a business successfully and who considered gender discrimination as a lesser barrier to starting a business. The magnitude of these effects put in evidence suggests that mainstream television programs can be a powerful instrument to change individuals' mindset. However, some of these impacts have unclear welfare consequences, which also draws attention to the content of these edutainment programs, the messages they convey and, eventually, the potential negative impact those programs may have on viewers by combining educational and entertainment content and blurring the line between fiction and reality. Finally, we also find some evidence of spillover effects within clusters of friends in relation to respondents' opinions, opening interesting avenues for future research on peer effects and the impact of media programs.

However, we could not find any impact of the intervention on any non-opinion-related outcomes and, in particular, on some of the key outcomes listed in our pre-analysis plan. While the limited statistical power of the study certainly reduces our ability to detect statistically significant effects, it is nevertheless disappointing not to find any effect on any core dimensions the intervention was expected to have a big impact on. In particular, while the intervention aimed to connect interested viewers with local partners delivering more advanced entrepreneurship training, mentorship, financial and technology services (through its networking events and online activities), no impact could be found on viewers' knowledge of the entrepreneurial eco-system in Egypt, suggesting that the intervention failed to create a bridge between the show and the rest of the support activities and partner organizations, as it was initially planned. And indeed, support activities and partner organizations were only rarely advertised throughout the show. Given the perceived importance of

financial constraints and individuals' limited knowledge of the entrepreneurial eco-system, this may have greatly reduced the potential impact of the intervention and explain why no impact could be detected on the share of viewers who took a step towards the creation of a business since the show started being broadcast. Our conclusions do not rule out edutainment programs as a possible effective public policy tool, but rather call attentions again to their content and the way key information are conveyed to viewers.

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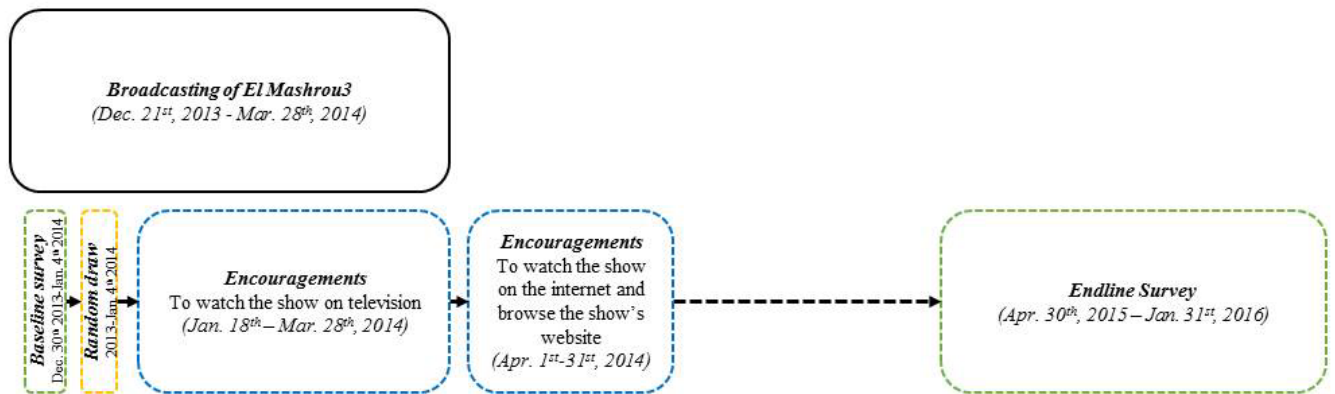
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## 9. Appendices

### A. Study timeline

In figure below, we summarize the study timeline.

**Figure 2: Project Timeline**





## B. Encouragements

In the following table, we list the encouragements sent to treatment respondents in the form of text messages:

**Table 14: List of the encouragements sent**

#	Date	Message (ENG)	Message (AR)
5	Sat.18 <sup>th</sup> , Jan.	Do you want to watch a reality TV show that has action, drama, and the necessary skills to become a successful entrepreneur? Watch "El Mashroua" on Al Nahar tonight at 11 pm	عايز تتفرج على برنامج واقعي في دراما، الكشن، والخطوات المطلوبة عشان تبقى رائد ناجح؟ شاهد "المشروع" على قناة النهار اليوم الساعة ١١ مساءً
6	Thu. 30 <sup>th</sup> , Jan.	Want to learn how to start your business? Create your free account elmashrou3.tv	عايز تعرف ازاي تبدأ مشروع خاص بك؟ خش على elmashrou3.tv و إشتراك ببلاش!
6	Sat. 1 <sup>st</sup> , Feb.	Tonight on Al Nahar at 11, watch entrepreneurs in the kitchen on El Mashroua!	الليلة الساعة 11 على النهار في برنامج المشروع رواد الأعمال في المطبخ
7	Thu. 6 <sup>th</sup> , Feb.	You have been selected to participate in a game: watch El Mashroua every week and answer a short survey testing your knowledge of the show at its end. You may win a Samsung tablet. Information: 01025117112.	تم اختيارك للمشاركة في المسابقة شاهد برنامج المشروع وجاوب استطلاع لاختبار معلوماتك لتفوز بسامسونج نوت8 للمعلومات: 01025117112
7	Sat. 8 <sup>th</sup> , Feb.	Tonight on Al Nahar at 11, learn how to plan business events on El Mashroua!	الليلة الساعة 11 على النهار اتعلم ازاي تخطط حفلات لعملك في المشروع
8	Thu. 13 <sup>th</sup> , Feb.	You have been selected to participate in a game: watch El Mashroua every week and answer a short survey testing your knowledge of the show at its end. You may win a Samsung tablet and other gifts. Information: 01025117112.	تم اختيارك للمشاركة في مسابقة شاهد برنامج المشروع وجاوب استطلاع لاختبار معلوماتك لتفوز بسامسونج نوت8 وهدايا أخرى للمعلومات: 01025117112
8	Sat. 15 <sup>th</sup> , Feb.	Tonight on El Mashroua (Al Nahar, 11pm), contestants face an exciting challenge in the desert!	الليلة الساعة 11 على النهار المتسابقين في الصحراء للتحدي الجديد!
9	Sat. 22 <sup>nd</sup> , Feb.	Tonight on El Mashroua (Al Nahar, 11pm), contestants learn how to advertize their business!	الليلة في المشروع (النهار الساعة 11) المتسابقين يعلنوا عن مشاريعهم!
10	Sat. 1 <sup>st</sup> , Mar.	Watch El Mashroua on Al Nahar tonight (11pm), contestants organize exciting fashion shows, last challenge before the grand finale!	الليلة الساعة 11 قناة النهار المتسابقين بيحضرو عرض! ازياء بديع!
11	Mon. 3 <sup>rd</sup> , Mar.	Want to go beyond the show? Need advice, online courses or micro-finance loans to start your business? Create your account on elmashrou3.tv, you'll find all the information you need to start your business	عاوز أكثر من البرنامج؟ محتاج نصيحة، تدريب أونلاين أو دعم مالي محدود لتبدأ مشروعك؟ إشتراك على elmashrou3.tv و هتتعرف ازاي تبدأ مشروعك
11	Sat. 8 <sup>th</sup> , Mar.	Watch El Mashroua on Al Nahar tonight (11pm) and see how successful entrepreneurs judge contestants' business plan!	الليلة الساعة 11 على النهار رواد أعمال ناجحين يقيموا خطة عمل المتسابقين
Quiz	Tue. 1 <sup>st</sup> , Apr.	Log on elmashrou3.tv and answer our quiz before 15/4 to win a Samsung Tablet	ادخل على elmashrou3.tv شارك في المسابقة قبل 4/15 واكسب سامسونج تابلت

**Notes:** in this table, we report the text messages sent (in Arabic) to treatment respondents to encourage them to watch the show.

### **C. Pre-analysis plan.**

This study was registered in AEA Social Science Registry under number AEARCTR-0000370. Its pre-analysis plan can be accessed through the following link:

<https://www.socialscienceregistry.org/trials/370>