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Sandrine Mesplé-Somps, Björn Nilsson

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Role models, Aspirations and Desire to migrate

Abstract

This paper investigates the impact of role models on aspirations and the desire to migrate in rural Mali, implementing an RCT. Three documentaries are shown, depicting two successful life stories of non-migrants and migrants, and one unsuccessful migrant's life story. We find that an identification process takes place, and that positive migrant and non-migrant role models increase aspirations and the feeling of control over one's future, and decrease depression symptoms. None has a significant average impact on the desire to migrate. Heterogeneity analysis on the desire to migrate using Machine Learning suggests that belonging to migrant-prone households increases responses to positive and negative migrant role models. It also suggests working in agriculture, bad health conditions, low aspirations and living with migrants induce a stronger response to the film about local opportunities.

Keywords: Aspirations, Role models, Migration, Sub-Saharan Africa.

JEL Classification: D91, F22, O15, O55

1 Introduction

Role models, defined as persons with whom individuals can identify (Ray 2006), have been shown to change behavior: investment of farmers (Bernard et al. 2018), girls' educational attainment (Beaman et al. 2012; Riley 2022) — in particular their math performance (Dennehy and Dasgupta 2017; Porter and Serra 2020) — or even fertility (La Ferrara, Chong, and Duryea 2012). One of the ways in which role models affect behavior is by raising aspirations. By providing counterexamples, they are also able to change beliefs and stereotypes (Marx and Roman 2002). Bernard et al. (2018) additionally show that they can affect locus of control, a concept measuring if individuals believe that external forces or themselves are the most important in determining their course of life. Finally, role models have also been shown to provide factual information, for instance about returns to schooling (Nguyen 2008) which in turn affect both aspirations and efforts.

Our first hypothesis in this paper is that role models act on individuals' aspirations, and on their locus of control, features that have been linked to economic decision-making in the broader economic literature.¹ The second hypothesis we test is that role models alter the desire to migrate, all the more so as they impact aspirations and locus of control. This second hypothesis echoes a literature that posits links between aspirations and migration (Carling 2002; Czaika and Vothknecht 2014; De Haas 2021) or that investigates non-cognitive determinants of migration behavior such as locus of control (Toney, Pitcher, and Stinner 1985; Caliendo et al. 2019) or self-efficacy (Groenewold, Bruijn, and Bilsborrow 2012).² More precisely, we first test whether documentaries depicting life stories of migrants and non-migrants change aspirations, depression symptoms and feeling of control over individuals' future. We then investigate if the desire to migrate responds to these role models. We ask whether the above outcomes respond to life stories portraying 1) success in leveraging local economic opportunities, 2) failure in migration, and 3)

¹Aspiration has been linked to economic decision-making in the broader economic literature. For instance, aspiration indices have been linked to educational decisions (Beaman et al. 2012; Clark et al. 2020; Riley 2022) as well as savings and investment decisions (Macours and Vakis 2014; Bernard et al. 2018; McKenzie, Mohpal, and Yang 2022). See Genicot and Ray (2020) for a summary of the theoretical and empirical literature on aspirations. Locus of control has also previously been tied to many aspects of economic behavior such as features of the job search process (Caliendo, Cobb-Clark, and Uhlendorff 2015; Heywood, Jirjahn, and Struewing 2017), investments in education (Coleman and DeLeire 2003; Heckman, Stixrud, and Urzua 2006; Mendolia and Walker 2014b), health decisions (Chiteji 2010; Cobb-Clark, Kassenboehmer, and Schurer 2014; Mendolia and Walker 2014a), farmer technology adoption (Abay, Blalock, and Berhane 2017), savings and investment decisions (Cobb-Clark, Kassenboehmer, and Sinning 2016; Pinger, Schäfer, and Schumacher 2018; Salamanca et al. 2020) and insurance uptake (Bonsang and Costa-Font 2022).

²Other psychological traits are also investigated as predictors of migration behaviors, like adaptability (Bütikofer and Peri 2021) and risk preference (Jaeger et al. 2010; Bauernschuster et al. 2014).

success brought on by a migration episode.

We set up a randomized controlled trial on a sample of 2000 young men living in the Kayes region in Mali. We show three documentaries portraying individuals of the same sex, age group and geographical origin as our study population. The documentaries were filmed by a Malian anthropologist specialized in visual communication. We define five outcomes of interest: an aspiration index, a locus of control index, depression, desire to migrate, and desire to migrate *and* having made arrangements to do so. The two variables linked to migration are decomposed into five destinations. We also investigate treatment response heterogeneity through the causal forests algorithm (Wager and Athey 2018).

In much of West Africa, migration is primarily an economic decision considered as a means of improving standard of living. In Mali, and particularly in the Kayes region, there is a long-standing history of migration. Malian emigrants represent 6.4% of the Malian population, and almost 40% of Malians living abroad are from the Kayes region.³ Furthermore, Mali is part of the Economic Community of West African States (ECOWAS), within which the free movement of people is assured. Neighboring ECOWAS countries, and in particular Côte d'Ivoire, boast important Malian diasporas. In addition, migration out of Africa is also part of a historical dynamic initiated during French colonization. These migrations towards the North are nowadays more constrained and consequently more irregular. Internal migration is also an important phenomenon, our baseline survey revealing that one-third of respondents want to migrate within the country. In such a context where mobility is strongly rooted in habits and where the migration of a household member is potentially perceived as the only way to improve household living conditions, local opportunities for economic success may be poorly known or underestimated.

We first seek to understand if showing economic and social success of non migrant role models impacts young Malian men, by increasing their aspirations, decreasing depression symptoms, changing their locus of control or reducing their desire to migrate. Second, investigate the impact of a movie featuring an individual who took big risks and ended up failing in his migration project. Even in a setting with high migration, individuals may not be properly informed about potential pitfalls of migration. As shown by Shrestha (2020), potential migrants do not have accurate information about the risks of migrating abroad, even in the Nepalese context where 15% of households have a member

³Source: <https://www.migrationdataportal.org/> and Mesplé-Soms and Nilsson (2020).

abroad.⁴ We hypothesize that a movie featuring failed attempts to migrate will decrease individual’s aspirations, increase depression symptoms, and decrease the desire to migrate.

Third, our aim is to investigate if exposing potential migrants to successful migrants’ stories enhances aspirations, reduces depression symptoms, increases locus of control, and/or increases the desire to migrate. Through this third treatment, we also aim to test if showing a positive experience in migration within the African continent decreases the willingness to migrate to other destinations.

We find that films showing positive role models, with or without migration experiences, significantly increase aspirations in terms of future welfare, and that positive non-migrant role models decrease depression symptoms and increase the feeling of control over one’s future. Turning to the desire to migrate, these two interventions fail to produce significant impacts, as does the film featuring a negative role model. These results hold when controlling for attrition bias. Using an alternative definition of migration, based on preparedness for migration, we however find suggestive evidence that all three films may significantly alter preparedness to migrate to at least one destination. When investigating treatment response heterogeneity through Machine Learning techniques, we find that people with living conditions that could facilitate migration as well as higher aspirations have higher predicted responses to the film showing positive migrant role models. We also find that people who were more often farmers, in worse health, with lower aspirations and with more migrants in their households responded more to the film about local opportunities. Finally, we find that individuals living in poor households and with migrants in their household have a stronger negative response in migration desire when exposed to a negative migrant role model.

This paper contributes to the limited but growing economic literature on role models as a channel of change in behavior or attitudes. First, we confirm that role models do not have to be available in real life to influence behavior, in line with previous work:

⁴Why potential migrants are misinformed about risk in migration is not yet well understood. Research in anthropology and sociology (Bolzman, Gakuba, and Amalaman 2017; Gakuba and Amalaman 2019) and novels like Diome (2003) have shown that people who have failed to migrate do not disclose their attempts to leave or the problems they encountered. Those who have succeeded to migrate abroad are also most often silent on the difficulties encountered, or may underestimate the risks involved with the journey. They and their relatives have invested so much in migration that migrants cannot give a negative image of the migration experience. By definition, the migration experience must be a success; the opposite would be shameful, both for the individuals themselves and for their relatives. Individuals profiting from irregular migration (traffickers) also have an interest in the migration narrative to remain a positive one. This results in a greater emphasis on the emigration option.

Bernard et al. (2015) demonstrate that showing documentaries of successful individuals from the same region of Ethiopia as their sample affected both viewers' investment in their children's education and other future-oriented behaviors. In Uganda, low-performing secondary students who saw a movie featuring a potential role model had better exam results than those who were invited to see a placebo film (Riley 2022). Second, we show that role models have an impact on aspirations, and on locus of control. The efficiency of role models is rooted in social psychology theory. Attitudes and behaviors are strongly shaped by the experience of fellow human beings, and documentaries showing fellow human beings may be able to substitute for actual peers' experiences. Self-efficacy, the belief that results will follow from personal effort, is one belief that may respond to role models: if someone resembling me does something which gives a certain result, the same result should be obtained by me if I undertake the same action. Undervalued self-efficacy may result from narrow individual aspirations windows (Ray 2006; Mani and Riley 2019). Such windows are shaped by individuals' social networks, which in our context of rural Kita are likely to overlap to a large extent with village networks. Given homogeneity in standards of living at the village level, aspirations windows are likely to be narrow and there is a rationale for an effect of stories on successful individuals from similar villages on aspirations. Third, we add to a scant literature on the non-economic drivers of migration. While our treatment induces a change in locus of control and aspirations, it does not produce a change of the desire to migrate. They however seem to resonate particularly with individuals already desiring to migrate, increasing or decreasing their level of preparedness. Our heterogeneity analysis suggests that both aspirations and locus of control seem relevant for the size of the treatment effect, implying that variations were simply not large enough to produce observable differences in the basic migration desire outcome.

Our study also connects with the economic literature on the impact of information on economic opportunities—in urban areas or abroad—on migration behaviors. Bryan, Chowdhury, and Mobarak (2014) test if providing information on types of jobs available in pre-selected destinations increase internal migration in Bangladesh. Beam, McKenzie, and Yang (2016) conduct an experiment in a rural province of the Philippines, and analyze the impact of unilateral facilitation, which takes the form of information provision, assistance and a subsidy for a passport application. Both articles conclude that it is not so much the lack of information on economic opportunities in migration that prevents people from migrating. Instead, financial constraints and risk aversion, particularly in contexts of poverty like Bangladesh, may be too strong to realize the decision to migrate, even when this decision is beneficial for the economic well-being of all.

Closest to our setting, Tjaden and Dunsch (2021) and Bah et al. (2022) focus on the risks of irregular migration. Tjaden and Dunsch (2021) test an intervention providing information about risk through peer-to-peer interactions between Senegalese past migrants and urban candidates for migration. Their results suggest a decreased willingness to migrate irregularly after viewing a film about the dangers of migration and interacting with past migrants. They find no evidence however that their intervention modified factual knowledge about irregular migration among study subjects. The experiment conducted in the rural Gambia by Bah et al. (2022) shows that providing information about risks of the journey to Europe improves the level of knowledge about these dangers but the impact is no longer significant 18 months later, and does not impact the intention to migrate. These results, combined with the lack of impacts from pure information treatments in Bryan, Chowdhury, and Mobarak (2014) and Beam, McKenzie, and Yang (2016), suggest that pure information provision is unlikely to be an efficient policy to influence migration behavior. We therefore place our focus on the aspirations channel, and psychological traits like locus of control and depression symptoms, examining how the provision of role models relates to these outcomes and potentially to migration desire. Finally, our second treatment, showing a negative migration experience, is similar to information campaigns about migration produced by international organizations and allows us to produce some insights on the effectiveness of such international campaigns.⁵ Related to the above discussion on role models, besides the factual content provided in such films, the emotional charge (or salience) of information may matter.⁶ However, we find that informing about the risks of the journey by role models has no effect on aspirations, locus of control or depression symptoms, nor on the general desire to migrate. In contrast, we find that showing local positive role models whose economic and social success does not require any migration experiences impacts significantly and positively aspirations, self confidence (internal locus of control) and reduce depression symptoms. It seems also to lower migration intentions of individuals whose migration plans are the most advanced or who come from

⁵For instance, the International Organization for Migration’s (IOM) project *Aware migrants*, funded by the Italian Ministry of the Interior, produces music videos and short documentaries in association with African artists and media bodies for circulation in African countries. The European Commission’s 2014-2020 *Asylum and Migration Fund* (now replaced by the Asylum, Migration and Integration Fund) financed information campaigns on the dangers of irregular migration for broadcast in Sub-Saharan countries every year. The rationale behind these campaigns is to discourage irregular migration, if not migration per se. Other campaigns are designed to expand the base of information available to potential and current migrants. Examples of this are *InfoMigrants*, a partnership of three European news agencies providing information available to migrants on their journey, and *Telling the real story*, a UNHCR-funded source of personal accounts told by migrants who have crossed the Mediterranean sea.

⁶Consistent with this idea is the finding by Shrestha (2020) that migrants “overupdate” their beliefs on mortality risk when receiving information about the death of a migrant in their community.

families where migration is more common. These results are consistent with Bah et al. (2022) that find that providing information about risks of migration to Europe combined with an offer of skill training to enhance domestic employment opportunities decreases the share of young people who said that they would certainly migrate to Europe within the next five years.

In section 2, we present the interventions, the data collection and randomization procedures, and experimental integrity. Section 3 presents baseline statistics on the desire to migrate. Section 4 is devoted to the presentation of the empirical strategy. Section 5 presents the results, and section 6 concludes.

2 Experimental design and Data

Our experiment consists in showing documentaries at the village level. These documentaries, filmed by a visual anthropologist, are life stories told by the main protagonists and deal with the subjects of labor market opportunities and migration. The films were randomly allocated in 200 villages and shown to individuals surveyed in the first round. The following subsections describe the interventions (contents of the films, sampling, data collection and randomization of the treatment, and experimental integrity). A more exhaustive description of the experimental setup, along with a description of the geographical setting of the *cercle* of Kita, is available in the Online Appendix.

2.1 The interventions

Our intervention sought to evaluate the impact on the desire to migrate of watching documentaries reporting on success stories from the local community and migration experiences.⁷ Three documentary films were conceived and filmed by Sidylamine Bagayoko, a Malian anthropologist specialized in visual communication. The films are very similar in terms of style, length and protagonist background: all three films portray young men from rural areas of Kita telling stories about their lives and their economic success (or lack thereof). None of the protagonists were rich or had any connections to begin with. We deliberately decided that the stories told in the films relating migration episodes show experiences that took place on the African continent. This was done in order to bring the protagonists of the films as close as possible to the respondents, insofar as African

⁷The films can be obtained per request to the authors.

countries are the most common actual destinations of Malian migrants, and are also the most feasible ones given the average living standards of the respondents. The films last about 20 minutes, which is about the same length as the *placebo* film we show in control villages, and as documentaries shown in Ethiopia by Bernard et al. (2015). Protagonists speak in Bambara, and the films were subtitled in French. Initially, we planned for each film to tell the story of two individuals. However, it was very difficult to find a person willing to testify about failure in migration. The negative migration experience film thus only tells the story of one protagonist.

The first film (**Film LO** - *Local opportunities*) portrays two young men called Bablen and Lassina who have successfully set up and grown businesses in their local communities, without help from government or NGOs. The first is a farmer who makes a good living from his farm, regularly investing to buy more livestock and also a mill—the only one in the village—which he rents to villagers. The second runs a small money transfer service, which has become an important feature in the village. He explains how he has become an important figure in the local community since the start of his venture and how he has been able to plow more and more money back into his business, which is continuously growing. This film thus sends a message of the potential for success in the local area.

The second film (**Film NM** - *Negative migration experience*) tells the story of Bamadi, who migrated to Libya through Algeria. After a long spell in Libya, during which he considered attempting a passage to Italy, which never materialized, he ran into an ambush in the capital Tripoli together with two of his countrymen. He escaped, but took a bullet in the leg which put him in the hospital for a month. It was only with the help of his brother who sent money that he managed to return to Mali and, after being examined by the local hospital, was able to undergo surgery in Bamako and return to his home region. He still needs a walking stick to move about and the injuries sustained during migration prevent him from working. The entire family's financial situation has deteriorated since Bamadi's migration episode and he deeply regrets ever having left his home village.

The third film (**Film PM** - *Positive migration experience*), focuses on a successful migration story featuring two car mechanics. One worked in Ghana and Côte d'Ivoire, and the other in Libya. The skills and experience they acquired abroad helped them set up and grow their own current local businesses with many workers and apprentices on their payroll. Diakolou, for example, is the only person in Kita who can use hydraulic scissors designed for work on trucks, a skill that landed him a contract with the Japanese

Development Agency working on the construction of a bridge in the area.

By using short documentaries recounting life stories of inhabitants of Kita, our aim is to identify a clear link between exposure to potential role models and subsequent outcomes. Our experiment is close to Bernard et al. (2015) or Chong and La Ferrara (2009) who show that exposure to role models through documentaries or TV programs impacts behavior. We hypothesize that the provision of information through role models on local opportunities and migration experiences may affect perceptions on opportunities and consequently aspirations and the desire to migrate.

2.2 Sampling, data collection and randomization

We randomly selected 200 villages from a sample frame of 289 rural villages, and surveyed 10 men aged 18 to 35 from each village⁸. In each village, an enumeration area (EA) was randomly chosen and a listing of households carried out. In each EA, 20 households were selected. 10 main households, and 10 replacement households. A sampling step equal to $S = \frac{N}{20}$ was computed, and a random number comprised in the interval $[1, S]$ was drawn, designating the starting point. Surveyors then advanced through their enumeration lists in steps equal to $2S$, to ensure geographical spread of selected households. Within households with several eligible members, we randomly chose the eligible member to interview. The response rate in households stood above 99%, due to the fact that surveyors obtained the villages head's blessing prior to conducting interviews. The choice of surveying men only relates to the fact that female migration, although potentially a growing phenomenon, remains rare in the region studied. We partitioned villages into four groups of equal size by stratified randomization (16 strata), and showed one film in each village. The placebo film was a well known Malian comedy lasting about 20 minutes.

The baseline survey took place in October and November of 2018, and the screenings occurred in February and March of 2019.⁹ Around 73% of baseline interviewees were found at the time. Our endline survey took place in May-June 2019, and mobilized the same surveyors. After a tracking exercise running over the months of July and August, 1856 of the original 2000 individuals had been found and re-interviewed, mainly in their

⁸The National Statistics Office defines 310 of the cercle's 324 villages as rural. Using population data from the 2009 census, we removed villages with a small number of males aged 9-26 years old in order to ensure that a sufficient number of eligible individuals (aged 18 to 35) would be present for the baseline in 2018. This reduced the number of villages to 289, constituting our sampling frame.

⁹Data will be available in a repository and will be accessed via a DOI link, once the article will be accepted.

villages.

Few individuals refused to attend screenings, and for practical reasons, other villagers were allowed to attend. In a majority of villages, more than 10 non-interviewed individuals attended. The village head was often present, and to a lesser extent, the village Imam. In the vast majority of cases, screenings ran uninterrupted, but occasionally they were interrupted due to phone calls received or technical difficulties.¹⁰ In all such cases, screenings were able to resume quickly. Due to an error by one of the surveyors, the wrong film was projected in one of the villages.

2.3 Experimental integrity

The internal validity of the impact evaluation relies on the comparability of the three treatment groups and the control group. Table A.1 reports balance tests for the three treatment experiments on a variety of individual and household level variables. The four treatment arms are mostly balanced. No significant differences are found when comparing treatment groups to the control in individual characteristics like age, having been to school, ethnicity, economic activity, parent’s occupational status, marital status, etc. Yet, there is a small imbalance between the control and Film LO in the proportion of people having completed primary, in the number of migrants in the household and in the proportion of households owning a bike. For the negative film, Film NM, individuals are slightly more likely to have children and to own a bike. For the last film, Film PM, portraying a positive migration experience, individuals are slightly more likely to suffer from depression¹¹, to have current migrants in the household, to own a bike and to wish to migrate abroad or inside Mali at baseline. The F-tests for variables current migrants in the household, owning a bike and wanting to migrate inside Mali are significant. The joint orthogonality tests (F-test) indicate that the variables may be jointly relevant for the three films LO, NM and PM, at the 1% level.

¹⁰See Table OA2 in the Online Appendix for detailed statistics by treated and control villages

¹¹The depression variable is based on the depression module from the Mini International Neuropsychiatric Interview. All individuals were asked two screening questions related to depression, and all who answered positively to one of the two questions were asked an additional seven questions, creating a score from 0 to 9. Individuals with a score higher or equal to 5 were categorized as depressed. The MINI questionnaire has previously been used to measure depression in Burkina Faso (Duthé et al. 2016).

3 The desire to migrate at baseline

The baseline survey shows the importance of migration in the life plans of young rural men in Kita. A full 60% of the 2,000 individuals surveyed said they wanted to leave their place of residence for a period of at least 6 months (Table 1). Nearly all of them wanted to leave to improve their standard of living. They had high hopes that migration would improve their living conditions, which three-quarters of them saw as only fair, if not difficult (Table 1). Migration was therefore perceived as a significant opportunity to escape their current conditions. Yet it is not just international migration that is considered, but also migration within Mali. A total of 28% of the entire sample (or 47% of those wishing to migrate) said they wanted migrate within Mali – essentially to Kéniéba or Bamako – and only one-third of these planned to migrate for more than one year. 31.9 % of the entire sample declare a willingness to migrate abroad, with 9% interested in moving to another Sub-Saharan African country (most often Gabon or Côte d’Ivoire), 4.5% to North Africa (Algeria or Libya), while 18.5% wanted to leave Africa and placed France, Spain and Italy at the top of the list of destinations they would like to reach (Table 1). For international migrants, the vast majority intended to stay abroad for more than a year.

While our main outcome variable concerns the wish to migrate (“Do you wish to live abroad or in another cercle in Mali in the future, for a period of more than 6 months?”), this is in our view the first step of the migration process, which is bounded by a number of constraints, such that a large share of those wishing to migrate probably end up never migrating. There is, however, evidence of a correlation between the desire to migrate and preparations to do so, as well as between preparations for migration and actual flows (Bertoli and Ruysen 2018; Tjaden, Auer, and Laczko 2019). In our data, when asked why they had not yet left a majority of individuals cited a lack of resources to finance the journey. In this regard, internal migration (and also international migration) can sometimes occur as a way of securing the financial capital individuals need to realize their long-term plans (King and Skeldon 2010). Among those who wish to migrate, 34% declare having made at least some arrangements to prepare their departure; for 2/3 of them, that means saving, whereas 20% of them have acquired information from friends living in their locality or abroad about how to migrate, and around 10% have started looking for a job or have taken steps to obtain a passport. By including the joint outcome of desiring to migrate and having made arrangements to do so, we test whether our treatments have a greater effect on individuals closer to the margin of migrating (Beam, McKenzie, and Yang 2016).

Table 1: Migration intentions and sociodemographic characteristics of individuals with and without migration intentions

	Total	Wish to migrate ¹	No wish to migrate	Statistical difference between (2) and (3)
<i>Abroad</i>	<i>31.9</i>			
<i>Outside Africa</i>	<i>18.5</i>			
<i>SS Africa</i>	<i>8.9</i>			
<i>North Africa</i>	<i>4.5</i>			
<i>Inside Mali</i>	<i>28.1</i>			
Age	25.3	25.2	25.5	ns
Have been to school	63.6	65.3	61.1	*
Primary level completed	41.6	43.2	39.3	*
Malinke (Mother tongue)	59.4	58.5	60.6	ns
Work in agr. sector	79.4	81.2	76.8	*
Family worker	71.7	72.6	70.3	ns
Father farmer	81.3	80.5	82.4	ns
Mother inactive	17.8	21.8	11.9	***
Household head's son	65.5	67.7	62.3	**
Household Head	14.3	11.1	19.3	***
Married	58.4	57.4	59.9	ns
Have children	46.0	44.3	48.4	*
Ever diagnosed ²	45.1	51.8	35.0	***
Suffer from depression ³	21.6	26.9	13.8	***
Aspiration Index ⁴	4.2	4.2	4.3	ns
Locus of control Index ⁵	10.7	10.2	11.4	***
Current mig. in the hous.	58.7	62.8	52.5	***
Return mig. in the hous.	43.0	50.8	31.4	***
Ever left the village	58.9	68.8	44.1	***
Ever went abroad	23.1	27.6	16.4	***
<i>Subjective living conditions⁶(%)</i>				
Well or quite well	22.0	20.1	24.9	**
Fairly well	60.5	60.3	60.9	ns
With difficulty	17.5	19.7	14.3	**
Nb. durable goods (Max:8) ⁷	3.5	3.5	3.5	ns
<i>The household owns one or more:</i>				
Motorbike or car	68.7	69.7	67.1	ns
Bike	64.6	64.3	65.0	ns
TV	32.4	34.0	29.9	*
Solar module	58.1	57.6	59.0	ns
N	2000	1200	800	
%	100	60.0	40.0	

¹ The question administered to identify migration intentions was: "Do you wish to live abroad or in another circle in Mali in the future, for a period of more than 6 months?"

² Individuals were asked if they have ever been diagnosed with any of the following illnesses: chronic respiratory infection, cardiovascular disorder, malaria, HIV/AIDS, tuberculosis, cancer, diabetes, psychiatric disorder, liver or stomach disease.

³ Nine standard questions were asked to define whether people were depressed: a person was defined as suffering from depressive symptoms if s/he answered more than five questions positively.

⁴ The aspiration index is the average of individuals' perception of what their life situation will be in 10 years, in terms of income, housing, wealth and social status. Individuals were asked to weight the four categories, and the overall aspirations index represents the weighted measure. The four dimensions of aspirations are defined as the belief that in 10 years one will reach a higher level of income, housing, wealth or social status than the present one. Answers lie on a Likert scale from 1 to 5, 5 representing a very likely positive change, 3 no change, and 1 a very likely negative change.

⁵ The locus of control index is the sum of answers to five questions: (1) I don't have enough control over the direction my life is taking; (2) In my life, being lucky is more important to succeed than working hard; (3) Every time I try to move forward in my life, something or someone prevents me from doing so; (4) Making plans makes me unhappy because my plans rarely work; (5) Chance and luck are very important for what happens to me in life.

⁶ Subjective living conditions: the question was: "Given your household income, do you feel that you are living 1 = Well or quite well 2 = Fairly well 3 = With difficulty.

⁷ List of owned durable goods: car or motorbike, bike, cart, TV set, radio, fridge, solar panel, power generator.

ns: difference not statistically significant; *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Sample: Baseline survey.

As documented by previous research, we observe that young men who would like to migrate are more often than not sons of the household head and have fewer children than those who do not express any willingness to migrate (Table 1); they work more in the agricultural sector and are slightly more educated. They also belong more to households with current or return migrants, and they are more likely to have left their village or gone abroad in the past. Interestingly, they also displayed more of a tendency to be depressed and to have more mental or physical health problems.¹²

4 Empirical strategy

4.1 Baseline model

Since the projections of the films were randomly assigned, our variable of interest is in expectation uncorrelated with the error term and can therefore be estimated through OLS. For each outcome, we study the impact of the treatments by presenting results from the following regression:

$$I_{i,v,post} = \delta + \beta F_v + \gamma I_{i,v,pre} + \nu_2 X'_v + \alpha_{strata} + \epsilon_i \quad (1)$$

where $I_{i,v,post}$ denotes an outcome variable of individual i living in village v measured at endline. A first set of outcome variables relates to aspirations, depression, and locus of control. A second set relates to migration outcomes: the desire to migrate, measured as the willingness to leave one's place of residence for 6 months or more, and preparedness to migrate, equal to one for individuals who express a desire to migrate and who report having made arrangements to migrate. For both these outcomes, five destination are tested: abroad, to countries outside Africa, to Sub-Saharan Africa, to North Africa and, finally, within Mali. F_v is a categorical variable denoting the film shown in the village v , α_{strata} are strata fixed effects and ϵ_i a stochastic error term. Our preferred specification makes use of the ANCOVA estimator, where the pre-treatment value of our outcome variable, $I_{iv,pre}$ is included in the regression. As shown by McKenzie (2012), the power gains from the ANCOVA estimator over a difference-in-difference specification are proportional to the autocorrelation of the outcome variable. A small set of controls at the village level is included in the equation to account for significant differences in attendance conditions.

¹²These 'negative' health statuses go hand in hand with a stronger sentiment of living in poverty: as can be seen in Table 1, young people with a desire to migrate express less satisfaction with the living conditions in their household, although we do not observe any statistically significant differences in their objective standards of living (as measured by the number of durable goods owned)

Specifically, the vector X_v includes two dummy variables equal to one when the village head or an Imam were present at the film screening.

The coefficient β captures an intention-to-treat (ITT) effect. We choose an ITT specification since we want to capture the *direct* and *indirect* effects of the screening in the treated group. Although uptake of our treatment—exposure to films—was excellent among individuals present in the village, absent individuals obviously could not watch the films. Most of absentees had however returned to their village by the endline, and were likely informed about the screening and its contents. Since treatment is assigned at the village level, we cluster the standard errors at the village level.

Given our setup with 200 clusters of 10 individuals each, 4 equal-sized arms, a 5% significance level and 0.8 power, and given the standard deviations of our outcome variables and the estimated intraclass correlations of outcomes and clusters, the experiment is able to detect effect sizes from 0.04 to 0.14 depending on the arm and the outcome variable considered, with an average of 0.1.¹³ These are however upper bounds on the MDE. McKenzie (2012) shows that the variance of the ANCOVA estimator is smaller than that of a simple OLS (POST) estimator by an approximate factor of $(1 - \rho^2)$, where ρ is the coefficient of autocorrelation in outcomes, and smaller by a factor of $2 \frac{(1-\rho)}{(1-\rho^2)}$ with respect to the difference-in-difference estimator. In our control group, autocorrelation ranges from 0.02 to 0.37 depending on the outcome considered. To give an overall idea, thus, to detect an effect, our films need provoke a change in the desire to migrate of at most one individual per village. Below, we also draw on a recent Machine Learning literature to estimate conditional average treatment effects, enabling us to discuss the distribution of effects in the study population. As shall be seen, this allows us to put our null results related to migration into perspective.

4.2 Attrition

Even if our attrition rate is fairly low (92.6% of baseline individuals were re-interviewed), attrition bias may still be a cause for concern. If attrition is due to migration, and migration is a result of our intervention, precisely those individuals who were most impacted by the films will not contribute to the estimated effect. In general, failure to

¹³The minimum detectable effect for the OLS (POST) estimator is equal to $MDE = (t_{1-\kappa} + t_{\frac{\alpha}{2}}) \sqrt{\frac{1}{P(1-P)}} \sqrt{\frac{\sigma^2}{N}} \sqrt{1 + (n_s - 1)\rho}$, where n_s is the average cluster size (10 in our case), and ρ the estimated intraclass correlation coefficient.

relocate individuals can come from long-distance mobility (we did not seek to interview individuals whose families declared that they had moved to a foreign country¹⁴), death and failed tracking.¹⁵ There is good balance of attrition between treatment arms, with P-values of a joint F-test equal to 0.67, 0.32, 0.55 and 0.73 (Table A2 in Appendix: by order: total attrition, attrition due to international migration, attrition due to internal migration, and attrition due to incomplete questionnaires). However, since we do not know the counterfactual attrition rates of each treatment arm, this does not guarantee that attrition is not a problem. We thus deal with these concerns using two methods: inverse probability weights, and non-parametric Lee bounds. A detailed description of the attrition-correction procedures can be found in the Online appendix.

Overall, when attrition is controlled for, all results remain (Table A3 and Table A4 in Appendix). Note, however that when attrition is controlled for using the non parametric Lee bound correction, some results turn to be significantly different from zero: impact of Film NM on having depression symptoms, and on locus of control index, and impact of Film PM on having depression symptoms. The Lee bounds specification, being non-parametric, is however not strictly comparable to the ANCOVA specification. The confidence interval provided by the Lee bounds contains the OLS coefficient without controls, but not necessarily the coefficients resulting from ANCOVA with strata and additional controls.

4.3 Machine Learning and treatment response heterogeneity

Finally, exploring treatment response heterogeneity can add value to experimental studies through identifying subgroups responding more or less to treatment. Recent advances in Machine Learning techniques provide tools to secularly explore such heterogeneity. Causal forests in particular have been shown to possess properties enabling the estimation of a treatment effect with asymptotic confidence intervals (Athey and Imbens 2016). Based on the random forest algorithm by Breiman (2001), Wager and Athey (2018) develop a causal forest algorithm that is shown to outperform k -nearest neighbor matching, in particular when the number of covariates is large, such as in our study. Several authors have successfully applied causal forests in the treatment literature (Bertrand et al. 2021; Davis and Heller 2017; Athey and Wager 2019; Davis and Heller 2020). Apart from examining

¹⁴For two reasons: first the great difficulty of conducting telephone interviews due to the length of the questionnaire and, second, the high cost of tracking individuals abroad in multiple destinations.

¹⁵There are other—rare— reasons for failure to capture interviewees a second time in the data, such as imprisonment.

heterogeneity in a secular manner, the use of Machine Learning also permits a deviation from the linearity assumption in estimating the ATE, a useful addition to the main results.

We run the causal forest algorithm in R using the `grf` package. We estimate the propensity score for Y using local linear forests, since these show improved performance over standard regression forests, in particular when smooth signals are present, when the covariate space is big and when correlation is expected to be strong among many of the covariates (Friedberg et al. 2020). Similar to Athey and Wager (2019), and motivated by Basu et al. (2018) we first train a pilot random forest used to identify relevant covariates among a vector of variables at the individual, household and village levels. A second forest is then trained using only those covariates with a large number of splits in the pilot forest, allowing the forest to make more splits in low-signal situations, which our baseline estimates suggest are our case. The forests are *honest* (Wager and Athey 2018), meaning that different sets of observations are used for training and for prediction. Furthermore, Athey and Wager (2019) adapt their algorithm to the presence of clustered effects on outcomes, such as those arising from being part of a school, or a village. They achieve this through drawing whole clusters instead of individual observations in the subsampling procedure. It is important to notice that since clustering intervenes at the sampling stage of forest training, it affects not only standard errors, but also the estimands themselves. Athey and Wager (2019) discuss the implications of their clustering strategy, which can be thought of as estimating:

$$Y_i = m_{A_i}(X_i) + W_{i_{\tau_{A_i}}}(X_i) + \epsilon_i, \quad \tau(x) = \mathbb{E}[\tau_j(x)] \quad (2)$$

where each cluster $A \in \{1, \dots, J\}$ has its own main function and treatment effect, and the ATE is averaged over clusters. In their application on data from the National Study of Learning Mindsets, they find that clustering substantially reduced estimated CATE sizes and widened confidence intervals, suggesting that some of the variation captured was due to school-specific effects. Using the cluster-based algorithm, the resulting standard errors are cluster-robust and based on a bootstrapping procedure. In what follows, all of our results based on the causal forest algorithm are obtained using the clustering subsampling procedure. Finally, Friedberg et al. (2020) point out the benefits from locally adjusting predictions from a causal forest, which may strongly improve the predictions of a forest when capturing a smooth signal in the presence of a lot of noise. In our setup, locally linearizing predictions greatly improves fit, and we thus systematically make use of it (selecting linearization variables through LASSO) in our heterogeneity analysis.

5 Treatment effects

The rationale for the use of role models as an intervention hinges first on the idea that individuals identify with the protagonists of the documentaries shown. We show summary statistics on reported identification and relevance in sub-section 5.1. Second, once an identification mechanism occurs, the films may modify individual aspirations. Our hypothesis is that young men confronted with positive professional and social trajectories of role models increase their economic and social aspirations. Conversely, witnessing a negative experience of one of their "peers" can decrease their own aspirations. Conceptually, we view these effects as being distinct from improved factual knowledge about benefits or risks of the endeavors carried out in the films. We first investigate whether the films modified aspirations in terms of future income, wealth, housing and social status, synthesized into an index. We then investigate whether the documentaries impact the depressive symptoms displayed by individuals. We hypothesize that role models with ascending professional trajectories, by improving aspiration, could decrease depression symptoms if they are the result of a feeling of being stuck in a narrow aspirations window. On the opposite, we hypothesize that the confrontation with a negative migration experience increases feelings of depression. Results on aspirations and depression are shown in sub-section 5.2.

Third, we examine the impacts on locus of control, a concept from psychology placing individuals on a scale according to whether they believe that internal forces (themselves) or external forces are most relevant in determining their course of life (sub-section 5.3). It may be that the documentaries, aside from providing *identification*, *higher aspirations* and decreasing depression symptoms, convey a message of *control* over one's fate. However, the intended impact is uncertain, and may vary depending on the film shown. The successful endeavors of individuals in Films PM and LO may convey a feeling that life trajectories are within one's control and that by making the right decisions, future prospects can be improved. On the other hand, confronted with portraits of men whose life paths have evolved quite positively (Film PM and Film LO), some individuals may acquire an accentuated feeling of powerlessness in their own life projects, lose personal confidence and think that their destiny is fundamentally shaped by factors totally beyond their control. Film NM may reinforce their belief in their lack of control over their destiny or on the contrary be shrugged off as bad luck. These hypotheses find an echo in psychology, where numerous studies have theorized and empirically verified a *self-serving attributional bias* (Mezulis et al. 2004). It can be summarized by the idea that people are more likely

to attribute positive events to themselves and dismiss negative events as attributable to other causes.

Finally, we investigate the impact on the desire to migrate. Portraying successful non-migrant entrepreneurs, Film LO could be expected to have a negative impact on the desire to migrate both abroad and within the country. However, it could also favor migration, at least for those who think that their locality of residence cannot provide them with sufficient conditions to realize their economic potential at present, or for those who do not have enough savings to develop their local activities and think about migrating temporarily to accumulate savings. If migration is favored, it is more likely to be within Mali or to neighboring countries. We hypothesize that the film showing a negative migration experience (Film NM) will have a negative impact on the desire to migrate abroad. The film portrays an individual who faced deplorable conditions in the North African countries of Algeria and Libya and who is still suffering dire consequences from his migratory journey. While we expect the film to reduce the willingness to migrate to North Africa and North countries, it might potentially increase the willingness to migrate to Sub-Saharan African countries or within Mali as substitute destinations. Our priors about the film conveying a positive message about migration on the African continent (Film PM) are that this film has a positive impact on the desire to migrate abroad. Moreover, to the extent that Film PM shows individuals who have benefited from migrating within Africa, a larger impact can be expected on the willingness to migrate to African countries than on the willingness to migrate outside the continent. By testing the impacts of projections on the desire to migrate inside Mali, we also want to check if there are any substitution effects. Specifically, being exposed to positive role models of international migration may reduce the willingness to migrate internally. Average treatment effects are discussed in sub-section 5.4 and the heterogeneity analysis on responsiveness of desire to migrate is presented in sub-section 5.5

5.1 Subjective relevance and identification

The men portrayed in the three documentaries are all from rural areas in Kita. Surveyed individuals however need not have felt that the protagonists, or their life stories, were relevant to them. At the end of the endline questionnaire, we asked questions pertaining to the screenings. These questions, shown in Table 2, help us partially assess the extent of identification taking place, while at the same time gauging whether or not individu-

als understood and recalled the contents of the films. In general, interviewees properly identified the film they were shown. In all four cases, more than 90% of interviewees identified the correct film, based on a short description of its contents.¹⁶ This suggests overall good understanding of the films, which is not all that surprising since the lion's share of the sample is composed of individuals with either Malinke or Bambara as their mother tongue, and the two are mutually intelligible dialects of the dialect continuum of the Manding languages. Furthermore, individuals found that the film provided them with interesting information in a majority of cases. Even the Placebo film, a well-known comedy, was deemed interesting by a majority of interviewees. Such a high rate may reflect social desirability bias and the nature of interactions in Mali. Reassuringly, though, the percentage of interviewees who found the three documentaries interesting is much higher than our Placebo figure, between 94% and 97%. In terms of personal relevance, four out of five interviewees deemed the three documentaries relevant, while only 57% found the comedy relevant for their future projects.

When asked whether or not they identified with the characters, between 71% and 78% declared that they identified with the characters in the three documentaries—more than the 67% of the Malian comedy. When asked why the films provided useful information for their personal projects, most interviewees answered that it helped them formulate a personal project, in particular the two positive films (Film LO and Film PM). Also somewhat reassuring, the two same films (LO and PM) also comforted individuals in their initial projects to a larger extent than the control film and Film NM. Although the evaluative nature of the questions¹⁷ casts some doubt as to what can be said based on the answers to these questions, it does seem that the films were seen as relevant and easy to relate to in the context of rural Kita. This is also the general feeling that came out of debriefings with surveyors, who reported a general interest in films among villagers attending the screenings.

5.2 Aspirations and depression

We elicited a set of aspiration-related measures. Column 1 of Table 3 shows an indicator of aspirations based on individuals' perception of what their life situation will be in 10 years, in terms of income, housing, wealth and social status. Individuals were asked to

¹⁶Not shown. The largest error rate was for the Placebo film, where 7.3% of interviewees identified a different film.

¹⁷Individuals may consider that they are to some extent evaluating the performance of the surveyor.

Table 2: Opinions of the films

Perceptions about the films					P-value		
	Control	Film LO	Film NM	Film PM	C-LO	C-NM	C-PM
Correctly identified the film shown	92.737 (3.174)	95.538 (1.699)	95.238 (1.682)	94.709 (2.111)	0.436	0.486	0.605
Do you think that the film provided you with interesting information?	73.743 (4.717)	94.226 (1.499)	96.032 (1.303)	94.709 (1.640)	0.000***	0.000***	0.000***
Do you think that this information will be useful for your future projects?	57.821 (6.094)	85.827 (2.970)	82.540 (3.693)	84.921 (3.350)	0.000***	0.001***	0.000***
<i>Why?</i>							
It helped me formulate a personal project	42.029 (5.039)	52.294 (4.321)	42.949 (5.358)	46.417 (3.931)	0.124	0.900	0.492
It comforted me in my initial project	18.841 (3.378)	31.804 (4.359)	16.346 (3.165)	33.022 (3.563)	0.020**	0.589	0.005***
It made me reconsider my initial project	20.290 (4.220)	10.398 (1.892)	17.308 (3.012)	15.576 (2.320)	0.034**	0.564	0.328
It forced me to abandon my original project	18.841 (4.749)	5.505 (1.500)	23.397 (4.148)	4.984 (1.211)	0.008***	0.469	0.006***
Identified with the characters	67.598 (5.271)	75.591 (4.787)	70.899 (4.866)	78.307 (3.788)	0.262	0.645	0.101
N	358	381	378	378			

Values in columns (Control) to (Film PM) are percentages.

*, $p < 0.10$, **, $p < 0.05$, ***, $p < 0.01$.

Sample: Endline survey, sample of individuals who watched the films.

weight the four categories, and the overall aspirations index in column 1 represents the weighted measure.¹⁸ Answers lie on a Likert scale from 1 to 5, 1 representing a very likely negative change, 3 no change, and 5 a very likely positive change. At baseline, average aspirations are high, with the aspiration index averaging above 4 (last line, Table 3 reproduces the index mean of the control group at baseline). This high aspiration level goes hand in hand with high depression feelings, the instrument used in the survey suggesting that 27% of the sample can be declared as depressed (last line, column 2, Table 3).¹⁹

Table 3 shows estimates of the impacts of the three films on outcomes which have been standardized relative to the control group at baseline. It appears that Film LO showing local opportunities significantly increases aspirations. The aspiration index increases by 0.158 standard deviations. It is mainly driven by income, housing and wealth aspirations, which increase with 0.14 - 0.2 standard deviations. It also decreases depression symptoms, the share of individuals defined as depressive diminishing by 9.5 percentage points. Film

¹⁸Individuals were given 20 points to allocate to the four dimensions of aspiration, according to the importance they placed on each dimension. The points were used as weights in the computation of the aspiration index.

¹⁹Table OA4 in the Online Appendix shows the impact of the three treatments on the four respective dimensions of the aspiration index.

Table 3: Aspiration, depression and locus of control

	(1) Aspiration Index	(2) Depression	(3) Locus of control Index
<i>Positive Non-Migrant Doc. (LO)</i>	0.158* (0.0820)	-0.0946** (0.0373)	0.838** (0.351)
<i>Negative Migrant Doc. (NM)</i>	0.0117 (0.0832)	-0.0613 (0.0374)	0.455 (0.362)
<i>Positive Migrant Doc. (PM)</i>	0.141* (0.0849)	-0.0455 (0.0327)	0.366 (0.344)
Observations	1,856	1,856	1,856
Control mean (baseline)	4.18	26.96	10.43

Notes: The aspiration index in column (1) is the average of individuals' perception of what their life situation will be in 10 years, in terms of income, housing, wealth and social status. Individuals were asked to weight the four categories, and the overall aspirations index in column (1) represents the weighted measure. The four dimensions of aspirations are defined as the belief that in 10 years one will reach a higher level of income, housing, wealth or social status than the present one. Answers lie on a Likert scale from 1 to 5, 5 representing a very likely positive change, 3 no change, and 1 a very likely negative change.

In column (2), a person is defined as suffering from depressive symptoms (dummy variable = 1) if s/he answered more than five questions positively among nine standard questions about depressive symptoms.

The locus of control index is the sum of answers to five questions: (1) I don't have enough control over the direction my life is taking; (2) In my life, being lucky is more important to succeed than working hard; (3) Every time I try to move forward in my life, something or someone prevents me from doing so; (4) Making plans makes me unhappy because my plans rarely work; (5) Chance and luck are very important for what happens to me in life.

All outcomes are standardized relative to the control group at baseline.

Coefficients are from an ANCOVA ITT specification (using baseline outcome as a control). Standard errors clustered at the village level; Additional control variables at the village level – strata dummies and dummy variables equal to one whether an Imam was present at film screening, or whether the village head attended the film screening.

*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Sample: Endline survey.

PM, showing a positive migration experience, also increases individuals' aspiration index by 0.14 standard deviations, particularly in the dimension of income and social status. Film NM does not have any impact on aspiration index or depression symptoms. These results broadly confirm our initial hypotheses. They show that Films LO and PM struck a chord in study subjects by changing their overall aspirations. Role models with ascending professional experiences positively impact individuals' aspirations and reduce symptoms of depression.

5.3 Locus of control

Linked to aspirations, the films could have an impact on locus of control. Rather than focusing on what can be achieved, this measure focuses on individual actions or effort as a determinant in achieving those goals. It is thus close to the concept of self-efficacy briefly discussed in the introduction. Even though the treatments increase individual welfare aspirations, an impact on the desire to migrate may also have to do with the extent to which locus of control is external rather than internal.

We compute a synthetic index based on Likert scale answers to 5 questions: do you agree, strongly agree, disagree or completely disagree with (LC1) I don't have enough control over the direction my life is taking, (LC2) in my life, being lucky is more important for success than working hard, (LC3) every time I try to move forward in my life, something or someone prevents me from doing so, (LC4) making plans makes me unhappy because my plans rarely work, and (LC5) chance and luck are very important for what happens to me in life. At baseline, we observe that respondents have very little confidence in their capacity to control their destiny. More than 60% agreed or strongly agreed with these 5 assertions.²⁰ The estimated impact on the synthetic index is shown in column (3) of Table 3. Note that positive coefficients indicate a stronger level of disagreement with the questions, and thus a stronger belief that locus of control is internal, rather than external. The coefficients on the locus of control index on our treatment arms are mainly positive and reasonably large. However, only for Film LO is the coefficient significantly different from zero. The locus of control index increases by 0.838 standard deviations. The coefficient associated to Film NM and Film PM show a lower coefficient for Locus of control but none are not significantly different from zero. Summing up, it seems that Film LO resonated with our subjects, increasing the extent to which they believe that their destinies depend on their own actions rather than external forces. This film has the strongest average effects on aspiration, depression symptoms and locus of control, suggesting that the activities shown therein might seem more attainable to many (since, for instance developing a local business is less costly than migration) or that individuals are less well informed about local opportunities than about opportunities involving migration.

These findings confirm the previously mentioned identification process with the protagonists, impacting aspirations, depression symptoms and locus of control. Since migration in the African context is widely considered as a life-improving strategy, our next step

²⁰Last line, Table OA5 in the Online Appendix

is to examine whether the impacts on aspirations and locus of control find resonance in modified desires to migrate.

5.4 Desire to migrate

Table 4 presents the treatment effects of the three documentaries on the desire to migrate (First panel) and on those who express a desire to migrate *and* who report having made arrangements to migrate (Second panel). The arrangements reported include accumulating savings, contacting acquaintances abroad or looking for a job abroad. Aside from the mere desire to migrate, we thus investigate whether screening attendance might have an impact on individuals whose desire to migrate is more assertive than others. For both outcomes, five destinations are investigated: Abroad (column 1), which is decomposed by non African countries (mainly OECD countries, column 2), Sub-Saharan African countries (column 3), and North African countries (column 4), and internal migration (column 5).

First, exposure to non-migrant professional success (Film LO) does not generate a measurable decrease in the desire to migrate internationally (Table 4). The point estimates are close to zero. The coefficients for migration abroad, and to a larger extent migration outside Africa are however negative, but not significant. The coefficients of desiring to migrate to African countries (columns 3 and 4 Table 4) are on the contrary positive, but not significant. Table 4 also shows that non-migrant positive role models do not have any impact on the desire to migrate inside Mali: the coefficient is negative but never statistically different from zero (column 5).

Similar to the first film, Film NM —presenting a negative experience of migration— produces no impact on the desire to migrate abroad (column 1). In particular, it does not significantly decrease the willingness to migrate to North Africa or outside the continent (Table 4, columns 2 and 4). The hypothesis of a substitution of destinations is also not substantiated. The desire to migrate to both Sub-Saharan countries and within Mali does not increase after the viewing of Film NM (Table 4, columns 3 and 5).

Lastly, the hypothesis of a positive impact of Film PM on the desire to migrate abroad, more specifically to Sub-Saharan African countries, is not substantiated. Coefficients are positive but not significantly different from zero in Table 4 (columns 1 through 4), and the coefficient for internal migration is indeed negative, but not significantly different from

zero. Looking at the largest coefficient, the implied confidence interval lies between -0.05 and $.12$, meaning that we cannot exclude that the intervention produces a small positive effect that our experimental setup is underpowered to detect.

As a complement to the desire to migrate, Panel 2 shows results on having made arrangements (henceforth preparedness) to migrate, defined as the combination of desiring to migrate and having made arrangements to do so (second panel, Table 4). Given the null results on the desire to interest, an impact on the preparedness to migrate would suggest that films impact those already wishing to migrate making them take (additional) steps towards migration. As stated in section 3, roughly one third of individuals expressing a desire to migrate have made some kind of arrangement, and savings account for two thirds of arrangements. We are cautious in our interpretation of this variable however, since we have no way of quantifying the effort that was undertaken in terms of preparedness (for example, is starting to think about savings as being allocated to a migration project a change in behavior?). Bearing this in mind, our results however suggest that Film LO reduces the preparedness to migrate abroad in general and to non-African countries specifically by 3.3 p.p. Although exploratory, these results speak to the necessary distinction between the desire to migrate, and more tangible measures of migration intentions, and suggest that readiness to absorb information may be dependent on the stage at which an individual is situated in his or her migration project. Contrary to the results using desire to migrate as a measure, Film NM now seems to produce a substitution effect, as the probability of having made arrangements to migrate to Sub-Saharan African countries increases by 2.2 p.p. We furthermore find that Film PM impacts positively having made arrangements to migrate to Sub-Saharan countries by 1.9 p.p. When investigating the precise arrangements which respond to each of the films, by defining a separate migration arrangement variable for each type of arrangement and running the above regressions arrangement by arrangement (not shown), we find that the significant coefficients for films LO and NM seem to predominantly come from a variation in savings, whilst the significant coefficient for Film PM comes from a variation in information gathered both locally and from abroad.

To take stock, exposing young males in Kita to life stories—about migration and local opportunities—does not significantly impact their *desire* to migrate internationally or internally. We do however find suggestive evidence that the films affected *arrangements* to migrate. This highlights the need to distinguish between different measures of actual and potential migration, and pleads in favor of heterogeneity analysis even when average results do not seem to point to significant impacts. In our case, as the heterogeneity analysis

will suggest, particular profiles may be more receptive than others to our treatment, and the degree of responsiveness can be linked to a migration culture, occupation and health. Although in a very different setting, these findings echo those of Beam, McKenzie, and Yang (2016), who find evidence of stronger response to their interventions among the subgroup of individuals who reported being interested or strongly interested in migrating abroad. While our results, much like theirs, suggest that individuals on the margin of migrating may be affected by exposure to role models, they also suggest that the absence of such role models is a weak candidate in explaining why a majority of young rural males in Mali harbor a desire to migrate.

Summing up all three interventions, the coefficients from our regressions on migration desires tend to be close to zero and the randomized controlled trial reveals no detectable average impacts on the desire to migrate from the provision of information in the form of life stories about migration experiences and non migration experiences. In terms of confidence intervals, returning to the discussion held in section 4.1, the 95% confidence intervals are highest for the outcome international migration, standing at [-0.093,0.087] for Film LO, [-0.056,0.104] for Film NM and [-0.55,0.105] for Film PM. Again, the films thus needed to promote a change in the desire of migrating in roughly one individual per village. We thus acknowledge that although the evidence we provide points to no impact, we cannot exclude that an experiment with higher power could be able to detect small effects of our intervention on the desire to migrate. The relatively homogeneous individual treatment effect distributions and the fact that we find evidence of updated beliefs at the level of aspirations and of locus of control however lead us to believe that the impact of documentaries showing local role models on the desire to migrate is at best marginal on average. However, the results obtained using an alternative definition of our outcome variable point to modified behavior occurring among a subset of the population—those on the margin of making arrangements to leave.

Table 4: Desire and arrangement to migrate

	(1)	(2)	(3)	(4)	(5)
Wish to migrate	Abroad	North countries	Sub-Sahara Africa	North Africa	Inside Mali
Desire to migrate					
<i>Local Opportunities Doc (LO)</i>	-0.003 (0.046)	-0.025 (0.039)	0.017 (0.021)	0.005 (0.014)	-0.017 (0.034)
<i>Negative Migrant Doc (NM)</i>	0.024 (0.041)	0.014 (0.037)	0.005 (0.018)	0.006 (0.014)	0.011 (0.033)
<i>Positive Migrant Doc (PM)</i>	0.025 (0.041)	0.013 (0.038)	0.008 (0.018)	0.009 (0.015)	-0.006 (0.033)
Observations	1856	1856	1856	1856	1856
Mean dep. var. (%)	27.2	18.3	5.4	3.4	18.1
Arrangement to migrate					
<i>Local Opportunities Doc (LO)</i>	-0.034* (0.020)	-0.033* (0.017)	0.004 (0.008)	-0.005 (0.004)	-0.005 (0.016)
<i>Negative Migrant Doc (NM)</i>	0.006 (0.019)	-0.016 (0.015)	0.022*** (0.008)	-0.000 (0.005)	0.006 (0.016)
<i>Positive Migrant Doc (PM)</i>	0.011 (0.024)	-0.007 (0.018)	0.019** (0.009)	-0.001 (0.005)	0.001 (0.016)
Observations	1856	1856	1856	1856	1856
Mean dep. var. (%)	7.65	4.02	1.21	2.41	11.9

Coefficients from an ANCOVA ITT specification (using baseline outcome as a control). Standard errors are clustered at the village level. Additional control variables: strata dummies and control variables at the village level – dummy variables equal to one whether an Imam was present at film screening, or whether the village head attended the film screening.

*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Sample: Endline survey.

5.5 Heterogeneity in responsiveness in desire to migrate

Although average effects on the desire to migrate are not significantly different from zero, it may be that subsets of our sample experience positive or negative impacts, which are canceled out in the full sample. The significant impacts of the films on having made arrangements for potential migrants to several destinations suggest that there was some response to the treatment. A common practice in heterogeneity analysis is to interact the treatment variable with subsample dummies to test for this. Such methods however rely on *ad hoc* definitions of candidate variables, and Machine Learning methods have been suggested as a better way of exploring heterogeneity, holding the desirable features

of relaxing the linearity assumption, taking into account high order variable interactions and being able to search for heterogeneity in settings with a large number of covariates. We thus turn to the Machine Learning algorithm described in section 4.3, running the algorithm with some 131 explanatory variables.²¹

Conditional distributions of the average treatment effect as estimated through the locally linearized version of the *causal forests* algorithm run with 25000 trees, effectively portray the extent of heterogeneous responses to the 3 treatments (Figures OA2, OA3 and OA4 in the Online Appendix). First of all, coherent with the absence of an impact of the three films, the majority of distributions are centered at or close to 0. An exception to this are perhaps the distributions of Individual Treatment Effects (ITE) for international migration and migration to Sub-Saharan Africa in Film PM. The estimated ATEs are indeed positive, but contained within the 95% confidence intervals. Turning to heterogeneity, the breadth (or "peakedness") of some distributions does indeed suggest that heterogeneity may be present, although simply eyeballing the figures does not allow to distinguish noise from true heterogeneity.

Understanding across which dimensions heterogeneity operates is not straightforward, even in a Machine Learning setting. Although the individual treatment effect distribution can be estimated from the causal forest algorithm, there is no straightforward way of asserting which variables play an important role in shaping heterogeneity. Split frequencies and other measures of variable importance are sometimes used, but their interpretation is difficult due to the fact that causal forests—and other Machine Learning algorithms—are not constant in terms of model selection. Instead of searching for variables associated with heterogeneity (a difficult exercise in a non-parametric setting), we follow Davis and Heller (2020) who partition their sample into quartiles based on the estimated individual treatment effect obtained from the causal forests algorithm. The procedure, thoroughly described in Davis and Heller (2020), first regresses the outcome on an interaction between the treatment dummy and the predictions from the causal forest.²² Being able to exclude zero implies that the predictions are indeed relevant. We find that the treatment interacted with predictors is positively and significantly associated with our outcome variable, suggesting that overall heterogeneity is present and captured by the locally linearized forest.²³ We then partition the sample into quartiles according to the predicted CATEs from

²¹As mentioned in section 4.3, variables producing very few splits in the first run of the forest are however removed in the final run.

²²In our case, from the locally linearized causal forest.

²³However, the predictions underestimate actual heterogeneity, since our coefficients are higher than one.

Table 5: Summary statistics by quartile of predicted effect -Film LO

	Q1	Q2	Q3	Q4	Total	Q4-Q1	P-value (Q4)-(Q1)
Average prediction	-0.031	-0.009	0.008	0.034	0.000	0.065	0
Age	24.506	25.699	25.830	25.984	25.504	1.478	0
Father alive	0.798	0.724	0.773	0.740	0.759	-0.058	0.13
Farmer	0.903	0.829	0.729	0.695	0.789	-0.208	0
Household head	0.158	0.134	0.117	0.159	0.142	0.001	0.98
Has children	0.445	0.508	0.478	0.451	0.471	0.006	0.9
Nb. Siblings	6.526	5.695	5.684	5.699	5.902	-0.827	0
Ever left home	0.644	0.642	0.575	0.524	0.596	-0.12	0.01
Ever abroad	0.235	0.268	0.247	0.167	0.229	-0.068	0.06
Ever diagnosed	0.757	0.760	0.664	0.528	0.677	-0.229	0
Depression	0.304	0.293	0.194	0.179	0.242	-0.125	0
Locus of control index	10.105	11.220	10.854	9.976	10.539	-0.129	0.69
Subjective poverty	1.923	2.049	2.012	1.911	1.974	-0.012	0.82
Aspirations index	4.049	4.108	4.213	4.438	4.202	0.389	0.01
Current migrants in HH	2.267	1.935	1.506	1.382	1.773	-0.885	0.01
Current return migrants in HH	1.045	1.199	0.858	0.589	0.923	-0.456	0
Distance Bamako	169.639	166.532	176.336	193.691	176.543	24.052	0
Distance Kita	50.409	51.486	49.152	70.347	55.337	19.938	0
Distance Dakar	886.019	889.649	877.368	868.371	880.355	-17.648	0
	Stat.	S.E.					
$\theta_\alpha(S)$	0.365	0.021					
Observations	247	246	247	246	986		

Baseline descriptive statistics according to quartiles of locally linearized causal forest predictions.

Sample: Baseline survey, control and Film LO subsamples. Outcome variable used for predictions: willingness to migrate abroad at endline.

$\theta_\alpha(S)$ is the Rank-Weighted Average Treatment Effect (RATE) (Yadlowsky et al. 2021).

the forest algorithm, and present descriptive statistics by quartile on a set of sociodemographic variables. All three tables present predicted response quartiles on the willingness to migrate abroad, and results can be seen in Tables 5, 6 and 7. They serve as a basis for an exploration of the characteristics associated with high (low) response to the films in terms of desire to migrate.

A recent addition to the Heterogeneity analysis literature is the Rank-Weighted Average Treatment (RATE) estimator (Yadlowsky et al. 2021). The estimator relies on the *Targeting Operating Characteristic*, a scoring function S used to rank observations according to a prioritization rule. In our case, it thus allows us to test if the prioritization rule implied by the causal forest predictions does significantly better than pure randomness in identifying observations with heterogeneous treatment effects. We show estimates of the RATE and the associated P-values in Tables 5, 6 and 7, concluding that the predictions indeed successfully distinguish observations according to their treatment response.

Since the hypothesized effect from Film LO is a decrease in the desire to migrate, the lower quartiles in Table 5 give hints on the profile of individuals more likely to react to the treatment in the expected manner. The films shows a protagonist doing well in

Table 6: Summary statistics by quartile of predicted effect -Film NM

	Q1	Q2	Q3	Q4	Total	Q4-Q1	P-value (4)-(1)
Average prediction	-0.018	-0.001	0.010	0.031	0.006	0.049	0
Age	24.340	25.337	25.300	25.817	25.198	1.477	0
Father alive	0.771	0.722	0.759	0.718	0.743	-0.053	0.18
Farmer	0.810	0.738	0.783	0.825	0.789	0.015	0.66
Household head	0.134	0.210	0.123	0.103	0.143	-0.031	0.28
Has children	0.427	0.488	0.455	0.460	0.457	0.033	0.45
Nb. Siblings	6.435	5.837	5.490	5.540	5.826	-0.895	0
Ever left home	0.664	0.571	0.549	0.540	0.581	-0.124	0
Ever abroad	0.300	0.175	0.166	0.226	0.217	-0.074	0.06
Ever diagnosed	0.700	0.623	0.609	0.575	0.627	-0.125	0
Depression	0.328	0.139	0.221	0.282	0.243	-0.046	0.26
Locus of control index	10.538	11.746	10.652	9.746	10.670	-0.792	0.02
Subjective poverty	2.206	1.925	1.814	1.845	1.948	-0.361	0
Aspirations index	4.155	4.269	4.193	4.300	4.229	0.145	0
Current migrants in HH	2.150	1.516	1.605	1.964	1.809	-0.186	0.51
Current return migrants in HH	1.265	0.948	0.850	0.952	1.004	-0.313	0.02
Distance Bamako	175.726	186.577	178.814	179.787	180.220	4.061	0.28
Distance Kita	52.045	52.547	51.796	45.292	50.423	-6.753	0.03
Distance Dakar	878.568	867.695	876.999	875.890	874.794	-2.678	0.43
	<u>Stat.</u>	<u>S.E.</u>					
$\theta_\alpha(S)$	0.411	0.0163					
Observations	253	252	253	252	1,010		

Baseline descriptive statistics according to quartiles of locally linearized causal forest predictions.
Sample: Baseline survey, control and Film NM subsamples. Outcome variable used for predictions:
willingness to migrate abroad at endline.
 $\theta_\alpha(S)$ is the Rank-Weighted Average Treatment Effect (RATE) (Yadlowsky et al. 2021).

Table 7: Summary statistics by quartile of predicted effect -Film PM

	Q1	Q2	Q3	Q4	Total	Q4-Q1	P-value Q4-Q1
Average prediction	-0.000	0.020	0.034	0.054	0.027	0.054	0
Age	25.460	25.526	25.316	25.249	25.388	-0.211	0.66
Father alive	0.736	0.731	0.752	0.747	0.741	0.011	0.78
Farmer	0.916	0.900	0.768	0.610	0.799	-0.306	0
Household head	0.156	0.161	0.096	0.112	0.131	-0.044	0.15
Has children	0.508	0.510	0.472	0.414	0.476	-0.094	0.03
Nb. Siblings	6.168	5.779	6.016	5.518	5.871	-0.65	0
Ever left home	0.636	0.558	0.588	0.635	0.604	-0.001	0.97
Ever abroad	0.248	0.165	0.272	0.225	0.227	-0.023	0.54
Ever diagnosed	0.620	0.562	0.596	0.651	0.607	0.031	0.48
Depression	0.328	0.241	0.168	0.133	0.217	-0.195	0
Locus of control index	9.268	9.952	10.980	11.976	10.543	2.708	0
Subjective poverty	2.112	1.952	1.860	1.896	1.955	-0.216	0
Aspirations index	4.031	4.136	4.304	4.413	4.221	0.382	0
Current migrants in HH	2.404	1.574	1.392	1.373	1.686	-1.031	0
Current return migrants in HH	1.296	0.835	0.780	0.614	0.882	-0.682	0
Distance Bamako	158.193	173.814	175.169	196.022	175.781	37.829	0
Distance Kita	53.803	45.062	48.224	58.417	51.375	4.614	0.14
Distance Dakar	895.609	880.673	879.976	862.630	879.738	-32.979	0
	<u>Stat.</u>	<u>S.E.</u>					
$\theta_\alpha(S)$	0.378	0.022					
Observations	250	249	250	249	998		

Baseline descriptive statistics according to quartiles of locally linearized causal forest predictions.
Sample: Baseline survey, control and Film PM subsamples. Outcome variable used for predictions:
willingness to migrate abroad at endline.
 $\theta_\alpha(S)$ is the Rank-Weighted Average Treatment Effect (RATE) (Yadlowsky et al. 2021).

agriculture, and it may perhaps come as no surprise that individuals predicted to be more impacted (Q1) are more likely to work as farmers. They furthermore tend to be younger, in worse health (particularly depressive symptoms) and with lower aspirations. Finally, they come from households with a larger number of current and past migrants, and have themselves been away from home to a larger extent, suggesting that they evolve in a culture where migration is seen as the only way of escaping poverty and securing a good life for oneself.

For our second film, NM, we also expect a negative response and therefore focus on Q1 in Table 6. Again, individuals are younger, coming from larger households, more often declare a disease, and live in households with a higher number of return migrants. They declare a lower standard of living, and, interestingly, have more often been away from home, suggesting they may come from more migrant-oriented households with baseline views of migration as the only viable way to increase their standards of living.

For our last film, PM, we hypothesize a positive effect on the desire to migrate and therefore focus on Q4, corresponding to the predicted high-responders to the treatment. The summary statistics of Table 7 here point to a different profile from the two previous high-responders. Individuals responding positively to the film may be less mobility constrained, as witnessed by a lower share of farmers and a lower probability of having children. Furthermore, they less often declare being depressed, and more often report an internal locus of control together with higher aspirations. Altogether, high-responders paint a portrait of being less constrained, and with higher aspirations and beliefs in their own ability to shape their future.

How do high and low responders react differently to our treatment? Our prior is that role models' experiences are more or less relevant to individuals, depending on their profiles. An alternate hypothesis is that some individuals were less likely to attend screenings, or to pay attention during them. To assess this in a superficial manner, we run regressions on the probability of declaring having attended screenings, and having identified the film based on a simple sentence, using the variables discussed above as controls. We find no systematic evidence that the controls would explain attendance at screenings, or understanding of the film, and therefore modestly suggest that what varies at the individual level is relevance of information. Indeed, investigating the link between making arrangements to leave and the variables emerging from the above discussion, we find that those who have made arrangements to leave are more often depressed, less often farmers, have more often been abroad, are more often heads of households, and also believe to a

larger extent that they are masters of their destinies. This seems to corroborate the fact that those who are most responsive to the three treatments have particular economic, social and psychological characteristics. Thus, it appears that even though some of the films, mainly the LO and PO films, affect individuals' aspirations and their confidence in their destiny, their capacity to alter the desire to migrate applies only to those individuals whose characteristics predispose them to modify their migration plans.

6 Conclusion

In this paper, we present results from a field experiment whose aim was to examine the impact of role models on aspirations, depression symptoms, locus of control and on the desire to migrate, by exposing young Malian males to films depicting life stories of non-migrants and migrants. Whereas we did not find any significant impact of showing a negative experience in migration, we found that the films showing positive role models (LO and PM) increased welfare aspirations, bearing witness to an identification effect. Film LO furthermore had a positive impact on locus of control—the belief that internal rather than external forces shape one's destiny—and decreased depression symptoms. Despite these first stage impacts, no evidence was found that any of the three interventions generated, on average, an impact on the desire to migrate. These results stand when we control for attrition bias. However, when focusing on an alternative measure of desire to migrate, namely desiring to migrate and having made arrangements to do so we find suggestive evidence of impacts of all three treatments. In particular, the film portraying local opportunities reduced the probability of making arrangements to leave for a country outside the continent. We also examined heterogeneity using the causal forests algorithm, allowing us to derive common traits in high-responders for all three films. For the film showing local opportunities, the highest responders were more likely to work in agriculture, and expressed worse health and lower aspirations. On the contrary, high responders to the film showing a positive migration experience tended to be the opposite: less often in agriculture and with higher aspirations.

This article feeds into the literature on role models as drivers of aspirations and behavior. We confirm that welfare aspirations and locus of control are impacted by documentaries featuring role models. However, those same role models fail to produce an impact on the average desire to migrate. In some ways, our heterogeneity analysis confirms Carling (2002) and De Haas (2021): migration desires are shaped by complex factors, among them economic, social and professional constraints and aspirations. When the latter are low, it may be due to a lack of positive role models in individuals' social network. Our

study shows and confirms the ability of influencing aspirations through films featuring role models. These effects do not extend to migration desire in the full sample, and may suggest the need to target particular subsamples of potential migrants. Another feature of our study is that it took the form of a "one-shot" intervention. The efficiency of continuous information provision using role models remains an unexplored area for future research, which should also attempt to pinpoint the role of a "migration culture" in the efficiency of information provision.

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A Appendix

A.1 Tables

Table A1: Experimental integrity

Individual characteristics	P-value (t-stat)									
	Total	Control	Film LO	Film NM	Film PM	C-FLO	C-FNM	C-FPM	F-stat	P-value (F)
Age	25.455 [0.336]	25.554 [0.282]	24.949 [0.274]	25.321 [0.332]	25.316 [0.153]	0.719	0.218	0.922	0.919	
Have been to school	62.978 [2.954]	66.667 [2.799]	61.793 [2.703]	63.273 [3.121]	63.650 [1.443]	0.188	0.453	0.927	1.393	
Primary level completed	38.431 [2.400]	43.967 [2.835]	40.546 [3.002]	43.513 [3.108]	41.600 [1.424]	0.064*	0.479	0.107	1.467	
Malinke (Mother tongue)	58.350 [6.294]	50.716 [6.479]	67.057 [5.781]	60.878 [5.697]	59.350 [3.037]	0.512	0.227	0.636	1.275	
Work in agr. sector	78.873 [3.555]	78.937 [3.863]	78.947 [3.695]	80.838 [3.853]	79.400 [1.858]	0.957	0.902	0.544	0.229	
Family worker	69.014 [4.380]	69.121 [4.549]	74.074 [4.157]	74.251 [4.103]	71.650 [2.138]	0.962	0.255	0.219	0.952	
Father farmer	81.891 [3.691]	79.550 [3.868]	79.532 [3.951]	84.032 [3.776]	81.250 [1.902]	0.578	0.540	0.501	0.754	
Mother inactive	17.706 [3.638]	15.951 [3.618]	21.053 [3.781]	16.367 [3.411]	17.800 [1.801]	0.692	0.583	0.709	0.437	
Household head's son	67.203 [3.129]	67.689 [3.369]	61.014 [3.174]	66.267 [3.128]	65.500 [1.599]	0.888	0.180	0.807	0.887	
Household Head	12.877 [2.536]	15.542 [2.686]	15.595 [2.861]	13.373 [2.592]	14.350 [1.330]	0.452	0.396	0.778	0.279	
Married	60.161 [2.647]	59.509 [2.942]	56.530 [2.585]	57.485 [3.337]	58.400 [1.438]	0.851	0.251	0.594	0.396	
Have children	48.491 [2.720]	45.603 [3.065]	43.080 [2.393]	46.707 [3.228]	45.950 [1.427]	0.422	0.091*	0.723	0.922	
Suffer from depression	26.962 [4.182]	21.472 [4.291]	21.637 [4.247]	16.567 [3.625]	21.650 [2.049]	0.185	0.238	0.030**	1.553	
Ever diagnosed	48.089 [5.743]	49.489 [6.228]	39.961 [5.242]	43.114 [5.472]	45.100 [2.827]	0.970	0.190	0.389	0.757	
Aspiration Index	4.180 [0.071]	4.224 [0.067]	4.277 [0.062]	4.262 [0.062]	4.236 [0.033]	0.496	0.213	0.275	0.616	
Locus of control Index	10.427 [0.476]	10.652 [0.489]	10.906 [0.495]	10.659 [0.479]	10.663 [0.241]	0.576	0.369	0.659	0.267	
Current mig. in the hous.	64.588 [3.601]	53.374 [4.636]	60.234 [3.860]	56.487 [4.409]	58.700 [2.075]	0.006***	0.338	0.047**	2.813**	
Return mig. in the hous.	49.095 [4.783]	38.241 [4.809]	43.860 [5.088]	40.918 [4.646]	43.050 [2.417]	0.022**	0.272	0.117	1.519	
Ever left the village	60.362 [3.441]	58.896 [3.641]	55.945 [3.374]	60.479 [3.091]	58.900 [1.687]	0.544	0.187	0.896	0.586	
Ever went abroad	21.127 [2.637]	24.744 [2.875]	22.222 [2.549]	24.351 [3.047]	23.100 [1.384]	0.308	0.784	0.276	0.561	

continued

Individual characteristics	P-value (t-stat)									
	Total	Control	Film LO	Film NM	Film PM	C-FLO	C-FNM	C-FPM	F-stat	P-value (F)
Subj. liv. cond.	1.966 [0.062]	1.982 [0.057]	1.930 [0.060]	1.944 [0.057]	1.955 [0.029]	0.996	0.649	0.848	0.135	
Nb. durable goods (Max:8)	3.374 [0.134]	3.462 [0.117]	3.571 [0.133]	3.589 [0.152]	3.500 [0.067]	0.698	0.181	0.334	0.678	
The HH has one or more Motorbike or car	68.410 [3.021]	66.667 [2.845]	69.006 [3.092]	70.459 [2.787]	68.650 [1.463]	0.671	0.685	0.578	0.400	
Bike	56.137 [4.103]	65.235 [3.568]	70.370 [3.317]	66.467 [3.694]	64.600 [1.861]	0.071*	0.002***	0.055*	3.366**	
TV	33.400 [2.312]	31.902 [3.018]	32.749 [2.727]	31.337 [3.080]	32.350 [1.390]	0.666	0.930	0.397	0.230	
Fridge	0.604 [0.341]	1.022 [0.439]	0.195 [0.195]	0.399 [0.279]	0.550 [0.162]	0.433	0.303	0.585	1.186	
Power generator	0.402 [0.282]	1.227 [0.474]	0.975 [0.418]	0.798 [0.386]	0.850 [0.198]	0.121	0.205	0.394	0.955	
Solar module	57.948 [3.696]	56.646 [3.427]	56.725 [3.635]	61.277 [3.838]	58.150 [1.819]	0.659	0.920	0.625	0.309	
<i>Wish to migrate at baseline (%)</i>										
Abroad	30.584 [3.402]	28.630 [2.838]	29.825 [3.659]	38.523 [3.447]	31.900 [1.690]	0.457	0.793	0.092*	2.039	
Outside Africa	18.109 [2.633]	17.382 [2.389]	17.739 [2.803]	20.758 [3.258]	18.500 [1.390]	0.662	0.890	0.553	0.272	
SS Africa	8.652 [1.858]	6.748 [1.181]	7.602 [1.776]	12.575 [2.386]	8.900 [0.934]	0.319	0.695	0.212	1.678	
North Africa	3.823 [0.906]	4.499 [1.272]	4.483 [1.056]	5.190 [1.287]	4.500 [0.566]	0.717	0.810	0.377	0.243	
Inside Mali	33.400 [3.610]	30.470 [3.556]	26.901 [3.102]	21.756 [2.566]	28.100 [1.631]	0.533	0.117	0.005***	3.092**	
Observations	2000	497	489	513	501					
Joint ortho. test (Film LO)									2.21	0.002
Joint ortho. test (Film NM)									2.40	0.001
Joint ortho. test (Film PM)									2.13	0.002

¹ Nine standard questions were asked to define whether people were depressed: a person was defined as suffering from depressive symptoms if s/he answered more than five questions positively.

² People were asked if they suffered from one of the following diseases: chronic respiratory infection, cardiovascular disorder, malaria, HIV/AIDS, tuberculosis, cancer, diabetes, psychiatric disorder, liver or stomach disease.

³ The aspiration index is the average of individuals' perception of what their life situation will be in 10 years, in terms of income, housing, wealth and social status. Individuals were asked to weight the four categories, and the overall aspirations index represents the weighted measure. The four dimensions of aspirations are defined as the belief that in 10 years one will reach a higher level of income, housing, wealth or social status than the present one. Answers lie on a Likert scale from 1 to 5, 5 representing a very likely positive change, 3 no change, and 1 a very likely negative change.

⁴ The locus of control index is the sum of answers to five questions: (1) I don't have enough control over the direction my life is taking; (2) In my life, being lucky is more important to succeed than working hard; (3) Every time I try to move forward in my life, something or someone prevents me from doing so; (4) Making plans makes me unhappy because my plans rarely work; (5) Chance and luck are very important for what happens to me in life. Answers lie on a Likert scale from 1 to 4, 1 representing full agreement and 4 no agreement.

⁵ Subjective living conditions: the question was: "Given your household income, do you feel that you are living 1 = Well or quite well 2 = Only fairly 3 = With difficulty.

⁶ List of durable goods: car or motorbike, bike, cart, TV set, radio, fridge, solar panel, power generator.

*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$. Standard errors were clustered at the village level.

Sample: Baseline survey. Strata included in regression for joint orthogonality tests.

Table A2: Attrition rates

	Full sample	Control	Film LO	Film NM	Film PM	P-values				
						C-FLO	C-FNM	C-FPM	F-stat	P-value (F)
Attrition rate	8.249 (1.516)	7.362 (1.528)	7.212 (1.661)	5.988 (1.136)	7.200 (0.734)	0.680	0.644	0.233	0.522	0.668
due to departure abroad	2.213 (0.720)	2.658 (0.863)	1.170 (0.532)	2.395 (0.608)	2.100 (0.344)	0.691	0.244	0.847	1.181	0.318
due to departure within Mali	4.225 (1.187)	3.272 (0.892)	4.288 (1.082)	2.595 (0.846)	3.600 (0.505)	0.520	0.969	0.264	0.704	0.550
due to incomplete questionnaire	1.811 (1.027)	1.431 (0.583)	1.754 (0.662)	0.998 (0.427)	1.500 (0.352)	0.748	0.963	0.464	0.428	0.733
Observations	2000	497	489	513	501					

*, $p < 0.10$, **, $p < 0.05$, ***, $p < 0.01$.
Sample: Baseline survey.

Table A3: Aspiration, depression, locus of control, attrition bias, IPW correction and Lee bounds procedure

	IPW correction			Lee bound					
	Film LO	Film NM	Film PM	Lower	Upper	Lower	Upper	Lower	Upper
				Film LO			Film NM		Film PM
Aspiration index	0.0964** (0.0477)	0.0106 (0.0489)	0.0878* (0.0494)	0.0986*** [0.0520	0.1178*** 0.1674]	0.0008 [-0.0465	0.0181 0.0629]	0.1067*** [0.0577	0.1491*** 0.1984]
Depression	-0.0930** (0.0363)	-0.0587 (0.0364)	-0.0433 (0.0317)	-0.0850*** [-0.1258	-0.0754*** -0.0396]	-0.0504** [-0.0912	-0.0391* -0.0017]	-0.0803*** [-0.1240	-0.0557** -0.0191]
LoC index	0.822** (0.352)	0.446 (0.363)	0.366 (0.347)	0.5808** [0.1417	0.6690** 1.0525]	0.4721* [0.0500	0.5762*** 0.9401]	0.1445 [-0.3299	0.3763* 0.7520]
Observations	1,856			986 (909 / 0.0096)		1010 (932 0.0112)		998 (927 0.0241)	

Notes: The aspiration index is the average of individuals' perception of what their life situation will be in 10 years, in terms of income, housing, wealth and social status. Individuals were asked to weight the four categories, and the overall aspirations index represents the weighted measure. The four dimensions of aspirations are defined as the belief that in 10 years one will reach a higher level of income, housing, wealth or social status than the present one. Answers lie on a Likert scale from 1 to 5, 5 representing a very likely positive change, 3 no change, and 1 a very likely negative change. A person is defined as suffering from depression symptoms (dummy variable = 1) if s/he answered more than five questions positively among nine standard questions about depression symptoms. The locus of control index (LoC index) is the sum of answers to five questions: (1) I don't have enough control over the direction my life is taking; (2) In my life, being lucky is more important to succeed than working hard; (3) Every time I try to move forward in my life, something or someone prevents me from doing so; (4) Making plans makes me unhappy because my plans rarely work; (5) Chance and luck are very important for what happens to me in life. Aspirations and locus of control are standardized relative to the control group at baseline.

Standard errors clustered at the village level; ANCOVA ITT estimator with control variables at the village level – strata dummies and dummy variables equal to one whether an Imam was present at film screening, or whether the village head attended the film screening.

IPW correction: attrition bias is controlled for by the introduction of inverse probability weights of an attrition equation that includes: strata dummies, willingness to migrate, age, age squared, having Malinke as mother tongue, having been to school, whether or not the father is alive, being an unpaid family worker, father farmer, matrimonial status, being household head, having children, subjective poverty, living in a household with return or current migrants, having lived outside the village, surveyor dummies, and possession of two cell phone numbers.

The Lee lower and upper bounds correspond to extreme assumptions about the missing information that are consistent with the observed data. Either from below or from above, the group (treatment, control) that suffers less from sample attrition is trimmed at the quantile of the outcome variable that corresponds to the share of 'excess observations' in this group. Calculating group differentials in mean outcome yields the lower and the upper bounds, respectively, for the treatment effect depending on whether trimming is from below or above. The 95% confidence interval for treatment effect are presented into bracket below. It contains the OLS coefficient without controls, but not necessarily the coefficients resulting from ANCOVA with strata and additional controls. Standard errors are bootstrapped (500 replications); Number of selected observations and trimming proportion are indicated into brackets in the last line of the table.

*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Sample: Endline survey; sub-samples of control group and each treatment group for Lee bound estimates.

Table A4: Desire to migrate, IPW correction and Lee bounds procedure

	IPW correction			Lee bound					
				Lower	Upper	Lower	Upper	Lower	Upper
	Film LO	Film NM	Film PM	Film LO	Film NM	Film PM	Film LO	Film NM	Film PM
Wish to migrate									
Abroad	-0.00335 (0.0462)	0.0219 (0.0417)	0.0253 (0.0404)	-0.004 [-0.0607]	0.0093 [0.0664]				
to North countries	-0.0238 (0.0395)	0.0138 (0.0371)	0.0125 (0.0375)	-0.0220 [-0.0740]	-0.0123 [0.0345]				
to SSA countries	0.0146 (0.0205)	0.00387 (0.0177)	0.00715 (0.0180)	0.0091 [-0.0254]	0.0188 [0.0468]				
to North Afri. countries	0.00542 (0.0138)	0.00627 (0.0142)	-0.00972 (0.0153)	-0.0068 [-0.0351]	0.0028 [0.0254]				
Inside Mali	-0.0192 (0.0338)	0.00904 (0.0331)	-0.00891 (0.0328)	-0.0332 [-0.0836]	-0.0235 [0.0234]				
Made arrang. to mig.									
Abroad	-0.0324* (0.0193)	0.00736 (0.0186)	0.0114 (0.0231)	0.0075 [-0.0367]	0.0321* [0.0668]				
to North countries	-0.0317* (0.0164)	-0.0144 (0.0144)	-0.00596 (0.0178)	-0.0207 [-0.0590]	0.0040 [0.0323]				
to Sub-Sahara Africa	0.00380 (0.00793)	0.0214*** (0.00801)	0.0180** (0.00877)	0.0036** [-0.0227]	0.0282 [0.0468]				
to North Africa	-0.00439 (0.00430)	0.000178 (0.00457)	-0.000550 (0.00464)	-0.0066 [-0.0148]	-0.0001 [0.0104]				
Inside Mali	-0.00580 (0.0161)	0.00622 (0.0163)	0.00164 (0.0164)	-0.0272* [-0.0580]	-0.0025 [0.0226]				
	1,856			986(909/0.0096)		1010(932/0.0112)		998(927/0.0241)	

Notes: Standard errors clustered at the village level; ANCOVA ITT estimator with control variables at the village level – strata dummies and dummy variables equal to one whether an Imam was present at film screening, or whether the village head attended the film screening.

IPW correction: attrition bias is controlled for by the introduction of inverse probability weights of an attrition equation that includes: strata dummies, willingness to migrate, age, age squared, having Malinke as mother tongue, having been to school, whether or not the father is alive, being an unpaid family worker, father farmer, matrimonial status, being household head, having children, subjective poverty, living in a household with return or current migrants, having lived outside the village, surveyor dummies, and possession of two cell phone numbers.

The Lee lower and upper bounds correspond to extreme assumptions about the missing information that are consistent with the observed data. Either from below or from above, the group (treatment, control) that suffers less from sample attrition is trimmed at the quantile of the outcome variable that corresponds to the share of 'excess observations' in this group. Calculating group differentials in mean outcome yields the lower and the upper bounds, respectively, for the treatment effect depending on whether trimming is from below or above. The 95% confidence interval for treatment effect are presented into bracket below. It contains the OLS coefficient without controls, but not necessarily the coefficients resulting from ANCOVA with strata and additional controls. Standard errors are bootstrapped (500 replications); Number of selected observations and trimming proportion are indicated into brackets in the last line of the table.

*, $p < 0.10$, **, $p < 0.05$, ***, $p < 0.01$.

Sample: Endline survey; sub-samples of control group and each treatment group for Lee bound estimates.

Sandrine Mesple-Somps, disclosure statement

1. Sources of financial support: The project received funding from the Swedish Ministry of Foreign Affairs, and the French Development Agency.
2. No financial support received
3. No positions as officer, director, or board member of relevant non-profit organizations or profit-making entities.
4. No another party had the right to review the paper prior to its circulation.
5. The internal review board of the Paris School of Economics approved our experimental protocol (application #2018 015).
6. The trial is registered at <https://www.socialscienceregistry.org/trials/4423>

Björn Nilsson, disclosure statement

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