

Will video kill the radio star?

Assessing the potential of targeted exposure to role models through video

Tanguy Bernard, Stefan Dercon, Kate Orkin, Alemayehu Seyoum Taffesse

Globalisation and decreases in ICT costs have led to rapid increases in exposure to media, especially in the developing world. More recently, development interventions are starting to use specifically tailored video content as part of behavioral change campaigns. Relying on TV and internet networks, but also mobile display video equipment, such as basic projectors or tablet computers, these media are remarkably effective at delivering homogenous messages even in remote rural communities. They are accessible to illiterate viewers. The costs of producing content are fixed, so any intervention becomes progressively more cost-effective as it is scaled up. Even in linguistically diverse countries, videos can be easily dubbed into other languages.

In this paper, we focus on the effectiveness of such media in inducing behavioral changes in poor countries. We first review relevant literature from different disciplines. This suggests both that information targeted to an individual's specific needs is more effective than broader messages and that videos featuring role models similar to viewers reinforce persuasiveness as the latter relate to the character. We then discuss some of the challenges in designing non-laboratory randomized controlled trials to evaluate video-based interventions. We draw on our design of a recently completed study in remote rural Ethiopia, which showed that simple documentaries of relatively successful individuals from the same region affected both viewers' investment in their children's education and other future-oriented behaviors (Bernard, Dercon, Orkin and Taffesse, 2014). We discuss the importance and challenges of placebo treatments to evaluate the effects of exposure to video and gatherings, explore the potential for controlling variation in the exposure of an individual's network of friends to the same treatment, and discuss external validity. Our experiment only partially addresses the issues we highlight, so we suggest directions for future research.

1. Video-based interventions and behavioral change

There is extensive work on the effects of exposure to television on attitudes and behaviors. Some has focused on access to news channels and political beliefs (e.g. DellaVigna and Kaplan, 2007). Other work has examined the effects of TV or radio soap operas, which are not designed with particular messages in mind. Exposure to TV soaps for instance, has had effects on fertility and women's empowerment in

Tanzania (Vaughan and Rogers, 2000), Brazil (La Ferrara, Chong and Duryea, 2012) and India (Jensen and Oster, 2009).

In a more pro-active way, the genre of educational entertainment (Singhal et al. 2004) explicitly includes educational messaging in soap operas as vehicle for behavioral change messaging. For instance, educational operas have shown to be effective in altering multiple dimensions of attitudes and behaviour, from adoption of agricultural practices in Vietnam (Heong et al. 2008); to use of oral rehydration therapy for children in Egypt (Abdulla, 2004); co-operative behaviours in Rwanda (Paluck 2009); and in reduction in gambling and use of lower-interest rate in South Africa (Berg and Zia, 2013).

There are two aspects to effective messaging. First, messages tailored to the specific information needs of individuals have been shown to be more powerful at affecting behavior. As economists, we “typically assume that only one type of persuasive content matters: objectively useful information” (Mullainathan et al. 2008: 1). This is supported by Jensen (2010) and (2012), and Hanna et al. (2012) who find a positive effect of targeted information on individuals’ choices related to business opportunity in India, children’s education in the Dominican Republic, and inputs on seaweed farms in Indonesia. Further evidence is also given by research in other social science fields where trials find motivational messages where content is tailored to have larger effects on behavior compared to non-tailored messages: in public health on physical activity (Bull et al. 1999; Marcus et al. 1998), weight gain (Campbell et al 1994) and smoking cessation (Prochaska et al. 1999; Shiffman et al 2000), and in education on study habits and grades (Kim and Keller 2008). The boom in micro-targeting of political advertising has shown similar results.

Second, and possibly more important, persuasion also rests on framing a message in a way that individuals relate to. Communication through relevant individuals narrating their stories has been shown to be effective in “transporting” individuals into the story (Green and Brock 2000). This translates into cognitive and emotional engagement and attention among viewers and is associated with attitude change in the direction of the story’s conclusions (Green et al 2004; Slater and Rouner 2002). Partly, this is simply because people receive messages better from those whom they recognize as similar to them. Social cognitive theory from social psychology suggests that attitudes and behaviors are strongly affected by the experience of others in one’s immediate environment (Bandura, 1977, 1986). Exposure to role models with whom a viewer identifies can substitute for an individual’s experience of actual peers and may be a

particularly powerful way of framing a message to promote attitude and behavior change. Instead of simply receiving information, viewers watching a soap receive a “vicarious experience” (Bandura, 1977): a resonant, salient experience of what a different life might be like.

Thus, videos are increasingly being used, even outside the broad radio/TV network, as part of interventions geared at providing information and inducing behavioral changes. For example, Digital Green, an India-based NGO, produces videos on locally relevant agronomic, health and livelihood practices to motivate and educate community members organized into small screening and discussion groups. Characters are not agronomic technicians, but farmers from nearby communities. The Awethu Project, a small business incubator in South Africa, recruits candidates by going door-to-door in low-income communities. Their recruiters display videos about successful Awethu entrepreneurs on small tablets and sets of speakers. In India, a campaign to increase awareness of one’s right to access the National Employment Guarantee Scheme included screening of a movie in which a seasonal migrant returning to his home village hears about the program and decides to stay (Ravallion et al., 2013). The character is designed to be ‘locally relevant’ so as to “engage viewers emotionally [in order to] to shift their knowledge” (page 5).

2. Design of RCTs of video-based interventions, with an example from rural Ethiopia

In an experiment in rural Ethiopia, we aimed to test if there is a link between exposure to potential role models and subsequent outcomes. Poor people often do not make investments, even when returns are high. One possible explanation is that they form mental models which ignore some options for investment. We aimed to alter poor people’s perceptions of the possibilities for their own lives, by showing them four video documentaries of fifteen minutes each, in which people from similar backgrounds to the audience tell stories about their lives. They describe how they have improved their socio-economic position from being poor or of average socio-economic position in their communities, to being relatively successful, without help from government or NGOs.

The experiment took place in 64 remote villages of Eastern Ethiopia, grouped in fours around a screening site (a school or a farmer training center). In each village, both spouses from six randomly selected households were randomly invited to a screening of documentaries, while both spouses of an additional six households per village served as control. The baseline survey was implemented before allocation of tickets. A short follow-up survey was conducted straight after the documentary screening and endline data

were collected six month later. To ensure compliance with an individual-level treatment, screenings occurred in closed venues which individuals could only access with tickets; individuals were also given in-kind incentives for attendance to treatment and survey time. Overall compliance was high, with 96% per cent of the individuals who were allocated tickets attending the correct screening, despite an average 29 minutes travel time.

2.1. Direct treatment effect

Individuals featured in the documentaries did not provide any advice on particular actions or investments one should undertake in order to replicate their success. Instead, they report on how they achieved their current socio-economic status through setting goals, careful choices, perseverance and hard work. After seeing the documentary, we find that individuals invited to a screening of documentaries were hoping for significantly higher level of education for their eldest children than individuals in the control group. Six months after the intervention, treated individuals had higher numbers of children enrolled in school and more spending on school-related expenses than in the control group.

Importantly, these outcomes are not driven by the information content of the documentaries. While Jensen (2010) finds lower drop-out rates amongst individuals with access to specifically tailored information on local returns to education, none of the individuals in our documentaries had achieved positive socio-economic outcomes through higher-than-usual levels of education, nor did they provide any education-related advices in the documentary. One way to interpret our findings is that individuals were well aware of educational returns, given the Ethiopian government's campaigns for enrolment in years, but that they did not think their children would be able to achieve such returns. The documentaries may have shown the possibility of a brighter future for individuals of similar background.

A mere emotional connection with a successful individual would thus induce a person to revise her behavior towards higher investments in future-enhancing domains. If true, one would expect to observe larger effects when the viewer and the character displayed share a number of characteristics. Women for instance may be more responsive to stories featuring successful women; poorer individuals may be more affected by stories of individuals starting from a similarly impoverished background. In the present experiment, all treated individuals watched all four 15-minutes documentaries in a row. Two of them related to a female character, the other two to a male. Three of them related to successes in agriculture,

one to a successful small trade business. Because of lack of resources and to preserve statistical power, we were unable to further vary invitations - by inviting some women to female-only stories, while others would have been invited to male-only stories for instance.

2.2. Placebo effect

The simple occurrence of a video screening in very remote communities can affect viewers' mindsets in rather unpredictable ways. The mere effect of bringing people together, whatever the reason, may lead to exchange of information that can also affect their perceptions and behavior. Invited individuals may have also felt 'elected' to be in the screening session, especially with a large group of outsiders with technological equipment. This may have affected survey response and behavioral decisions.

To assess the extent to which the content of the documentary mattered above and beyond the screening event, we simultaneously ran a perfectly symmetric placebo experiment, similar in approach to that of Card et al (2012). In our intervention both heads and spouses from an additional six randomly chosen households in each village were also surveyed but invited to a screening of an entertainment program from Ethiopian TV depicting short plays and traditional Ethiopian songs. The placebo screenings also lasted for an hour and occurred in the same school or training center, on the same day although at a different time. Descriptive evidence suggests the placebo screening was an important event. Although the treatment videos were significantly more enjoyable and more widely discussed than the placebo videos (Table 1), the latter did generate extensive interest and discussion. Results further suggest that invitation to a placebo screening also led to increased investments in children's education, although these effects were of smaller magnitude and lower statistical significance than the treatment effect.

Table 1: Assessment of documentaries and placebo after six months

	Treatment	Placebo	P: Difference
Enjoyed watching what I saw	0.958 (0.201)	0.732 (0.443)	0.000***
Discussed film I saw a lot with my neighbours	0.873 (0.333)	0.713 (0.453)	0.000***
Discussed film others saw a lot with my neighbours	0.693 (0.462)	0.573 (0.495)	0.000***
Discussed film I saw at least once with neighbours in the past two weeks	0.331 (0.471)	0.216 (0.411)	0.000***
What I saw generated a lot of discussion within village	0.932 (0.251)	0.731 (0.444)	0.000***
N answered question	638	668	
N given ticket but didn't answer	37	34	

*p below 0.1, **p below 0.05, ***p below 0.01. Robust standard errors clustered at household level in parentheses. The last column gives the p value of the difference between the treatment and placebo group.

Source: Bernard, Dercon, Orkin and Taffesse (2014)

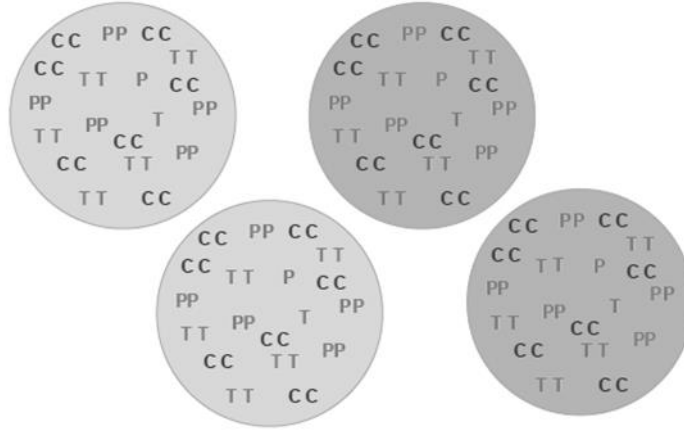
2.3. Peer-mediated treatment effect

As discussed in Paluck (2009) and Ravallion et al (2013), part of the effect of a video-based intervention may occur at the community-level, through a shift in public knowledge that may contribute to reinforce the mere effect of having been exposed to the screening itself. Video-based interventions in relatively remote village communities will inevitably trigger discussion, further diffusing and eventually re-interpreting the video content. Table 1 provides clear evidence of this in our setting. Further, consecutive changes in one's behavior may also affect one's peers. In education in developing countries, families who were not eligible for conditional cash transfers in Mexico but who lived close to eligible families were more likely to enroll children in primary (Lalive and Cattaneo, 2009) and secondary school (Bobonis and Finan (2009).

With randomization at the household level (instead of village level), peer effects may however contribute to lower impact estimates of direct treatment effects. If non-treated peers also (indirectly) benefit positively from the intervention, the difference between treatment and control group is best seen as a lower bound on the treatment effect. This downward bias on the impact estimate is likely to be greater as time passes and opportunities for spillovers expand. To assess the importance of peer effects, we generated exogenous variation in the extent to which an individual's network was exposed to the treatment. In each screening site of four villages, we randomly assigned two villages to be “intense treatment” villages and two to be “intense placebo” villages (Figure 2). In the “intense treatment” villages, shaded dark grey, we randomly selected 18 additional households (heads and spouses) to receive invitations to the documentary but did not collect data on these individuals. In the “intense placebo” villages, shaded light grey we randomly invited 18 additional households (heads and spouses) to the placebo session.

Each surveyed individual was asked to list their four closest friends at baseline. We matched these lists to the lists of invitees to treatment or placebo screening sessions to capture how many of a respondent's friends were invited to the documentary and to the placebo screening. For 93 per cent of the respondents, all four individuals cited lived within the same village, as would be expected given the remoteness of these communities. Only 14 per cent of the respondents listed any of their siblings within the four individuals, suggesting that any peer effect cannot be fully explained by family-level characteristics. With imperfect

correlation between one's village and one's social network, this design offers the advantage of generating an almost continuous distribution of network-level intensity of treatment (Baird et al. 2012).



Such design is not immune to eventual sorting effects (Manski, 1993). In fact, peers from a given network may be relatively similar, and hence react somewhat homogenously to the treatment. Our specification therefore includes an interacted term between a person's own treatment status and the number of her peers who were also invited to treatment. We find an insignificant coefficient on this interacted term, rejecting presence of sorting effect - along with potential additional peer-mediated treatment effects on the treated individuals. Overall, our results point towards a positive and significant peer-mediated effect on the level of spending towards children education.

Two important points are worth mentioning. First, these results are at best lower bound estimates. Absent a pure control group, such as a set of randomly selected villages where no intervention occurred, we are unable to compare the behavior of control individuals in treatment villages to that of individuals in villages where no screening occurred. For the current study, budgetary constraints forced us to prioritize maximal statistical power on direct treatment effects at the cost of lower capacity to fully assess the magnitude of peer-mediated treatment effects. Second, these estimates do not inform us about the potentially different effects in relation to the way the screening occurred. People may react differently to video content displayed in large groups, in small groups or individually, and to the composition of the group (e.g. Ruiz-Belda et al. 2003, Druckman & Nelson, 2003, Janis, Kaye, & Kirschner, 1965). Further research on video-based interventions should be designed to further explore these.

2.4. Lasting effects and impact pathways

As discussed, several studies have empirically documented how TV or radio soaps have significantly affected behaviors in such diverse fields as fertility choices, agriculture, health or conflict resolution. These studies essentially provide reduced-form impact estimates, and do not provide clear evidence of the psychological channels that may have triggered these changes. Other studies have focused on these channels in laboratory experiments (in the aspirations literature, see for example Stout et al 2011; Greene et al 1982). These studies are however limited by the artificial nature of laboratory experiments and only measuring outcomes straight after screening.

The Ethiopia video experiment built on these two approaches, by combining short and medium term effects on both psychological pathways and concrete behavior. Alternative psychological impact channels were specified and indicators collected at baseline, minutes after screening of documentary/placebo content (while control individuals were interviewed at the same time in their homes), and again six months following the intervention. These channels can be broadly categorized into two groups. The first related to changes in one's sense of control over life using indicators such as locus of control (Levenson, 1981), perception of poverty (Feagin, 1972), or designed and pre-tested measures of aspirations (Bernard and Taffesse, 2014). The second related to risk aversion (Binswanger, 1980) or subjective future discount factors (Hill et al. 2011).

Results point towards positive improvements on all indicators in the first category while no effects are found in the other. We find however that these effects, while still significant, decrease in magnitude over time. As discussed above, this may result from contamination of the control group, which cannot be measured in the absence of control villages group in the design. They may, however, relate to the effects vanishing over time, calling for repeated interventions if behavioral changes are to be sustained. The same is true for concrete behavior change. Although positive effects on concrete behavior related to children education were found six months following the intervention, one may wonder if such behavior are sustained over time, suggesting a structural shift in individuals' behavior, or whether one observes 'dis-adoption' of future-enhancing behavior after a few more months – or years.

2.5. External validity

There is strong evidence that real-world conditions associated with media consumption play a nontrivial role in its impact (see Paluck 2009). Although RCTs offer real-world but clean links between exposure and outcomes, they reduce external validity in one important respect. In the real world, people increasingly choose their exposure to media and to information more broadly according to existing attitudes and behaviors, and may engage more closely with material that accords with attitudes they already hold (Hovland 1959, Iyengar et al. 2008). In other words, were people free – and non-incentivized – to choose the video they wanted to be exposed to (for instance documentaries or placebo), results from the Ethiopian experiment may have been different. Assessing the magnitude of such selection effect may be assessed through randomized offer of video menus on DVD, as in Iyengar et al. (2008).

3. Conclusion.

This paper offers insight on research design meant to assess the effectiveness of a type of video-based interventions that increasingly take part in development interventions. We argue that such studies need to account of video content, screening characteristics, peer effects, impact channels, the extent to which any impact is sustained over time, and eventual self-selection in non-experimental conditions. We illustrate the discussion using a recently completed video-based experiment in rural Ethiopia. Features of the experiment are presented along with insights on some of its results. We also discuss the study's pitfalls and offer insights towards potentially more complete research designs to empirically study video-based interventions.

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