

Teaching through television: Experimental evidence on entrepreneurship education in Tanzania*

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Abstract

Can television be used to teach and foster entrepreneurship among youth in developing countries? We report from a randomized control field experiment of an edutainment show on entrepreneurship broadcasted over almost three months on national television in Tanzania. The field experiment involved more than two thousand secondary school students, where the treatment group was incentivized to watch the edutainment show. We find some suggestive evidence of the edutainment show making the viewers more interested in entrepreneurship and business, particularly among females. However, our main finding is a negative effect: the edutainment show discouraged investment in schooling without convincingly replacing it with some other valuable activity. Administrative data show a strong negative treatment effect on school performance and long-term survey data show

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that fewer treated students continue schooling, but we do not find much evidence of the edutainment show causing an increase in business ownership. The fact that an edutainment show for entrepreneurship caused the students to invest less in education carries a general lesson to the field experimental literature, by showing the importance of taking a broad view of possible implications of a field intervention.

JEL Codes: O1, I25

1 Introduction

Edutainment shows have a long history in the developed world and are increasingly used in developing countries in order to educate the population in different spheres of life, including health, human rights, and financial literacy.¹ But what are the effects of these shows on the viewers? Are they a source of knowledge and behavioral change, or are they largely pure entertainment? These questions are particularly important in the developing world, where poor quality and severe resource constraints in the educational sector make it pertinent to consider complementary approaches to education (Banerjee and Duflo, 2011).

The present paper reports from a randomized control field experiment studying an edutainment show for entrepreneurship, Ruka Juu (“Jump Up”), which was aired on national television in Tanzania during the spring of 2011. The overall aim of the edutainment show was to educate and motivate Tanzanian youth on entrepreneurship, business skills, and financial literacy in order to realize their potential and enable them to lift themselves out of poverty. The show responded to the lack of economic opportunities in Tanzania for a growing young labor force: 700 000 – 800 000 youth leave the school system every year looking for ways to earn an income, but only a small fraction obtain formal employment (Financial Sector Deepening Trust, 2013; World Bank Group, 2014). Self-employment is promoted by the government of Tanzania in their national development youth policies, but very little training and support have been provided to the youth to enable them to establish and manage small-scale businesses (United Republic of Tanzania, 2007).² More widely, the fostering of entrepreneurship

¹An edutainment show is typically defined as a program that purposely designs and implements a media message to both entertain and educate, in order to “increase audience knowledge about an educational issue, create favorable attitudes, and change behavior” (Singhal, Cody, Rogers, and Sabido, 2004). For an overview of recent developments in entertainment education, see Singhal (2013).

²For a further discussion of the challenges facing youth in Tanzania, see Helgesson (2006). There

is perceived to be a critical part of the policy agenda in developing countries to expand employment and earning opportunities and to reduce poverty, particularly for youth and women (Cho and Honorati, 2014).

In our study, we randomly selected 43 secondary schools in Dar es Salaam to take part in a field experiment. We used a symmetric encouragement design, where the treatment group was incentivized to watch the edutainment show and the control group was incentivized to watch a weekend movie. To analyze the impact of the edutainment show, we rely on a broad set of data. A few weeks after the end of the show, we conducted an extensive lab experiment to measure impact on entrepreneurship ambitions, business knowledge, and mind-set, including entrepreneurial traits such as the willingness to take risk, patience and competitiveness preferences. Eight months later, at the end of the school year, we collected administrative data on school performance. Further, almost two years after the show ended, we conducted a long-term follow-up survey of a randomized subset of the participants in order to capture the impact of the edutainment show on occupational status, in particular on business startups. Finally, we complemented the quantitative analysis with focus group discussions.

Our study provides some suggestive evidence of the edutainment show making the viewers more interested in entrepreneurship and business, particularly for females, but no evidence of the show having an impact on the business knowledge of the viewers and only weak evidence of the show having an impact on the viewers' mind-set. However, we find strong evidence of the edutainment show affecting long-term behavior, where our main finding is a negative effect: the show discouraged investment in schooling without convincingly replacing it with some other valuable activity. Administrative data show a strong negative treatment effect on school performance: there is almost a 20 percentage points reduction in the share of students who passed the final O-level exam in the treatment group and, consistent with this, the long-term survey data show that fewer treated students continue schooling. At the same time, we do not find much long-term evidence of the edutainment show causing an increase in business ownership.

The fact that an edutainment show for entrepreneurship caused the students to invest less in education carries a general lesson to the field experimental literature, by

is also increasing interest in targeting the youth with financial education, but the focus is then more on saving and financial decision-making (Lührmann, Serra-Garcia, and Winter, 2015; Bruhn, Leão, Legovini, Marchetti, and Zia, 2016; Berry, Karlan, and Pradhan, 2018; Lührmann, Serra-Garcia, and Winter, 2018).

showing the importance of taking a broad view of possible implications of field interventions. It also raises the question of whether it is recommendable to encourage entrepreneurship among youth if this causes them to place less importance on education. We believe that it is crucial to evaluate this finding in light of the present poor quality of the secondary education in Tanzania.³ A plausible interpretation of the finding is that the formal education was largely considered irrelevant by some students, while the edutainment show was perceived to present perspectives that were beneficial for their future life situation, even though we find only weak evidence of these perspectives actually translating into more business ownership. It is easy, however, to envision that the encouragement of entrepreneurship may work differently in a society with a high-quality formal education, where entrepreneurship ambitions may make students invest more in schooling.

The present paper represents, to our knowledge, the first randomized control field experiment of an edutainment show in a developing country. The study that comes closest to ours is Berg and Zia (2017), who evaluate the impact of incorporating financial messages in a soap opera in South-Africa in 2012 on financial literacy and financial habits. They also use a symmetric encouragement design, where the treated group was encouraged to watch a soap opera containing financial messages and the control group was incentivized to watch another soap opera, aired at the same time. In a follow-up study around four months after the show ended, they find evidence of behavioral change, where the treated participants are more likely to borrow from formal sources and less likely to engage in gambling. They find some evidence of increased financial literacy on topics that were prominent in the soap opera, but no effect on general financial literacy. Finally, they do not find any effect on the likelihood to seek financial advice, a topic extensively promoted in the soap opera, and they argue that this may be due to this message being communicated by an external character who failed to connect emotionally with the viewers. The importance of emotional connections is in line with the thinking of the designers of Ruka Juu, where a main idea was to introduce real life individuals, rather than soap opera fictional characters, as role models for the viewers. In the focus group discussions, we find strong evidence of the viewers connecting to the life situation and choices of the contestants in the show, which may contribute to explain both our short-term effects on business ambitions and why we find evidence of behavioral changes almost two years after the show ended. In

³A recent survey of the educational sector in Tanzania showed huge problems with teacher attendance and the quality of the teaching (Uwezo, 2017).

particular, this may shed light on the finding that the edutainment show made students drop out of school: two of the six entrepreneurs in the show had dropped out of school and succeeded in establishing their own business. Overall, our study differs from Berg and Zia (2017) on a number of accounts. We consider an edutainment show, focus on the impact on entrepreneurship, consider spillover effects on education, and provide data on long-term impact two years after the program.⁴

Our paper also relates to the growing literature studying how TV and radio more generally may cause behavioral change. Jensen and Oster (2009) show that the gradual expansion of cable TV in India caused a decrease in the reported acceptability of son preference, domestic violence toward women, and fertility, and La Ferrara, Chong, and Duryea (2012) find that exposure to soap operas in Brazil, which typically depict families with few children, led to a reduction in fertility, particularly among poorer women. In a very different context, Yanagizawa-Drott (2014) shows how a radio station contributed to the Rwandan genocide, by significantly affecting participation in violence and killings. These findings demonstrate the power of television and radio, and our paper complements them by studying the extent to which television may initiate long-term behavioral changes among youth in entrepreneurship and schooling.

Finally, our paper contributes to the literature studying the role of human capital and entrepreneurship training in microenterprise development (McKenzie and Woodruff, 2014; Blattman and Ralston, 2015).⁵ Governments and non-governmental organizations have increasingly focused on providing business training programs targeting poor people, as illustrated by the International Labor Organization's Start Up and Improve

⁴Another related paper is Bernard, Dercon, Orkin, and Taffesse (2014), which, in Ethiopia, studies the effect of exposing poor people to documentaries about people from similar communities who had succeeded in agriculture or small business. Six months later, they find positive effects on aspirations, locus of control, and several economic and school outcomes. There are also a number of studies outside of economics that have analyzed the impact of edutainment and related initiatives. Rogers, Vaughan, Swalehe, Rao, Svenkerud, and Sood (1999) is an early study in Tanzania of the effects of using soap opera on the radio to initiate behavioral change. Using a region not reached by the radio broadcast as control, the study finds strong effects of the radio show on family planning. Abdulla (2004) is another early contribution demonstrating the potential of edutainment shows in the context of a public health campaign in Egypt. In a more recent study using qualitative methods, Ramafoko, Andersson, and Weiner (2012) demonstrates how a reality show involving five deprived communities in South Africa targeted social issues like HIV/AIDS, alcohol abuse, and crime. See also Paluck (2009); Paluck and Green (2009); Cheung (2012); Trujillo and Paluck (2012), for other interesting studies of how soap operas, edutainment shows, and radio programs impact savings and aspirations, school outcomes, and prejudice and conflict, and political attitudes.

⁵Our paper is also related to the broader literature on financial education and financial literacy, see Hastings, Madrian, and Skimmyhorn (2013); Fernandes, Lynch, and Netemeyer (2014).

Your Business program, which has been offered to at least 4.5 million people in 100 countries (Blattman and Ralston, 2015; Campos, Frese, Goldstein, Iacovone, Johnson, McKenzie, and Mensmann, 2017). A growing literature has studied the impact of such business training programs on startups, profits and the growth of businesses (Karlan and Valdivia, 2011; De Mel, McKenzie, and Woodruff, 2014; Drexler, Fischer, and Schoar, 2014; Giné and Mansuri, 2014; Berge, Bjorvatn, and Tungodden, 2015a; Campos et al., 2017). The evidence is mixed and suggests that it is difficult to improve the conditions for women and their firms. A further challenge with the traditional business program interventions has been that they are based on classroom or personal training, which makes the scalability of such interventions an open question (Berge, Bjorvatn, Juniwaty, and Tungodden, 2012; Berge et al., 2015a).⁶ Televised edutainment shows on entrepreneurship represent an alternative to classroom training, and, in line with the effectiveness of television in causing behavioral change in other domains, the present study demonstrates that such shows can make viewers more interested in entrepreneurship and can initiate more business startups. The effectiveness of edutainment shows, which clearly focus on conveying the importance of a proactive entrepreneurial mindset, is in line with the recent finding that psychology-based personal initiative training programs may be more effective than traditional business training programs in generating entrepreneurial success (Campos et al., 2017). At the same time, it is important to note that the edutainment show in our study failed in teaching complex business knowledge through television. This may suggest that such training requires a more standard classroom approach that enables direct involvement with the participants or more use of a rule-of-thumb approach that focuses on basic entrepreneurial heuristics (Drexler et al., 2014).

The outline of the paper is as follows: Section 2 provides a discussion of the background for the edutainment show and an overview of the research design; Section 3 discusses sample, balance issues, and the experimental design in more detail; Section 4 outlines the empirical strategy; Section 5 studies whether the encouragement design caused increased exposure to the edutainment show among the treated students; Section 6 and Section 7 analyze short-term and long-term effects of the show; Section 8 offers some concluding remarks, while additional analysis is relegated to the online Appendix A.

⁶There are also educational classroom field interventions targeting the youth to make them more forward-looking in their behavior, see Alan and Ertac (2018).

2 Background and overview of the research design

We here provide a discussion of the background for the edutainment show and an overview of the research design.

2.1 Background

Ruka Juu is an edutainment show produced by the NGO Femina HIP, which is a multimedia platform working with youth and communities across Tanzania. Femina HIP has since 1999 promoted healthy life styles and gender equality, and in recent years increasingly also entrepreneurship and financial literacy, and citizen engagement.⁷

The first season of Ruka Juu was aired on national television in Tanzania from March to May 2011. The edutainment show consisted of 11 weekly episodes built up around six young entrepreneurs (three females and three males). They competed for “the opportunity of their life,” to win a prize of 5 million Tsh (around 3100 USD at the time of the intervention). The contestants, all running their own small-scale businesses, were recruited from semi-urban areas throughout Tanzania with the aim of establishing role models for the viewers. For example, one of the contestants, Benitha, was selected because she had managed to establish her own business despite having dropped out of secondary school due to pregnancy, a common situation for many girls in Tanzania. The audience followed each contestant through a number of challenges engaging both the contestants and the viewers to reflect on how to plan and operate a business. Important topics were market assessment, customer care, marketing, record keeping, credit, savings, insurance, health, and appearance. The edutainment show had a particular focus on female empowerment and one episode was specifically assigned to gender issues. It had an estimated 3.1 million viewers (Tanzania All Media Product Survey) and was awarded the second prize in the 2013 Pan-African Awards for Entrepreneurship in Education, in competition with over 350 initiatives from 33 different countries.

⁷In addition to Ruka Juu, Femina HIP also produce Fema Magazine, Fema Radio Show, and Fema TV Show. For a further discussion of Ruka Juu, see Ekström and Sekei (2014).

2.2 Overview of the research design

The participants were recruited from 43 randomly selected secondary schools in Dar es Salaam.⁸ The study was introduced as a research project on youth and media. 21 schools were randomly assigned into the treatment group and 22 schools into the control group before we had information about the distribution of background characteristics.⁹ At each school and before randomization, one class from the final year of the ordinary level (O-level), also known as Form IV, was selected to participate in the study.

In January 2011, before the first episode of *Ruka Juu* was aired, we conducted a baseline survey containing questions on socioeconomic background, media-habits, current topics, business issues, and personal ambitions.¹⁰ After the baseline survey was conducted, all students in the selected sample were invited to participate in the study. The students and their parents had to sign a contract where participants promised to watch, to the extent possible, the edutainment show (treatment group) or the weekend movie (control group). The contract also specified that the participants would receive 10 000 Tsh (approximately 7 USD) for participating in the study and that there would be a possibility to earn additional money in a follow-up session after the edutainment show had ended.¹¹ All participants selected for the study signed the contract, which means that our sample should be representative for the secondary school students in Dar es Salaam.

Midway into the edutainment show we conducted a short survey at all the schools to remind the participants of their contract. We asked them (among other things) to rank their favorite episode (of the edutainment show or the weekend movie), where they normally watched the program, and whether they had missed any episodes.

A few weeks after the edutainment show ended, we conducted an extensive lab experiment at each school to study the short-term impact, where we collected incen-

⁸We restricted the study to government and community secondary schools, though one private secondary school was included due to an administrative mistake in the list prepared to us by the district education officer. There were 134 government and community secondary schools in Dar es Salaam in 2011 (Table 4.24, United Republic of Tanzania, 2011). It turned out that two of the schools belonged to the same administrative unit; the results are not sensitive to the removal of these two schools.

⁹The fact that we randomized at the school level across Dar es Salaam makes it unlikely that participants would be aware of the other treatment arm being implemented elsewhere.

¹⁰A translated version of all supplementary material to the field experiment is provided in Appendix B.

¹¹5000 Tsh were paid out when they signed the contract, the remaining 5000 Tsh were paid out when we did the mid-term survey.

tivized measures of the participants' knowledge of the content of the edutainment show and the weekend movie, entrepreneurship ambitions, knowledge of business concepts and practices, and measures of entrepreneurial traits. We also asked a series of non-incentivized questions. The participants were not given any feedback on their performance or earnings during the experiment, and payments were made right after the experiment, in envelopes that ensured privacy.

The aim of measuring knowledge of the content of the edutainment show was to study in an incentivized manner whether the treated students actually had been more exposed to the edutainment show than the students in the control group. The intention of the measures of entrepreneurship ambitions was to establish whether the edutainment show had affected the occupational preferences of the students, while the measures of business knowledge and entrepreneurial traits aimed to shed light on whether the edutainment show had affected what are typically considered to be two important factors for entrepreneurial success (Campos et al., 2017).

To study long-term effects, we collected two sets of data. First, we collected administrative data on the participants' performance on the final O-level exam in December 2011; second, we conducted a long-term survey of occupational status, including business start-ups, in 2013.

Finally, to supplement the main analysis, we organized focus group discussions with secondary school students at schools not taking part in the present study. In the focus groups, we received feed-back on how the edutainment show was perceived by the viewers, the extent to which they found it useful, and their views on entrepreneurship and self-employment in general.

To summarize, Table 1 provides a timeline for the research project.

[Table 1 about here.]

The main methodological challenge when designing a field experiment on a nationally broadcasted TV program is to establish a proper control group. We use a symmetric encouragement design, where the treatment group was incentivized to watch the edutainment show and the control group was incentivized to watch the weekend movie.¹² This feature of the design allows us to rule out that the encouragement in itself, in particular the economic incentives offered to the students, can account for the

¹²The weekend movie is a well-established television show in Tanzania, which is supposed to be a family treat that showcases the best movies from Tanzania.

observed treatment effects. We chose the weekend movie for the control group since it was aired at the same time as the edutainment show and it is hard to see that exposure to the weekend movie should have any impact on entrepreneurial variables.

3 Sample, balance and attrition

We here provide a more detailed discussion of the sample, the different data sources, balance, and attrition.

3.1 Baseline: Survey data

We have 2 132 students from 43 schools in this study. In Table 2 we present a set of core variables collected in the baseline survey, and include p -values for a test of no mean difference between treatment and control groups and for the test of joint significance.

[Table 2 about here.]

The students are on average 18 years old and there are slightly more females than males. 25.7% of the students do not live with their parents, and on average they lean towards it being quite easy to find a place to watch television.¹³ The majority of the students attend the arts stream in secondary school, while 36.6% attend the business stream which is more practically oriented. At the baseline, we measured their (business) knowledge and (business) ambitions. The knowledge variable is a dummy taking the value one if the student has answered correctly all three questions about the benefit of insurance, how to calculate annual interest on a loan, and how to understand the concept of profit. The entrepreneurship ambition variable is a dummy taking the value one if the student has responded that he or she would like to spend a 1 million Tsh gift on starting a business (instead of buying something nice for themselves or their family, paying for education, or spending the money otherwise). We observe that 25.8% of the students answered correctly all three knowledge questions, while 11.6% of the students expressed business ambitions. Finally, we observe that there are on average

¹³The average, 3.4, is between 3: 'sometimes easy, sometimes difficult' and 4: 'quite easy.' 24.7% do not have a television at home.

49.6 students in each class and that 56.3% of the previous year's students failed at O-level (form IV) exam in 2010, where the high failure rate reflects the poor state of the secondary education in Tanzania.¹⁴

We observe that the control group scores higher on the knowledge questions, is slightly less likely to live with their parents, and has more male students. In line with the suggestion of Bruhn and McKenzie (2009), we deal with these imbalances by controlling for the baseline characteristics in the subsequent analysis. Further, since the edutainment show had a gender focus, we also study separately the treatment effects for males and females.¹⁵

3.2 Short term: Lab data

The lab experiment was conducted at the schools and we reached 1 915 of the 2 132 students (89.8%). As shown in columns (1)-(4) in Table 3, attrition is higher in the treatment group than in the control group, which effectively means that treated students were less likely to attend school on the day of the experiment. We also observe that attrition is positively associated with business knowledge and business ambitions (as measured in the baseline survey).

[Table 3 about here.]

To study how robust our findings are to attrition, we report nonparametric upper and lower bounds on the treatment effects of interest in Figures A5 – A8 in Appendix A (Lee, 2009; Manski, 1990).

3.3 Long term: Administrative data

We collected administrative data about performance on O-level exams from the National Examinations Council of Tanzania.

¹⁴At the national level, 70% of the students failed the O-level exam in 2010. The lower failure rate for the schools in the present study largely reflects that these schools are located in the main city of Tanzania.

¹⁵In Appendix A, we provide additional balance tables. Tables A1-A2 provide balance tables for the baseline sample by gender, Tables A3-A5 provide balance tables for the different subsamples that we reached in the different follow-up rounds. In Figure A1 in Appendix A, we provide an overview of the distribution of the share of females across schools. We note that there is one male-only school in the control group. All our results are robust to the removal of this school from the sample.

To have a baseline measure of school quality, we collected the failure rate in 2010 for all the schools included in this study, as reported in Table 2. The students taking part in the present study took the O-level exam in December 2011, around eight months after the edutainment show ended. Their exam performance thus allows us to study how the edutainment show impacted long-term educational attainment. We managed to collect exam results for 2039 of the 2135 students (95.5%), and as shown in columns (5)-(8) in Table 3, attrition is not correlated with treatment for the long-term administrative data.

3.4 Long term: Survey data

Finally, to investigate the long-term effect of the edutainment show on occupational status and, in particular, on business start-ups, we conducted an intensive tracking survey of 430 randomly selected participants during the summer of 2013, around two years after the edutainment show had ended and 18 months after the students had finished their Form IV education. The selected sub-sample was identified by randomly drawing ten participants from each of the 43 schools. Through an extensive search, we were able to reach and do a phone interview with 286 of the 430 selected participants (66.5%). As shown in columns (9)-(12) in Table 3, attrition is not correlated with treatment for the long-term survey data.

4 Empirical strategy

Our main strategy is to estimate average treatment effects of the encouragement to watch the edutainment show based on random assignment to treatment and control, hence an intention-to-treat effect in the sense that we do not condition on actually watching show. Our main specification is to run ordinary least square regressions of the following type:

$$y_{is} = \alpha + \delta T_s + \beta x_{is} + \varepsilon_{is}, \quad (1)$$

where y_{is} is the outcome y measured for individual i in school s . The average treatment effect δ is estimated based on the assignment, T_s , of the school to either the edutainment show or the weekend movie, and x_{is} is a vector of control variables, collected both at the individual level and at the school level. In addition to these average treatment effects, since the edutainment show had a strong gender component, we also estimate

gender-specific treatment effects based on a regression specification with interactions between treatment and gender,

$$y_{is} = \alpha + \delta_1 T_s + \delta_2 T_s \times m_i + \gamma m_i + \beta x_{is} + \varepsilon_{is}, \quad (2)$$

where m_i is an indicator for the individual i being male. Now the estimated treatment effect δ_1 is the effect on female and $\delta_1 + \delta_2$ is the effect on male students. In the main paper, we report only the treatment effects estimated with a full set of control variables, in the online appendix we provide both the full regressions that support these summary tables and short regressions without these controls.

For both of these specifications, since treatment is assigned at the school level, and both observed and unobserved characteristics of individuals are likely to differ systematically by school, we cluster the standard errors at the school level and report standard errors using the method of Liang and Zeger (1986). We document in Appendix A (Figure A4) that this approach provides standard errors that are practically the same as the (wild) bootstrap approach of Cameron, Gelbach, and Miller (2008).

For each family of outcomes (exposure to the edutainment show, business ambitions, knowledge, mind-set, long-term behavior), we present treatment effects for the set of outcome indicators we collected in the study, both overall and for each gender. To correct for multiple hypothesis testing, we follow three strategies. First, we test for joint significance of effects within each family of related effects based on a seemingly unrelated regression model, separately for the average effects and for the gender specific effects (within-family-SUR tests). Second, we present p -value corrections for multiple testing using the method of Hommel (1988), which is known to be conservative when tests are non-negatively correlated. Within each family, we do this separately for all average effects and for all gender specific effects (within-family-Hommel tests). Third, for the analysis of the lab data, we construct indices summarizing the different outcomes for each family of experimental outcomes, and we report the estimated treatment effects on this summary index. For these indices, we also present Hommel-corrected p -values separately for the average effects and for the gender specific effects (across-family-Hommel tests).

We address attrition in two ways, with and without invoking assumptions about the structure of attrition. First, we assume that treatment has a monotone effect on attrition, which corresponds to the intuition that attrition is a problem primarily when it is differential by treatment. Lee (2009) shows how this assumption can be used

to bound the average treatment effect on the group for which attrition status depends on treatment assignment. Second, we eschew all assumptions about how attrition is determined, and use the approach of Manski (1990) to establish (quite conservative) bounds. In the online appendix, we graphically present both sets of bounds for all the treatment effects we estimate in the paper (Figure A5–A9).

5 Did the encouragement design work?

We first consider whether our encouragement design succeeded in creating an exogenous difference in exposure to the edutainment show between the treatment group and the control group. To study this question and take account of the possibility of an experimenter demand effect, we conducted incentivized tests of the participants' knowledge of the content of the edutainment show as well as of the weekend movies. Each test consisted of ten multiple-choice questions and the participants earned 100 Tsh for each correct answer.

[Table 4 about here.]

From the first two columns in Table 4, we observe that there is a large and statistically significant difference in the number of correct answers on program content between the two groups, with the treatment group clearly knowing more about the edutainment show and less about the weekend movies than the control group. This applies to both females and males. The treatment group had almost two more correct answers on the content of the edutainment show than the control group, which amounts to approximately one standard deviation. The treatment differences in program exposure are supported by the last two columns of Table 4, which report regressions on the self-reported number of episodes watched by the treatment group and the control group respectively. The treated students also self-report to have watched significantly more episodes of the edutainment show and significantly fewer episodes of the weekend movies than the control group students.

The treated participants on average watched 5.7 out of the 11 episodes of the edutainment show. Two main reasons were brought forward for not watching all the episodes. First, the students expressed difficulty in getting access to a television: “You know, if I am sitting alone and grown-ups come and there are two of them and they are interested in soap operas. Then there are two of them against me, and they forcefully

take away the freedom you have of watching . . . So I usually just let them be.” Second, there were frequent power cuts in Dar es Salaam in the period when the edutainment show was broadcasted: “I only watched two episodes because later on we had electricity cut-down problems at our place and I couldn’t find another way to watch.” The fact that the students had problems fully complying with the contract thus illustrates the challenging learning environment that these students face.

To summarize, we find clear evidence of the encouragement design causing an exogenous difference between the treatment group and the control group in exposure to the edutainment show. These effects are also highly significant after correcting for multiple hypothesis testing, both in terms of the SUR tests ($p < 0.01$) and, as shown in Table 4, for the within-family Hommel tests for all the average effects and all the gender specific effects.

We now turn to a discussion of how the increased exposure to the edutainment show affected the participants in the short term and in the long term.

6 Short-term impact: Ambitions, knowledge, and mindset

An important aim of the edutainment show was to increase the entrepreneurship ambitions among the viewers and make them consider starting their own business. The focus group discussions suggested that the edutainment show succeeded in this respect, as reflected in the following quote by one of the participants: “I can say that Ruka Juu has inspired me to be more determined to succeed and to expand my business. I was thinking if there was a school about business and how to manage it, I would have joined so that I can broaden my knowledge.”¹⁶

In the lab experiment, we included several measures of the participants’ interest in entrepreneurship, both incentivized and non-incentivized. The incentivized measure was introduced at the end of the lab experiment, where the participants were given the choice between a participation fee of 4 000 Tsh or participation in two weekend courses on business training. The price of each course was 2 000 Tsh, which would be subtracted from the cash payment at the end of the lab session.¹⁷ 60% of the par-

¹⁶In the following, we will present a set of quotes from participants. These are selected because they represent views that came up frequently during the focus group discussions.

¹⁷The two courses offered were on how to start up and operate a new business (Course 1) and on

ticipants did not sign up for any of the two business courses, while 10% signed up for both courses.

The first column in Table 5 reports from a regression of the willingness to spend 4 000 TSh on further training. We observe that for the full sample (Panel A), there is no significant treatment effect of the edutainment show on the demand for business training. As shown in Panel B, there is suggestive evidence of there being a gender difference in the treatment effect: the treated female students are almost six percentage points more likely to sign up for the courses, corresponding to 0.22 of a standard deviation, while there is no treatment effect for the male students.¹⁸ In the second and third columns, we report regressions on non-incentivized measures of entrepreneurship ambitions. The second column reports the results for a non-incentivized question on what type of course the participants would take if they were given a free, week-long training course, where we consider the probability of them choosing “training in entrepreneurship.”¹⁹ For both male and female participants, there is a strong effect of the edutainment show on the non-incentivized responses, with an increase in the probability of choosing entrepreneurship training of almost 0.25 of a standard deviation. We also asked the participants whether they would prefer to start a business of their own over other careers (private sector employee, government employee, farmer) if income and hours were exactly the same across alternatives. We observe from the third column that the treatment group is more likely to report a preference for starting their own business, particularly among the male participants. Finally, in the fourth column of Table 5 we consider the treatment effect on an index combining the incentivized and non-incentivized entrepreneurship ambition measures.

Overall, for both male and female participants, there is a treatment effect on the ambition index, which is suggestive evidence of the edutainment show succeeding in

how to access microfinance and apply for a business loan (Course 2). The participants were told that (i) the courses would be offered by experts, (ii) there would be a limited number of seats, (iii) invitation to attend would be randomly distributed among those who signed up for a course, and (iv) they would be paid back the course fee if they were not selected. In total, 62 participants were offered a business course in the fall of 2011. Our long-term results are robust to the removal of these participants.

¹⁸There are two alternative approaches to measuring the demand for business training: the dependent variable could be the number of courses they signed up for (0,1,2) or an indicator for whether they signed up for any courses. Since the content of the two courses is different, we prefer to focus on whether they signed up for both courses. However, we report the alternative specifications in Table A9, where we observe the same gender-specific patterns, but the effects are less precisely estimated and not significant for females or males.

¹⁹The other alternatives were “training in office work,” “training on health issues,” “vocational training,” and “don’t know.”

making the viewers more interested in entrepreneurship and business. In line with this, the SUR tests provide a strong rejection of the null hypotheses that there are no non-zero average or gender-specific effects in this family of outcomes (average: $p < 0.01$, gender specific: $p < 0.01$). Further, as shown in Table 5, all the average and gender specific effects that are significant are robust to within-family-Hommel correction. However, it is important to keep in mind that we only observe robust effects in the non-incentivized responses. We may have concerns about an experimenter demand effect shaping these responses, where students in the treatment group may feel that they are expected to show an interest in business. Thus, we may have more confidence in the weaker findings from the incentivized measure.

[Table 5 about here.]

The edutainment show also aimed at educating the participants, by providing them with business knowledge and by focussing on the importance of having an entrepreneurial mind-set. With respect to business knowledge, the edutainment show provided factual information, introduced key business concepts, and highlighted good business practices with respect to, among other things, marketing, customer care, and record keeping. In order to measure the impact of the edutainment show on business knowledge, the participants answered a set of 24 incentivized multiple-choice questions on macroeconomic facts, business facts, business concepts, and business practices. The participants were paid 100 Tsh for each correct answer. The questions had been covered in the edutainment show and were developed in collaboration with the producers of the show as well as experts from the University of Dar es Salaam Entrepreneurship Centre, where the experts had been involved in the design and implementation of the show. To illustrate, one question on key business concepts was: “What is profit?” The four answers the participants had to choose among were: A: “Profit is sales of the most important products.”; B: “Profit is sales minus the cost of goods and operating expenses.”; C: “Profit is sales minus cost of goods and what you take home from the business.” D: “Profit is sales plus cost of goods and operating expenses.”²⁰

Table 6 reports regressions on the number of correct answers to the four subindicies of questions as well as on the knowledge index given by the total number of correct

²⁰ Questions illustrating the other categories are: “How many percent of Tanzanians have a bank account?”(Macro facts); “When do you have to prepare a financial statement for tax estimation?” (Business facts); and “Which of the following is an important part of customer service?” (Business practices). See Appendix B for a complete list of the business knowledge questions.

answers. We do not find a systematic treatment effect of the edutainment show on the incentivized test on business knowledge in the lab, even though we should note that there is suggestive evidence of a positive effect on the knowledge about macroeconomic facts among the male viewers. The SUR tests are also significant (average: $p = 0.08$, gender specific: $p = 0.06$). Still, the overall impression from the business knowledge part is that the edutainment show largely did not succeed in transferring business knowledge to the viewers. This is to some extent confirmed by the focus group discussions, which revealed that the viewers did not remember much of the factual information covered by the edutainment show. Participants in the focus groups mostly did not even remember that there had been any fact sheets displayed on the television screen, despite them appearing in every episode of the edutainment show. Moreover, the episodes covering classroom training led by facilitators from the University of Dar es Salaam and a guest speaker from Tanzania Revenue Authority were hardly mentioned at all by the focus group participants.

The focus group discussions did, however, reveal that some viewers felt that they had gained knowledge about business practices from observing the participants, particularly with respect to customer service: “I learnt to be attentive to the customers and listen to their needs, and not to shout at the customers but have a good language and general cleanliness in the business environment.” We can therefore not rule out that the edutainment show transmitted some business knowledge to the viewers, not captured by our test.

[Table 6 about here.]

The edutainment show also conveyed the importance of having an entrepreneurial mind-set, including patience and the willingness to take risks.²¹ This was reflected in the focus group discussions where viewers expressed admiration for the risk-taking behavior of the contestants: “I liked the entrepreneur, the one with the cosmetics shop. I liked the way she handled the situation when the goods were stolen, she accepted

²¹Which traits are essential for becoming a successful entrepreneur is still an open research question, and the answer will most likely vary across different types of business environments and cultures. There is some evidence, though, suggesting that the willingness to take risk is an important determinant of the decision to become self-employed in various environments, see for example (Dohmen, Falk, Huffman, Sunde, Schupp, and Wagner, 2011; Hvide and Panos, 2014; Berge, Pires, Bjorvatn, and Tunngodden, 2015b), and there is evidence suggesting that poverty may cause risk-averse and short-sighted decision-making (Haushofer and Fehr, 2014). The focus of the present edutainment show on risk-taking and patience was largely based on advice from the experts from the University of Dar es Salaam Entrepreneurship Centre, who have worked with the local business community for years.

the situation and moved on. She didn't panic although she had incurred a loss because as an entrepreneur one has to realize that one is investing and that there are risks in the process." Viewers also expressed that they had been impressed by the contestants' willingness to save and to take a long-term perspective.

To study whether the edutainment show had made the viewers adopt a more entrepreneurial mind-set, we conducted a series of incentivized tests in the lab to elicit their willingness to take risk, patience, and competitiveness preferences.²² To elicit their willingness to take risk, we asked the participants in the lab to choose between a safe alternative and a risky alternative in three different situations (one of the situations was randomly selected to determine the payment from this part of the experiment). The payoffs were the same for all three situations: in the safe option 2 000 Tsh, and in the risky option 4 000 Tsh if lucky and zero if unlucky. The only difference between the situations was the probability of the lucky outcome in the risky option (25%, 50%, 75%). From Table 7, we observe that watching the edutainment show did not have a significant effect on the willingness to take risk in the overall sample (Panel A). Panel B, however, shows that there appears to be an interesting gender difference. We observe an increase in the female viewers' willingness to take risk, while we do not observe any effect on the males.²³ This gender difference should be interpreted with care, however, since the gender interaction effect is only marginally significant. But the female-specific effect on risk-taking may be seen as suggestive evidence of the edutainment show having an effect on the viewers' perceptions of females as risk takers, which then shaped the female viewers' willingness to take risk.²⁴

[Table 7 about here.]

²²Note that we cannot disentangle whether any effect of the edutainment show on the willingness to take risk comes from a change in risk preferences or a change in the beliefs participants have about their future income. We also conducted incentivized tests of their social preferences, to see whether the focus on entrepreneurship and business in the show made the participants more selfish or meritocratic (Cappelen, Drange Hole, Sørensen, and Tungodden, 2007; Almås, Cappelen, Sørensen, and Tungodden, 2010; Cappelen, Sørensen, and Tungodden, 2010). As shown in Tables A18 – A20 in Appendix A, we do not find any impact of the show on the social preferences.

²³In the main analysis, we take the number of times they chose the risky option as a measure of a participant's willingness to take risk. In Figure A2, we show that the reported result is robust to alternative definitions of risky behavior. In Table A14, we report the corresponding ordered probit regressions.

²⁴In line with this finding, when we asked the participants in the lab what they considered the most common characteristic of Tanzanian business women, a significantly larger share of both males and females in the treatment group chose "Risk taker" (males, $p = 0.004$; females, $p = 0.002$). The alternative characteristics were "Fast in decision making", "Good at collaborating", and "Never give up".

To analyze the impact on patience, we asked the participants to make choices in two sets of situations. In the first set of situations, the participants chose between receiving 1 000 Tsh today and a larger amount of money after eight weeks. They made this choice in three situations where the amount of money received at the later dates varied (1 500, 3 000, and 5 000 Tsh). In the second set of situations, they made the same three choices, but now between money in eight weeks or money in sixteen weeks. For each of the two sets of situations, one situation was randomly drawn to determine the payment from this part of the experiment. We observe from Table 7 that we do not find a significant effect on the overall sample (Panel A) or for females or males (Panel B).²⁵

In measuring competition preferences, we followed the approach of Niederle and Vesterlund (2007). The participants were first asked to add up numbers for three minutes, where they received 200 Tsh per correct answer. They were then asked about their beliefs about how well they performed compared to the others in the session. Finally, they were told to do another round of adding up numbers, but this time could choose between a fixed payment of 100 Tsh per correct answer or a payment of 300 Tsh per correct answer if they performed as least as well as the average in the previous round in their session, and zero if they performed worse than the average. As shown in the third column of Table 7, we do not find any treatment effect on the willingness to compete for the overall sample (Panel A) or for females or males (Panel B).²⁶

Finally, in Table 7, we report treatment effects for the mind-set index, which combines the three mind-set dimensions. We observe that we do not find any overall mind-set effect in the full sample (Panel A) or for females or males (Panel B). In line with this, the SUR tests are also not significant (average: $p = 0.63$, gender specific: $p = 0.22$), and, as we observe from Table 7, none of the aggregate or gender specific effects are robust to within-family-Hommel correction. The series of incentivized tests on risk, patience, and competition therefore largely do not provide evidence of the edutainment show shaping the mind set of the viewers, possibly with the exception

²⁵In the main analysis, we take the number of times they chose the later payment date as a measure of their patience. The participants were on average more patient when choosing payments in the future ($p < 0.01$), but we obtain very similar estimates of treatment effects if we run separate regressions for the two sets of situations. In Figure A3, we show that we get statistically significant treatment effects on patience if we define patience as choosing the later payment date at least five times. In Table A15, we report the corresponding ordered probit regressions.

²⁶There was also no statistically significant difference between the treatment group and the control group in beliefs about own performance (males, $p = 0.82$; females, $p = 0.39$).

of females becoming more risk-willing.

In sum, the results from the lab experiment provide some suggestive evidence of the edutainment show making the viewers more interested in entrepreneurship and business, and the estimated effects on the ambition index are robust to across-family-Hommel correction (average: $p < 0.01$, gender specific: $p = 0.08$ (females), $p < 0.01$ (males)). But we find no evidence of the show having an impact on the business knowledge of the viewers and only suggestive evidence of the female viewers becoming more entrepreneurial in terms of their willingness to take risk.

7 Long-term impact on behavior

We now turn to a discussion of the impact of the edutainment show on long-term behavior, both with respect to school performance and occupational status.

We find evidence of the edutainment strengthening entrepreneurship ambitions in the short-run. An increased interest in entrepreneurship could make them put more effort into school work, if they perceived the school activities or school performance to be important in order to succeed in business. But the edutainment show might also cause a substitution away from school work, if the schooling is seen as irrelevant for business and the students consider it more beneficial to spend time exploring business opportunities.

To study the long-term effect of increased entrepreneurship ambitions on school performance, we collected administrative data on whether the students passed the O-level exam, which they took around eight months after the edutainment show ended. Strikingly, we observe from Table 8 that the treatment group performed significantly worse in the school exam than the control group; the fraction that passed the O-level exam is significantly lower in the treatment group than in the control group. This finding suggests that the increased focus on entrepreneurship as a possible career path made the students less motivated to study hard at school.

The attrition analysis in Table 3 sheds further light on how the edutainment show affected the students' investment in schooling, since attrition at the lab experiment is equivalent to not attending school on the day of the research visit.²⁷ We observe

²⁷It appears very unlikely that anyone would refrain from attending school that day to avoid taking part in the lab experiment. First, the date of the lab experiment was not announced to the students in advance. Second, the lab experiment represented a possibility for earning money, which made it attractive for the students to take part in it.

from Table 3 that the edutainment show had a negative treatment effect on school attendance, which suggests that increased entrepreneurial focus made the students less interested in school activities. Consistent with this, we observe in the competitiveness experiment that the treated students performed worse in the math task in the first round of the competitiveness experiment: they had 1.73 fewer correct answers than the control students ($p = 0.003$). Finally, we note from Table 3 that there is a significant negative association between business ambitions at baseline and school attendance; students that stated that they would use 1 million Tsh to start a business are seven percentage points less likely to attend school. This suggests that students do not consider schooling to be particularly relevant for business. Overall, our analysis shows that the edutainment show affected school performance negatively, by making them less motivated for school and thereby lowering their school attendance (and possibly also the effort they put into school more generally).

[Table 8 about here.]

Almost two years after the intervention, we again surveyed the participants to study whether the edutainment show had an impact on long-term occupational status. Consistent with more students having failed the O-level exam, we observe from Table 8 that it is less likely that the treatment group participants self-report currently being a student.²⁸ Taken together, the long-term data thus provide strong evidence for the edutainment show causing poorer school performance and making it less likely that the students continued schooling.

The remaining columns in Table 8 report long-term effects on business startups, employment status, and mobility.²⁹ The participants reported having started various types of kiosks and retail activities on the street, including selling snacks, water, chips, or other small products. Others reported having entered into repair work, computers, general welding, and low level financial intermediation. However, overall, we do not find strong evidence of the poorer school performance being replaced with a significant increase in business ownership. The estimated treatment effect in Table 8 on business startups is not statistically significant in the overall sample (Panel A), or for males or

²⁸We do not have detailed data on what they are studying. They may have continued with A-level secondary schooling, vocational education or be repeating classes for a retake of the O-level exam.

²⁹In the long-term survey, we also collected information on marriage and child-bearing; 9% of the participants were married and 8.2% had or expected a child. We do not find any difference between the treatment group and the control group on these two variables.

females separately.³⁰ In terms of employment and whether the students have moved since secondary school, we do not find any statistically significant treatment effects. We note that the estimated effect on mobility is positive for females, which is suggestive of the edutainment show making them more entrepreneurial in their thinking and therefore also more willing to move in order to seek out economic opportunities.³¹

Overall, the long-term findings provide strong evidence of the entertainment show having shaped the long-term behavior of the viewers, and the SUR tests are highly significant (average: $p < 0.01$, gender-specific: $p < 0.01$). The results are particularly strong for school outcomes, where we observe from Table 8 that the estimated average effects for whether they have passed the final exam and currently are studying are robust to within-family-Hommel correction (final exam: $p < 0.01$, currently a student: $p = 0.02$), as well as for the gender specific effect of having passed the final exam for females ($p < 0.01$) and currently being a student for males ($p = 0.01$). However, we only find some suggestive evidence of the poorer school performance being replaced by other valuable activities.

8 Concluding remarks

We have studied the short-term and a long-term impact of an edutainment show on entrepreneurship broadcasted on national television in a developing country. In the short term, we find some evidence of the show making the viewers more interested in entrepreneurship and suggestive evidence of some mind-set changes. At the same time, we find no evidence of the show impacting the business knowledge of the viewers. Our findings thus suggest that it is challenging to use an edutainment show as a vehicle for knowledge transmission. However, we should keep in mind that even though

³⁰The effect on business startups for females is borderline statistically significant if we apply a one-sided test of equality ($p = 0.10$), which may appear appropriate since the initial hypothesis clearly was that the edutainment show should increase the likelihood of starting a business. It is also interesting to note that the long-term estimates on business startups are very similar and not statistically different from our short-term findings on the demand for business training, as reported in Table 5. First, the size of the effect for females on the probability of having started a business is almost the same as for the demand for business training (8.6 percentage points versus 5.8 percentage points), and second, for both measures there is negligible effect for the males (1.9 percentage points versus 1.2 percentage points). Still, overall, we consider our data at best to provide suggestive evidence of the edutainment show having a positive long-term effect on business startups.

³¹A recent study from Tanzania suggests that there are significant economic returns to migration (Beegle, De Weerd, and Dercon, 2011), while a study from Kenya and Indonesia find more moderate effects (Hicks, Kleemans, Li, and Miguel, 2017).

the encouragement design caused an exogenous difference in the exposure to the edutainment show, the treatment difference in the average number of episodes watched is not very large. This partly reflects the fact that the viewing conditions were difficult for many participants. Hence, the treatment intensity may not have been sufficient to ensure knowledge transmission, which we believe provides an important reminder for television-based edutainment initiatives in developing countries. It may be hard to achieve the level of consistency in viewing that is needed in order to facilitate learning.

In the long-term, we find that encouragement of entrepreneurship caused the youth to invest less in schooling, which seems to reflect that they do not consider the present education to be particularly relevant for business. However, we do not find convincing evidence of the poorer schooling performance being replaced by an increase in business ownership or other valuable activities.

The spillover effect from entrepreneurship education to schooling serves as a reminder of the importance of taking a broad view when evaluating the impact of different field interventions. The fact that we find limited evidence of the program causing an increase in other valuable activities suggests that the overall effect of the edutainment show was negative. However, we should keep in mind the context of our study, characterized by low educational quality and very few students (11.7%) being able to continue to A-level even if they pass the O-level exam (Table 4.7, United Republic of Tanzania, 2011). One might argue that the strong effect on long-term schooling provides evidence of the edutainment show being powerful in terms of creating a proactive entrepreneurship mind-set which critically evaluate the schooling path, but failed to provide the viewers with the basis and knowledge needed to create an alternative pathway in life.

In this respect, an important question is whether reallocating investments from education to business is a good strategy for poor people. The return on investments in education and microenterprise in developing countries is a challenging topic, but available evidence suggest that it may, in fact, be more beneficial for the poor in many developing countries to invest in building a microenterprise than in further education (Glewwe, 2002; Söderbom, Teal, Wambugu, and Kahyarara, 2006; Schultz, 2004; de Mel, McKenzie, and Woodruff, 2008; Peet, Fink, and Fawzi, 2015). In fact, a recent report from UNESCO argues that the quality of education in sub-Saharan Africa is so poor that it threatens the future of entire generations: children and adolescents are not learning the minimum needed to prepare them for decent employment (UNESCO,

2017).

Edutainment shows broadcasted on television and radio represent an intriguing approach to a host of development issues, since they are potentially low-cost interventions with large outreach. More research is therefore needed to understand how these shows can be used to initiate behavioral and social change. In particular, an open question remains whether there are ways of making edutainment shows a vehicle for knowledge transmission, and as such a complement to the formal education, in developing countries. Another interesting avenue for future research is to study whether edutainment shows may be used in different settings in addition to being broadcasted on television, for example at schools or in villages by the use of mobile cinema, and thereby serve as a point of departure for teaching and community discussions. Finally, the digital revolution opens up new approaches to edutainment education, where for example digital games allow individuals to explore and learn by role-taking (Singhal, 2013), and it will be interesting for future research to tap into these opportunities and study how they can support human capital formation in developing countries.

References

- Abdulla, Rasha A. (2004). "Entertainment-education in the Middle East: Lessons from the Egyptian oral rehydration therapy campaign," in Arvind Singhal, Michael J. Cody, Everett M. Rogers, and Miguel Sabido (eds.), "Entertainment-Education and Social Change: History, Research and Practice," Mahwah, New Jersey: Lawrence Erlbaum Associates, pp. 301–320.
- Alan, Sule and Seda Ertac (2018). "Fostering patience in the classroom: Results from randomized educational intervention," *Journal of Political Economy*, 126(5): 1865–1911.
- Almås, Ingvild, Alexander W. Cappelen, Erik Ø. Sørensen, and Bertil Tungodden (2010). "Fairness and the development of inequality acceptance," *Science*, 328(5982): 1176–1178.
- Banerjee, Abihjit V. and Esther Duflo (2011). *Poor Economics: A radical rethinking of the way to fight global poverty*, PublicAffairs.
- Beegle, Kathleen, Joachim De Weerd, and Stefan Dercon (2011). "Migration and eco-

- conomic mobility in Tanzania: Evidence from a tracking survey,” *Review of Economics and Statistics*, 93(3): 1010–1033.
- Berg, Gunhild and Bilal Zia (2017). “Harnessing emotional connections to improve financial decisions: Evaluating the impact of financial education in mainstream media,” *Journal of the European Economic Association*, 15(5): 1025–1055.
- Berge, Lars Ivar Oppedal, Kjetil Bjorvatn, Kartika Sari Juniwati, and Bertil Tungodden (2012). “Business training in Tanzania: From research-driven experiment to local implementation,” *Journal of African Economies*, 21(5): 808–827.
- Berge, Lars Ivar Oppedal, Kjetil Bjorvatn, and Bertil Tungodden (2015a). “Human and financial capital for microenterprise development: Evidence from a field and lab experiment,” *Management Science*, 61(4): 707–722.
- Berge, Lars Ivar Oppedal, Armando Jose Garcia Pires, Kjetil Bjorvatn, and Bertil Tungodden (2015b). “Competitive in the lab, successful in the field,” *Journal of Economic Behavior & Organization*, 118: 303–317.
- Bernard, Tanguy, Stefan Dercon, Kate Orkin, and Alemayehu Seyom Taffesse (2014). “The future in mind: Aspirations and forward-looking behavior in rural Ethiopia,” SSRN Scholarly Paper ID 2514590.
- Berry, James, Dean Karlan, and Menno Pradhan (2018). “The impact of financial education for youth in Ghana,” *World Development*, 102: 71–89.
- Blattman, Christopher and Laura Ralston (2015). “Generating employment in poor and fragile states: Evidence from labor market and entrepreneurship programs,” Mimeo, University of Chicago, Harris School of Public Policy.
- Bruhn, Miriam, Luciana de Souza Leão, Arianna Legovini, Rogelio Marchetti, and Bilal Zia (2016). “The impact of high school financial education: Evidence from a large-scale evaluation in Brazil,” *American Economic Journal: Applied Economics*, 8(4): 256–95.
- Bruhn, Miriam and David McKenzie (2009). “In pursuit of balance: Randomization in practice in development field experiments,” *American Economic Journal: Applied Economics*, 1(4): 200–232.

- Cameron, A. Colin, Jonah B. Gelbach, and Douglas L. Miller (2008). “Bootstrap-based improvements for inference with clustered errors,” *Review of Economics and Statistics*, 90(3): 414–427.
- Campos, Francisco, Michael Frese, Markus Goldstein, Leonardo Iacovone, Hillary C. Johnson, David McKenzie, and Mona Mensmann (2017). “Teaching personal initiative beats traditional training in boosting small business in West Africa,” *Science*, 357(6357): 1287–1290.
- Cappelen, Alexander W., Astri Drange Hole, Erik Ø. Sørensen, and Bertil Tungodden (2007). “The pluralism of fairness ideals: An experimental approach,” *American Economic Review*, 97(3): 818–827.
- Cappelen, Alexander W., Erik Ø. Sørensen, and Bertil Tungodden (2010). “Responsibility for what? Fairness and individual responsibility,” *European Economic Review*, 54(3): 429–441.
- Cheung, Maria (2012). “Edutainment radio, women’s status and primary school participation,” Research Papers in Economics 2012:5, Stockholm University.
- Cho, Yoonyoung and Maddalena Honorati (2014). “Entrepreneurship programs in developing countries: A meta regression analysis,” *Labour Economics*, 28: 110–130.
- De Mel, Suresh, David McKenzie, and Christopher Woodruff (2014). “Business training and female enterprise start-up, growth, and dynamics: Experimental evidence from Sri Lanka,” *Journal of Development Economics*, 106: 199–210.
- Dohmen, Thomas, Armin Falk, David Huffman, Uwe Sunde, Jürgen Schupp, and Gert G. Wagner (2011). “Individual risk attitudes: Measurement, determinants, and behavioral consequences,” *Journal of the European Economic Association*, 9(3): 522–550.
- Drexler, Alejandro, Greg Fischer, and Antoinette Schoar (2014). “Keeping it simple: Financial literacy and rules of thumb,” *American Economic Journal: Applied Economics*, 6(2): 1–31.
- Ekström, Ylva and Linda Helgesson Sekei (2014). “Citizen engagement through SMS? audience ‘talking back’ to a reality television edutainment initiative in Tanzania,” in

- Tina Askanius and Liv Stubbe Østergaard (eds.), “Reclaiming the public sphere: power, communication and social change,” Palgrave Macmillan, pp. 184–200.
- Fernandes, Daniel, John G. Lynch, and Richard G. Netemeyer (2014). “Financial literacy, financial education and downstream financial behaviors,” *Management Science*, 60(4): 1861–1883.
- Financial Sector Deepening Trust (2013). “Finscope Tanzania 2013,” Brochure, Financial Sector Deepening Trust (FSDT).
- Giné, Xavier and Ghazala Mansuri (2014). “Money or ideas? A field experiment on constraints to entrepreneurship in rural Pakistan,” World Bank Policy Research Working Paper No. 6959.
- Glewwe, Paul (2002). “Schools and skills in developing countries: Education policies and socioeconomic outcomes,” *Journal of Economic Literature*, 40(2): 436–482.
- Hastings, Justine S., Brigitte C. Madrian, and William L. Skimmyhorn (2013). “Financial literacy, financial education, and economic outcomes,” *Annual Review of Economics*, 5: 347–373.
- Haushofer, Johannes and Ernst Fehr (2014). “On the psychology of poverty,” *Science*, 344(862): 862–867.
- Helgesson, Linda (2006). *Getting ready for life: Life strategies of town youth in Mozambique and Tanzania.*, Ph.D. thesis, Doctoral Dissertation, GERUM Kulturgeografi 2006:1, Umeå University, Umeå.
- Hicks, Joan Hamory, Marieke Kleemans, Nicholas Y. Li, and Edward Miguel (2017). “Reevaluating agricultural productivity gaps with longitudinal microdata,” Working Paper 23253, National Bureau of Economic Research.
- Hommel, G. (1988). “A stagewise rejective multiple test procedure based on a modified Bonferroni test,” *Biometrika*, 75(2): 383–386.
- Hvide, Hans K. and Georgios A. Panos (2014). “Risk tolerance and entrepreneurship,” *Journal of Financial Economics*, 111(1): 200–223.
- Jensen, Robert and Emily Oster (2009). “The power of TV: Cable television and women’s status in India,” *Quarterly Journal of Economics*, 124(3): 1057–1094.

- Karlan, Dean and Martin Valdivia (2011). “Teaching entrepreneurship: Impact of business training on microfinance clients and institutions,” *Review of Economics and statistics*, 93(2): 510–527.
- La Ferrara, Eliana, Alberto Chong, and Suzanne Duryea (2012). “Soap operas and fertility: Evidence from Brazil,” *American Economic Journal: Applied Economics*, 4(4): 1–31.
- Lee, David S. (2009). “Training, wages, and sample selection: Estimating sharp bounds on treatment effects,” *Review of Economic Studies*, 76(3): 1071–1102.
- Liang, Kung-Yee and Scott L. Zeger (1986). “Longitudinal data analysis using generalized linear models,” *Biometrika*, 73(1): 13–22.
- Lührmann, Melanie, Marta Serra-Garcia, and Joachim Winter (2015). “Teaching teenagers in finance: Does it work?” *Journal of Banking & Finance*, 54: 160–174.
- Lührmann, Melanie, Marta Serra-Garcia, and Joachim Winter (2018). “The impact of financial education on adolescents’ intertemporal choices,” *American Economic Journal: Economic Policy*, 10(3): 309–332.
- Manski, Charles F. (1990). “Nonparametric bounds on treatment effects,” *American Economic Review*, 80(2): 319–323.
- McKenzie, David and Christopher Woodruff (2014). “What are we learning from business training and entrepreneurship evaluations around the developing world?” *World Bank Research Observer*, 29(1): 42–82.
- de Mel, Suresh, David McKenzie, and Christopher Woodruff (2008). “Returns to capital in microenterprises: Evidence from a field experiment,” *Quarterly Journal of Economics*, 123(4): 1329–1372.
- Niederle, Muriel and Lise Vesterlund (2007). “Do women shy away from competition? Do men compete too much?” *Quarterly Journal of Economics*, 122(3): 1067–1101.
- Paluck, Elisabeth Levy (2009). “Reducing intergroup prejudice and conflict using the media: A field experiment in Rwanda,” *Journal of Personality and Social Psychology*, 96(3): 574–587.

- Paluck, Elisabeth Levy and Donald P. Green (2009). “Deference, dissent, and dispute resolution: An experimental intervention using mass media to change norms and behavior in Rwanda,” *American Political Science Review*, 103(4): 622–644.
- Peet, Evan D., Günther Fink, and Wafaie Fawzi (2015). “Returns to education in developing countries: Evidence from the living standards and measurement study surveys,” *Economics of Education Review*, 49: 69–90.
- Ramafoko, Lebo, Gavin Andersson, and Renay Weiner (2012). “Reality television for community development,” *Nordicom Review*, 33: 149–162.
- Rogers, Everett M., Peter W. Vaughan, Ramadhan M.A. Swalehe, Nagesh Rao, Peer Svenkerud, and Suruchi Sood (1999). “Effects of an entertainment-education radio soap opera on family planning behavior in Tanzania,” *Studies in Family Planning*, 30(3): 193–211.
- Schultz, T. Paul (2004). “Evidence of returns to schooling in Africa from household surveys: Monitoring and restructuring the market for education,” *Journal of African Economies*, 13(S2): 95–148.
- Singhal, Arvind (2013). “Introduction: Fairy tale to digital games: the rising tide of edutainment education,” *Critical Arts: South-North Cultural and Media Studies*, 27(1): 1–8.
- Singhal, Arvind, Michael J. Cody, Everett M. Rogers, and Miguel Sabido (eds.) (2004). *Entertainment-Education and Social Change: History, Research and Practice*, Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Söderbom, Måns, Francis Teal, Anthony Wambugu, and Godius Kahyarara (2006). “The dynamics of returns to education in Kenyan and Tanzanian manufacturing,” *Oxford Bulletin of Economics and Statistics*, 68(3): 261–288.
- Trujillo, Matthew D. and Elisabeth Levy Paluck (2012). “The devil know best: Experimental effects of a televised soap opera on latino attitudes toward government support for the 2010 US census,” *Analyses at Social Issues and Public Policy*, 12(1): 113–132.
- UNESCO (2017). “More than one-half of children and adolescents are not learning worldwide,” Fact Sheet No. 46, UNESCO Institute for Statistics.

United Republic of Tanzania (2007). “National youth development policy,” Policy statement, Ministry of Labour, Employment and Youth Development.

United Republic of Tanzania (2011). “Basic education statistics in Tanzania (BEST),” Technical report, Ministry of Education and Vocational Training.

Uwezo (2017). “Are Our Children Learning? Uwezo Tanzania Sixth Learning Assessment Report,” Dar es Salaam: Twaweza East Africa.

World Bank Group (2014). “Tanzania: Productive jobs wanted,” Country Economic Memorandum, The World Bank Group.

Yanagizawa-Drott, David (2014). “Propaganda and conflict: Evidence from the Rwandan genocide,” *Quarterly Journal of Economics*, 129(4): 1947–1994.

Table 1: Timeline of the research project

Period	Event
1. January 2011	Baseline study and focus group discussions
2. Spring 2011	11 episodes of Ruka Juu aired
3. March 2011	Mid-term quiz
4. June 2011	Lab experiment and focus group discussions
5. Spring 2012	Collection of administrative data from (Dec 2011) exams
6. Spring and summer 2013	Long-term follow-up

Table 2: Treatment-Control Balance

	Treatment status			Difference	<i>p</i> -value
	All	Control	Treated		
Male	0.445 (0.027)	0.516 (0.038)	0.369 (0.033)	-0.147 (0.050)	0.003
Age	17.916 (0.060)	17.935 (0.077)	17.894 (0.094)	-0.041 (0.120)	0.735
Household with no parents	0.258 (0.010)	0.231 (0.012)	0.286 (0.014)	0.056 (0.019)	0.003
Access to TV	3.405 (0.052)	3.350 (0.087)	3.463 (0.055)	0.113 (0.102)	0.266
Business stream	0.383 (0.073)	0.346 (0.103)	0.422 (0.103)	0.076 (0.144)	0.598
Business knowledge	0.257 (0.019)	0.289 (0.027)	0.223 (0.026)	-0.066 (0.037)	0.076
Business ambitions	0.116 (0.011)	0.107 (0.011)	0.125 (0.019)	0.018 (0.021)	0.404
O-level failure rate for school	0.563 (0.023)	0.574 (0.026)	0.551 (0.039)	-0.023 (0.046)	0.618
Number of schools	43	22	21		
Number of individuals	2132	1109	1023		

Note: The table reports means of baseline variables by treatment. Male: indicator variable taking the value one if the participant is a male; Age: the age of the participant in years; Household with no parents: indicator variable taking the value one if the participant does not live with any of the parents; Access to tv: response to “If you want to watch your favourite TV-program, how easy is it for you to find a place to watch it?”, scale from 1 (very difficult) to 5 (very easy); Business stream: indicator variable taking the value one if the participant is in the business stream at school; Business knowledge: indicator variable taking the value one if the participant answered correctly three questions about insurance, interest rate, and profits. Business ambitions: indicator variable taking the value one if the participant chose alternative “2” on the question “What would you do if you had 1 million Tsh?” (1=Use them to buy something nice for myself or my family; 2= Use them to start a business; 3=Use them to pay for my education; 4= Other); O-level failure rate for school: the failure rate of the O-level exam in 2010 for the school of the participant. For two schools, we have used the 2012 failure rate, since 2010 data were not available. The *p*-values are for a test of no difference in means. Joint *p*-value of the explanatory variables in a regression predicting treatment on background variables: $p < 0.001$. Standard errors (in parentheses) are clustered on the school level.

Table 3: Attrition

	The lab experiment				Administrative (exam 2011)				Long-term survey			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treated (edutainment)	0.054*** (0.019)	0.052*** (0.018)	0.055** (0.026)	0.053** (0.025)	-0.009 (0.013)	-0.014 (0.014)	-0.009 (0.019)	-0.011 (0.021)	-0.001 (0.066)	0.010 (0.065)	0.060 (0.079)	0.064 (0.080)
Treated × Male			0.003 (0.037)	-0.003 (0.037)			-0.004 (0.019)	-0.007 (0.020)			-0.132 (0.105)	-0.123 (0.108)
Male		0.003 (0.018)	0.010 (0.022)	0.004 (0.023)		-0.015 (0.013)	-0.008 (0.015)	-0.011 (0.019)		0.056 (0.057)	0.081 (0.064)	0.113* (0.066)
Age		0.003 (0.007)		0.002 (0.007)		0.007 (0.006)		0.007 (0.006)		-0.046** (0.022)		-0.043* (0.023)
Household with no parents		0.009 (0.014)		0.009 (0.014)		-0.005 (0.011)		-0.005 (0.011)		-0.005 (0.042)		-0.005 (0.042)
Access to tv		-0.004 (0.006)		-0.004 (0.006)		-0.004 (0.004)		-0.004 (0.004)		-0.000 (0.024)		0.001 (0.025)
Business stream		-0.011 (0.018)		-0.011 (0.018)		-0.003 (0.011)		-0.003 (0.011)		0.025 (0.054)		0.033 (0.054)
Business knowledge		-0.026* (0.015)		-0.026* (0.015)		0.007 (0.010)		0.006 (0.010)		-0.003 (0.050)		-0.006 (0.049)
Business ambitions		0.072*** (0.024)		0.072*** (0.024)		0.038** (0.015)		0.038** (0.015)		-0.006 (0.094)		-0.006 (0.094)
O-level failure rate for school		-0.041 (0.070)		-0.041 (0.070)		-0.084 (0.055)		-0.084 (0.055)		0.256 (0.162)		0.234 (0.156)
Constant	0.076*** (0.010)	0.068 (0.118)	0.071*** (0.013)	0.068 (0.116)	0.041*** (0.012)	-0.020 (0.094)	0.045** (0.018)	-0.021 (0.094)	0.341*** (0.044)	0.982** (0.423)	0.299*** (0.046)	0.924** (0.425)
Observations	2132	2113	2132	2113	2132	2113	2132	2113	429	426	429	426
R ²	0.008	0.017	0.008	0.017	0.001	0.012	0.001	0.012	0.000	0.015	0.005	0.019

Note: The table reports linear regressions in which the dependent variable is an indicator for attrition in the lab data (columns 1-4), administrative data (columns 5-8), and long-term data (9-12). Treated: indicator variable for the participant being in the treatment group. Treated × Male: interaction variable between Treated and Male. Male: indicator variable taking the value one if the participant is a male; Age: the age of the participant in years; Household with no parents: indicator variable taking the value one if the participant does not live with any of the parents; Access to tv: response to “If you want to watch your favourite TV-program, how easy is it for you to find a place to watch it?”, scale from 1 (very difficult) to 5 (very easy); Business stream: indicator variable taking the value one if the participant is in the business stream at school; Business knowledge: indicator variable taking the value one if the participant answered correctly three questions about insurance, interest rate, and profits. Business ambitions: indicator variable taking the value one if the participant chose alternative “2” on the question “What would you do if you had 1 million Tsh?” (1=Use them to buy something nice for myself or my family; 2= Use them to start a business; 3=Use them to pay for my education; 4= Other); O-level failure rate for school: the failure rate of the O-level exam in 2010 for the school of the participant. Standard errors are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$).

Table 4: Impact on exposure to the edutainment show

	Content question (Incentivized, standardized)		Episodes watched (Non-incentivized, standardized)	
	Edutainment	Weekend movie	Edutainment	Weekend movie
Panel A: Overall impact				
Treated (edutainment)	1.039 ^{***†††} (0.073)	-0.761 ^{***†††} (0.074)	1.372 ^{***†††} (0.093)	-0.458 ^{***†††} (0.059)
Observations	1,902	1,902	1,854	1,886
R^2	0.232	0.169	0.326	0.069
Panel B: Gender specific impact				
Treated (edutainment)	1.010 ^{***†††} (0.089)	-0.756 ^{***†††} (0.071)	1.337 ^{***†††} (0.109)	-0.441 ^{***†††} (0.076)
Treated × Male	0.068 (0.121)	-0.012 (0.096)	0.083 (0.127)	-0.039 (0.082)
Male	-0.134* (0.073)	-0.194 ^{***} (0.071)	-0.067 (0.073)	-0.020 (0.071)
Treatment on Males	1.078 ^{***†††} (0.101)	-0.768 ^{***†††} (0.106)	1.420 ^{***†††} (0.116)	-0.480 ^{***†††} (0.065)
Observations	1,902	1,902	1,854	1,886
R^2	0.232	0.169	0.327	0.070
Panel C: Statistics on dependent variable (in control group)				
Mean	0.371	0.616	0.199	0.342
Standard deviation	0.168	0.188	0.226	0.326

Note: The table reports linear regressions in which the dependent variable is: column 1, the participant's number of correct answers about program content of the edutainment show (incentivized, 0-10); column 2, the participant's number of correct answers about program content of the weekend movie (incentivized, 0-10); column 3, number of episodes the participant watched of the edutainment show (self-reported, 0-11); column 4, number of episodes the participant watched of the weekend movie (self-reported). All outcomes have been standardized with the control group means and standard deviations. Treated: indicator variable for the participant being in the treatment group. Treated × Male: interaction variable between Treated and Male. Male: indicator variable taking the value one if the participant is a male. Also included in the regressions but not reported are the other background variables reported in Table 2. Panel A reports overall impact, while Panel B reports gender specific impact, where Treatment on Males is the linear combination of Treated and Treated × Male. See Table A6 and A7 in Appendix A for the corresponding full regressions including all controls. Panel C reports statistics on the dependent variable in the control group (measured as fractions of 10 correct answers and 11 episodes). Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$; FWE-corrected treatment effects: † : $p < 0.10$, †† : $p < 0.05$, ††† : $p < 0.01$).

Table 5: Impact on business ambitions

	Demand for business training		Rating of having	Ambition
	Incentivized	Self-report	own business	index
Panel A: Overall impact				
Treated (edutainment)	0.038 (0.028)	0.123 ^{***} ^{†††} (0.029)	0.150 ^{**} ^{††} (0.061)	0.264 ^{***} ^{†††} (0.078)
Observations	1,902	1,897	1,851	1,847
R ²	0.007	0.043	0.013	0.039
Panel B: Gender specific impact				
Treated (edutainment)	0.058 [*] (0.032)	0.112 ^{***} ^{††} (0.039)	0.121 (0.084)	0.259 ^{**} [†] (0.107)
Treated × Male	-0.045 [*] (0.026)	0.025 (0.048)	0.069 (0.103)	0.012 (0.107)
Male	0.016 (0.018)	-0.055 (0.040)	-0.039 (0.071)	-0.066 (0.091)
Treatment on Males	0.012 (0.029)	0.137 ^{***} ^{†††} (0.035)	0.190 ^{***} ^{††} (0.071)	0.271 ^{***} ^{†††} (0.074)
Observations	1,902	1,897	1,851	1,847
R ²	0.008	0.043	0.014	0.039
Panel C: Statistics on dependent variable (in control group)				
Mean	0.079	0.573	2.776	1.210
Standard deviation	0.270	0.495	0.948	1.000

Note: The table reports linear regressions in which the dependent variable is: column 1, an indicator variable taking the value one if the participant wants to spend 4000 TSh on two additional weekend courses in entrepreneurship; column 2, an indicator variable taking the value one if the participant chooses training in entrepreneurship as the preferred free week-long training course; column 3, a variable reflecting how the participant ranks (if income and work hours were kept constant) having an own business relative to being employed in public sector, being employed in private sector, and farming, (1-4, 4=own business is ranked as first choice), column 4, an index which is the sum of the indicator variables from columns 1 and 2 and an indicator variable taking the value one if the dependent variable in column 3 takes the value 4 (own business is ranked as first choice). Treated: indicator variable for the participant being in the treatment group. Treated × Male: interaction variable between Treated and Male. Male: indicator variable taking the value one if the participant is a male. Also included in the regressions but not reported are the other background variables reported in Table 2. Panel A reports overall impact, while Panel B reports gender specific impact, where Treatment on Males is the linear combination of Treated and Treated × Male. See Table A8 and Table A9 in Appendix A for the corresponding full regressions including all controls. Panel C reports statistics on the dependent variable in the control group. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$; FWE-corrected treatment effects (within table): † : $p < 0.10$, †† : $p < 0.05$, ††† : $p < 0.01$). In cases where a treatment effect is considered as member of more than one family, the largest (corrected) p -value is indicated.

Table 6: Impact on knowledge

	Subindices				Knowledge index
	Macro	Business:			
	Facts	Facts	Concepts	Practice	
Panel A: Overall impact					
Treated (edutainment)	0.101 (0.077)	0.045 (0.037)	-0.146* (0.078)	-0.068 (0.111)	-0.068 (0.204)
Observations	1,902	1,902	1,902	1,902	1,902
R^2	0.020	0.010	0.047	0.026	0.041
Panel B: Gender specific impact					
Treated (edutainment)	0.035 (0.094)	0.045 (0.055)	-0.168* (0.099)	-0.111 (0.138)	-0.199 (0.243)
Treated \times Male	0.154 (0.113)	-0.001 (0.066)	0.052 (0.108)	0.101 (0.159)	0.306 (0.284)
Male	0.284*** (0.078)	-0.055 (0.054)	0.148** (0.069)	0.136 (0.110)	0.513*** (0.188)
Treatment on Males	0.189** (0.095)	0.044 (0.042)	-0.116 (0.089)	-0.010 (0.133)	0.107 (0.251)
Observations	1,902	1,902	1,902	1,902	1,902
R^2	0.021	0.010	0.047	0.027	0.042
Panel C: Statistics on dependent variable (in control group)					
Mean	2.204	0.855	1.509	4.049	8.617
Standard deviation	1.286	0.719	0.875	1.556	2.625

Note: The table reports linear regressions in which the dependent variable is the participant's number of correct answers on incentivized questions about different topics taught by the edutainment show: Macroeconomic facts (0-8); Business facts (0-3); Business concepts (0-3); Business practices (0-10); Knowledge index (0-24, sum of all answers). Treated: indicator variable for the participant being in the treatment group. Treated \times Male: interaction variable between Treated and Male. Male: indicator variable taking the value one if the participant is a male. Also included in the regressions but not reported are the other background variables reported in Table 2. Panel A reports overall impact, while Panel B reports gender specific impact, where Treatment on Males is the linear combination of Treated and Treated \times Male. See Table A10 and Table A11 in Appendix A for corresponding full regressions including all controls. Panel C reports statistics on the dependent variable in the control group. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$; FWE-corrected treatment effects: † : $p < 0.10$, †† : $p < 0.05$, ††† : $p < 0.01$).

Table 7: Impact on mind-set

	Risk	Patience	Compete	Mind-set index
Panel A: Overall impact				
Treated (edutainment)	0.083 (0.063)	0.078 (0.150)	-0.020 (0.091)	0.072 (0.109)
Observations	1,902	1,902	1,901	1,901
R^2	0.012	0.013	0.038	0.011
Panel B: Gender specific impact				
Treated (edutainment)	0.144 ^{**} (0.069)	0.171 (0.192)	-0.055 (0.106)	0.117 (0.133)
Treated \times Male	-0.143 [*] (0.075)	-0.216 (0.163)	0.081 (0.079)	-0.103 (0.130)
Male	0.088 [*] (0.050)	-0.074 (0.087)	0.010 (0.061)	0.053 (0.089)
Treatment on Males	0.001 (0.076)	-0.045 (0.136)	0.026 (0.087)	0.013 (0.117)
Observations	1,902	1,902	1,901	1,901
R^2	0.015	0.014	0.039	0.012
Panel C: Statistics on dependent variable (in control group)				
Mean	1.329	3.375	0.375	2.763
Standard deviation	0.718	1.497	0.484	1.000

Note: The table reports linear regressions in which the dependent variable is: column 1, the number of times the participant chooses the risky alternative (0-3); column 2, the number of times the participant chooses the later payment date (0-6); column 3, an indicator variable taking the value one if the participant chooses to compete (column 3); column 4, a mind-set index of the dependent variables in columns 1-3 in which each variable is weighted by the inverse standard deviation in the control group and then normalized to have unit variance in the control group. Treated: indicator variable for the participant being in the treatment group. Treated \times Male: interaction variable between Treated and Male. Male: indicator variable taking the value one if the participant is a male. Also included in the regressions but not reported are the other background variables reported in Table 2. Panel A reports overall impact, while Panel B reports gender specific impact, where Treatment on Males is the linear combination of Treated and Treated \times Male. See Table A12 and Table A13 in Appendix A for the corresponding full regressions including all controls. Panel C reports statistics on the dependent variable in the control group. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$; FWE-corrected treatment effects: † : $p < 0.10$, †† : $p < 0.05$, ††† : $p < 0.01$).

Table 8: Impact on long-term behavior

	Administrative	Long-term survey			
	Passed final exam	Currently a student	Started a business	Currently employed	Moved
Panel A: Overall impact					
Treated (edutainment)	-0.198 ^{***†††} (0.059)	-0.187 ^{***††} (0.066)	0.057 (0.056)	-0.044 (0.047)	0.065 (0.058)
Observations	2,029	281	279	279	279
R ²	0.162	0.132	0.023	0.023	0.093
Panel B: Gender specific impact					
Treated (edutainment)	-0.232 ^{***†††} (0.067)	-0.099 (0.077)	0.086 (0.071)	-0.073 (0.064)	0.104 (0.077)
Treated × Male	0.077 (0.058)	-0.200* (0.115)	-0.067 (0.109)	0.067 (0.075)	-0.089 (0.093)
Male	0.066* (0.038)	0.127 (0.082)	0.007 (0.062)	-0.084 (0.054)	-0.065 (0.075)
Treatment on Males	-0.155 ^{**} (0.063)	-0.299 ^{***††} (0.094)	0.019 (0.086)	-0.007 (0.056)	0.016 (0.067)
Observations	2,029	281	279	279	279
R ²	0.164	0.141	0.024	0.025	0.095
Panel C: Statistics on dependent variable (in control group)					
Mean	0.655	0.610	0.269	0.144	0.201
Standard deviation	0.475	0.490	0.445	0.352	0.402

Note: The upper panel in the table reports linear regressions in which the dependent variable is: column 1, an indicator variable taking the value one if the participant passed the final O-level exam; column 2, an indicator variable taking the value one if the participant is currently a student; column 3, an indicator variable taking the value one if the participant has started a business; column 4, an indicator variable taking the value one if the participant is currently employed; column 5, an indicator variable taking the value one if the participant has moved since the short-term survey. Treated: indicator variable for the participant being in the treatment group. Treated × Male: interaction variable between Treated and Male. Male: indicator variable taking the value one if the participant is a male. Also included in the regressions but not reported are the other background variables reported in Table 2. Panel A reports overall impact, while Panel B reports gender specific impact, where Treatment on Males is the linear combination of Treated and Treated × Male. See Table A16 and Table A16 in Appendix A for full regressions including all controls. Panel C reports statistics on the dependent variable in the control group. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$; FWE-corrected treatment effects: † : $p < 0.10$, †† : $p < 0.05$, ††† : $p < 0.01$).

A Appendix: Additional analysis

We here provide complementary analysis, as referred to in the main text.

A.1 Additional figures

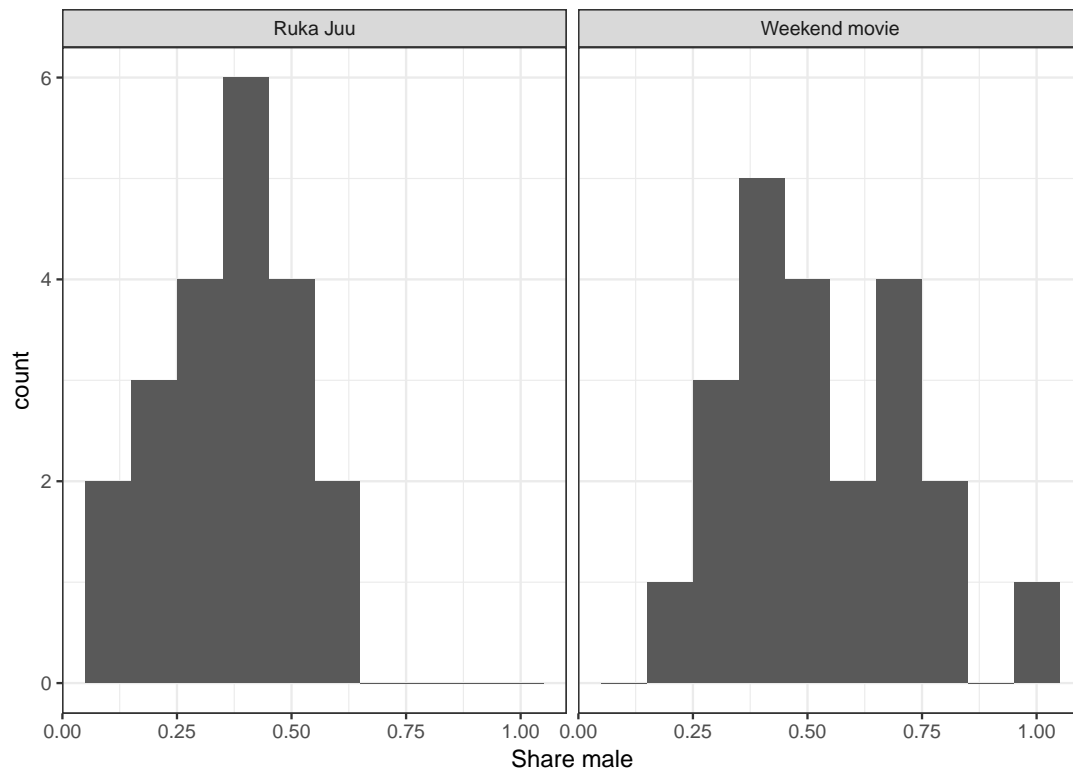


Figure A1: Distributions of gender composition by treatment

Note: Histograms of the share of males at each school by treatment.

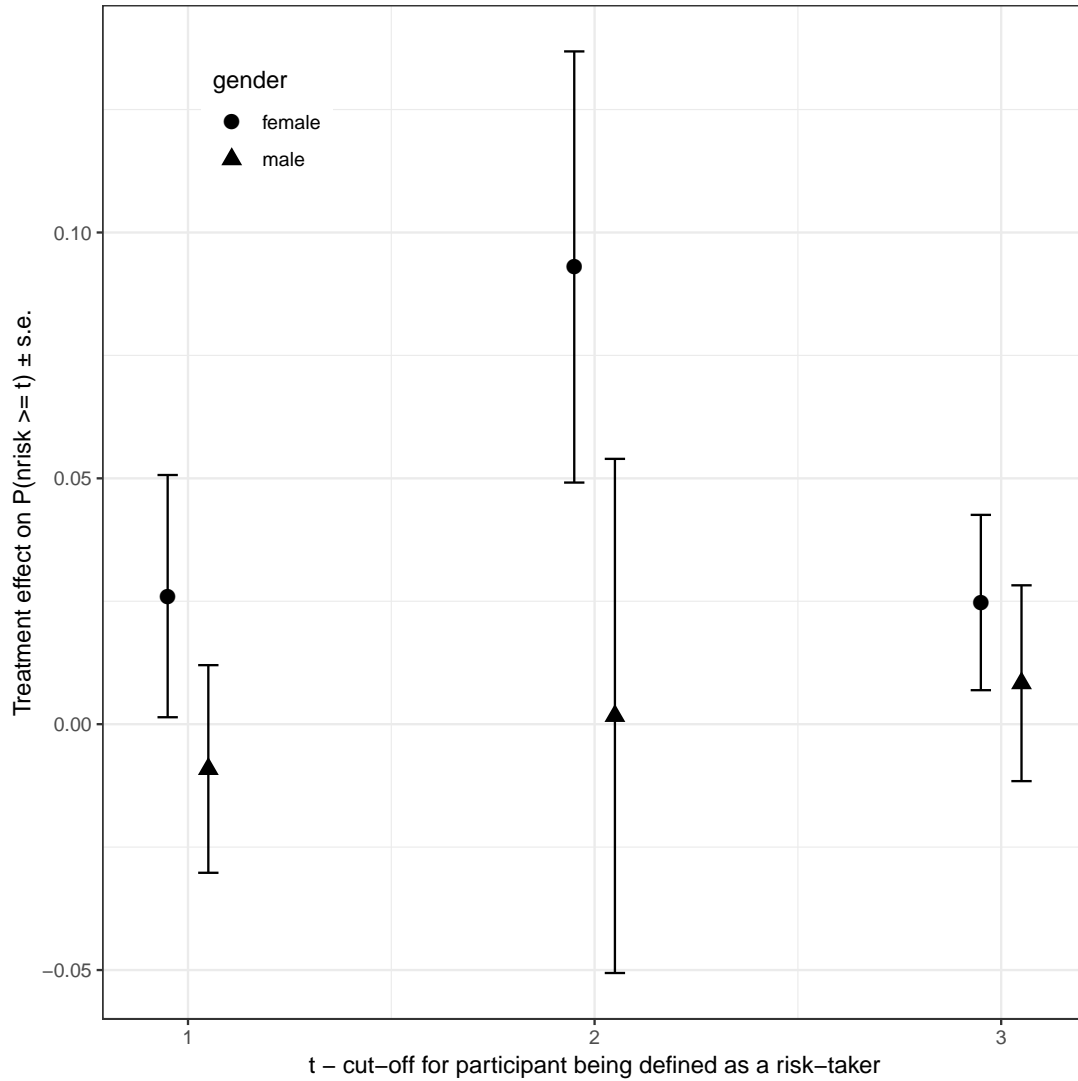


Figure A2: Treatments effect on willingness to take risk (alternative definitions)
Note: The figure reports the treatment effects for males and females on risk for alternative definitions of the willingness to take risk. The willingness to take risk is here defined by an indicator variable that takes the value one if the participant chooses the risky alternative at least 1/2/3 times.

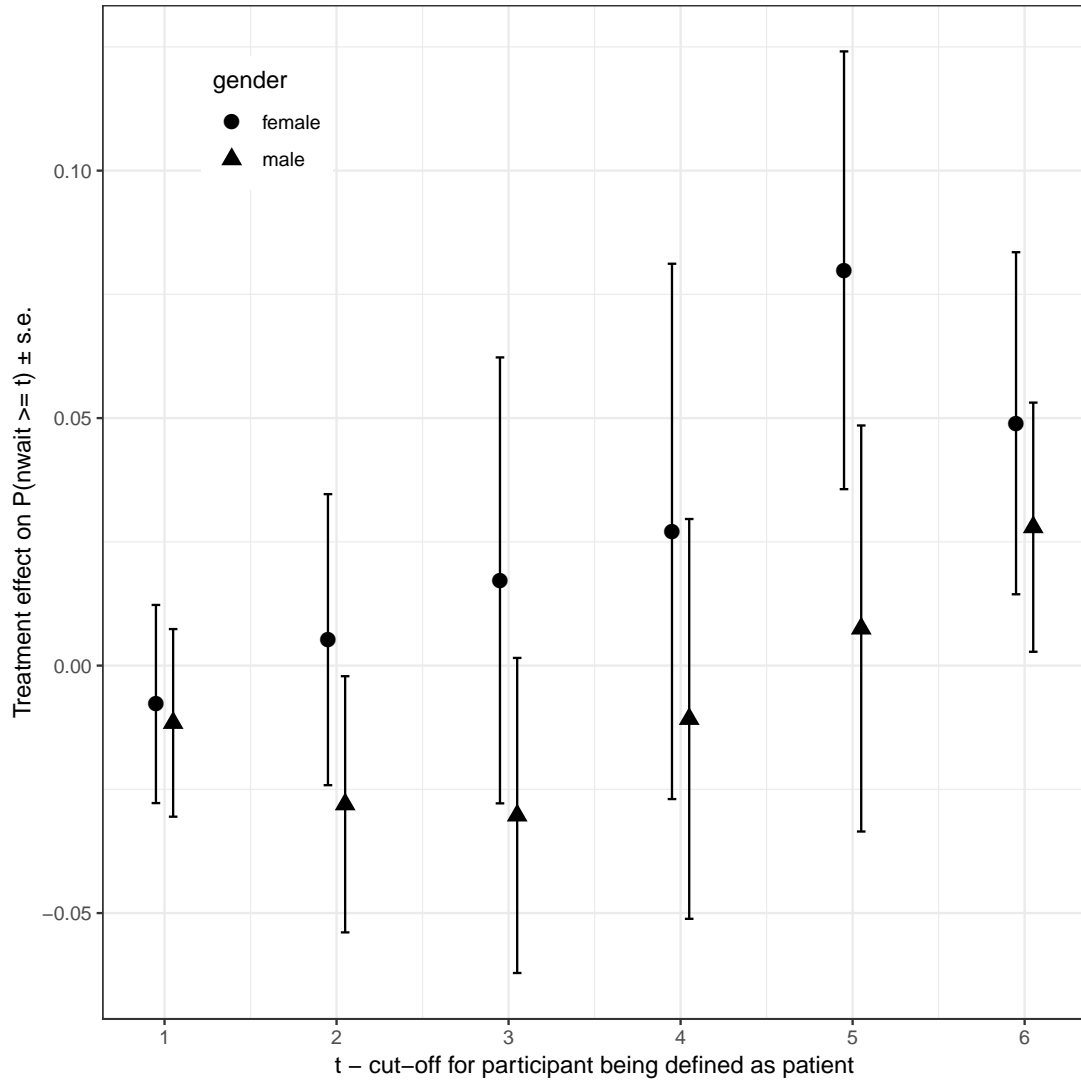


Figure A3: Treatment effects on patience (alternative definitions)

Note: The figure reports the treatment effects for males and females on patience for alternative definitions. Patience is here defined by an indicator variable that takes the value one if the participant chooses the later payment date at least 1/2/3/4/5/6 times.

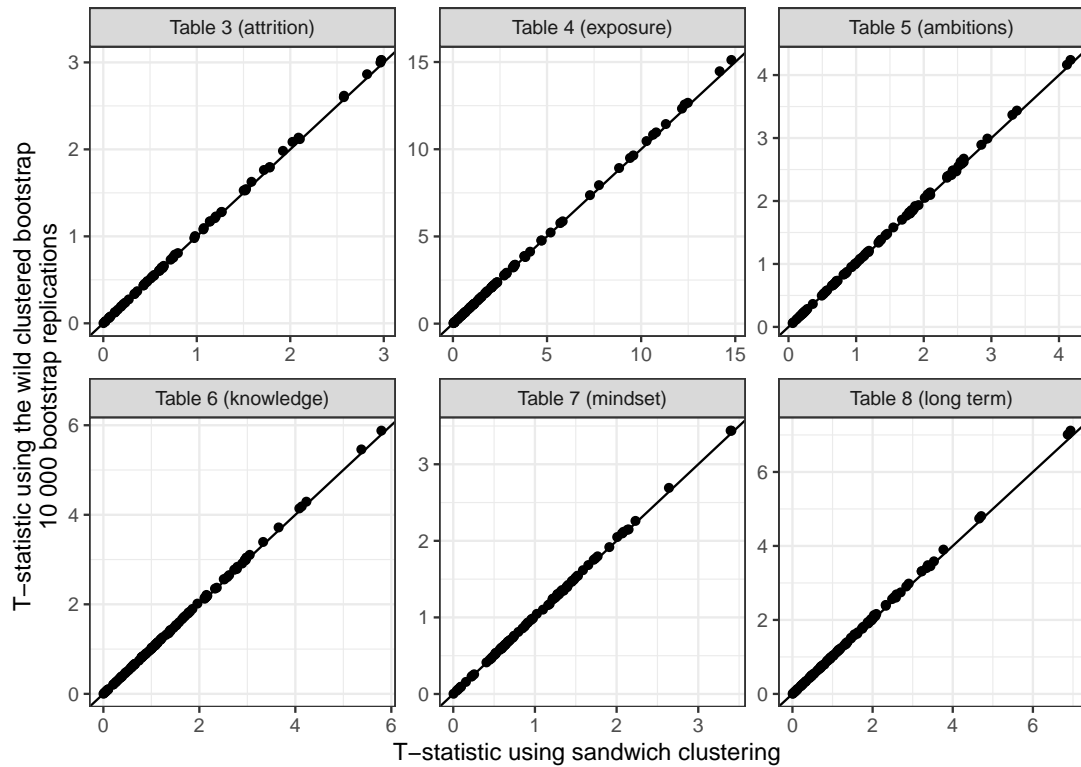


Figure A4: Robustness of standard error methodology

Note: The figure reports absolute values of t-statistics of the regression coefficients in Tables 3–8 (except for the constant term in each regression). The 45-degree line is included for reference, and we see that the choice of method for calculating standard errors is not important for any substantial conclusions – and that if anything, the wild clustered bootstrap t-stats tend to fall marginally above the 45 degree line, indicating that the reported clustered sandwich standard errors represent a marginally conservative approach).

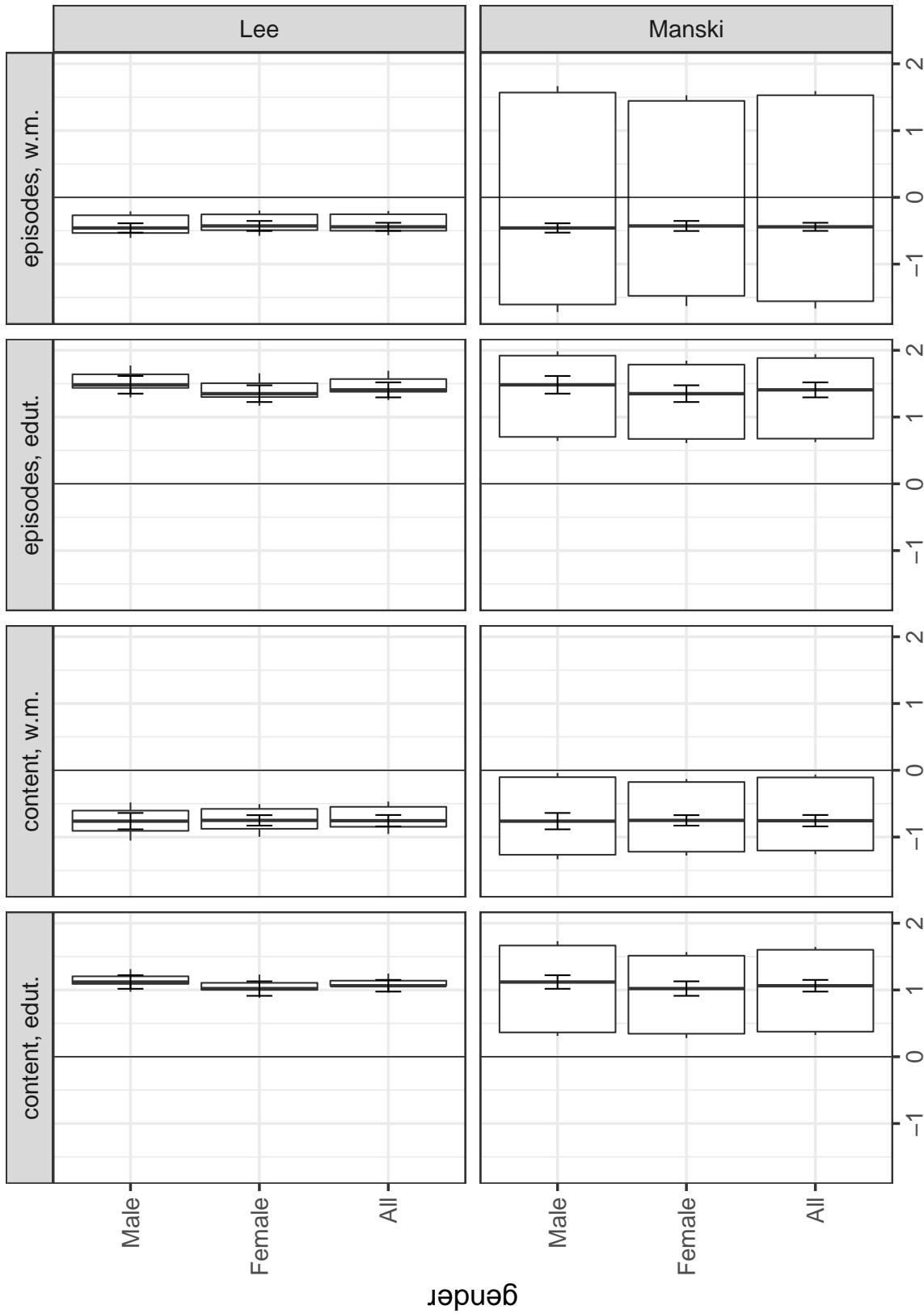


Figure A5: Bounds on impact of exposure to edutainment show

Note: Bounds on the treatment effects presented in Table 4. In each panel, the box represents the point estimates of the lower and upper bounds, with a vertical line inside the box representing the estimated mean treatment effect (without control variables). Error bars are indicated for the mean treatment effect (standard errors clustered at the school level). On each side of the box, one standard error is indicated, calculated using 1000 bootstrap replications clustered at the school level. The upper row of panels are estimated using the Lee (2009) approach, which assumes that treatment has a monotone effect on attrition. The lower row of panels are estimated present bounds that only assume the bounded support of the missing outcomes (Manski, 1990).

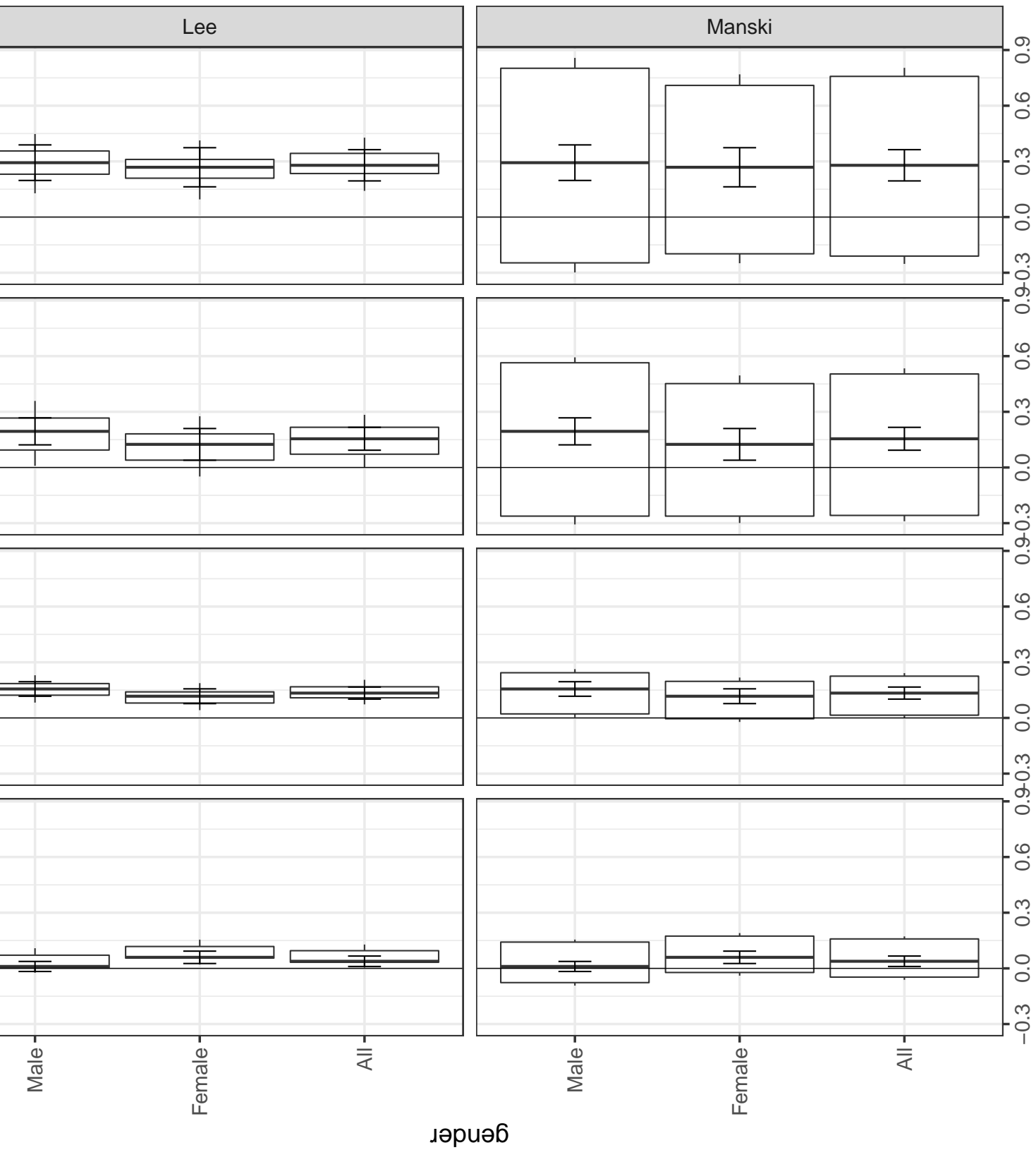


Figure A6: Bounds on impact on ambitions
Note: Bounds on the treatment effects presented in Table 5. In each panel, the box represents the point estimates of the lower and upper bounds, with a

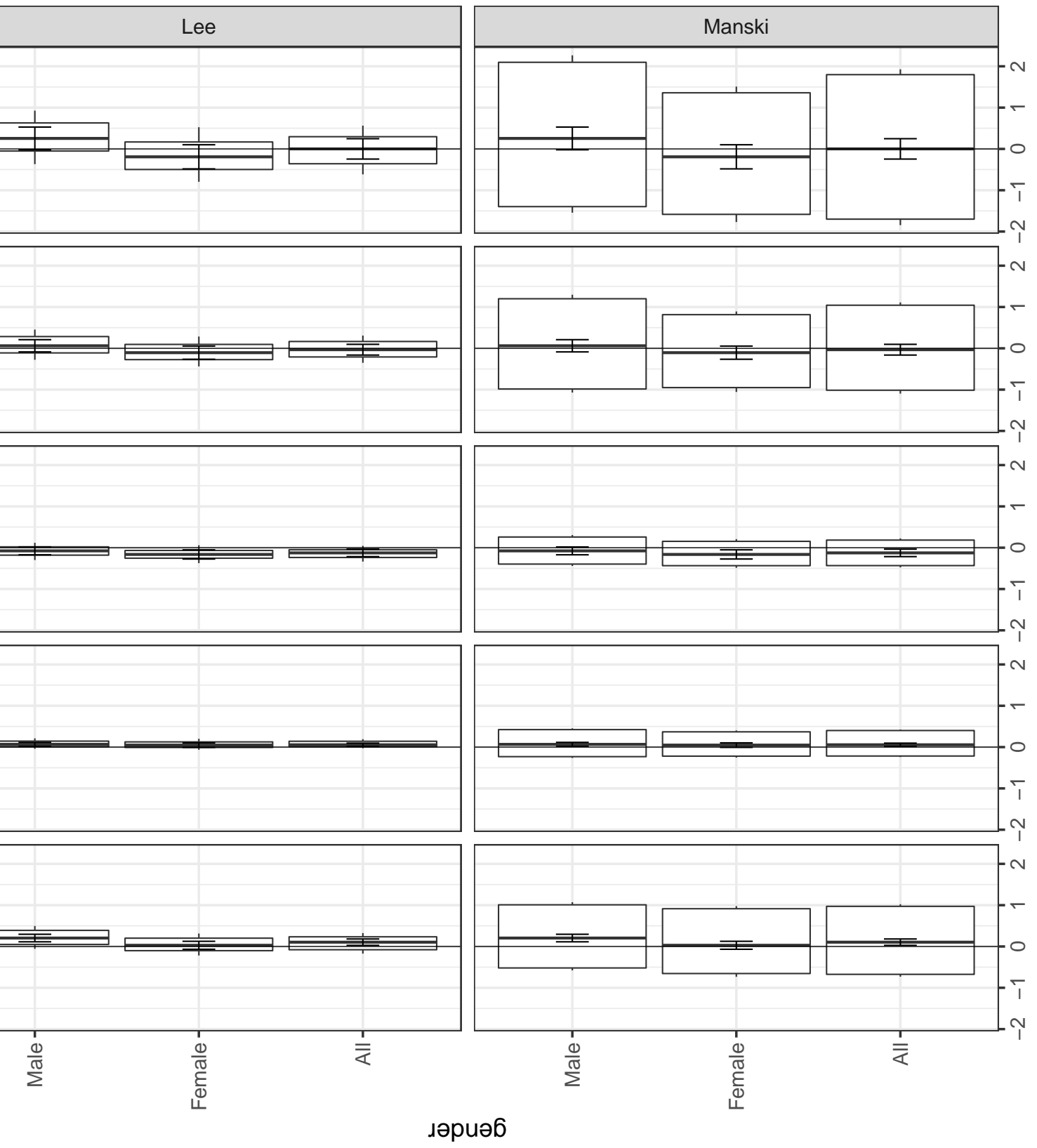


Figure A7: Bounds on impact on knowledge
Note: Bounds on the treatment effects presented in Table 6. In each panel, the box represents the point estimates of the lower and upper bounds, with a

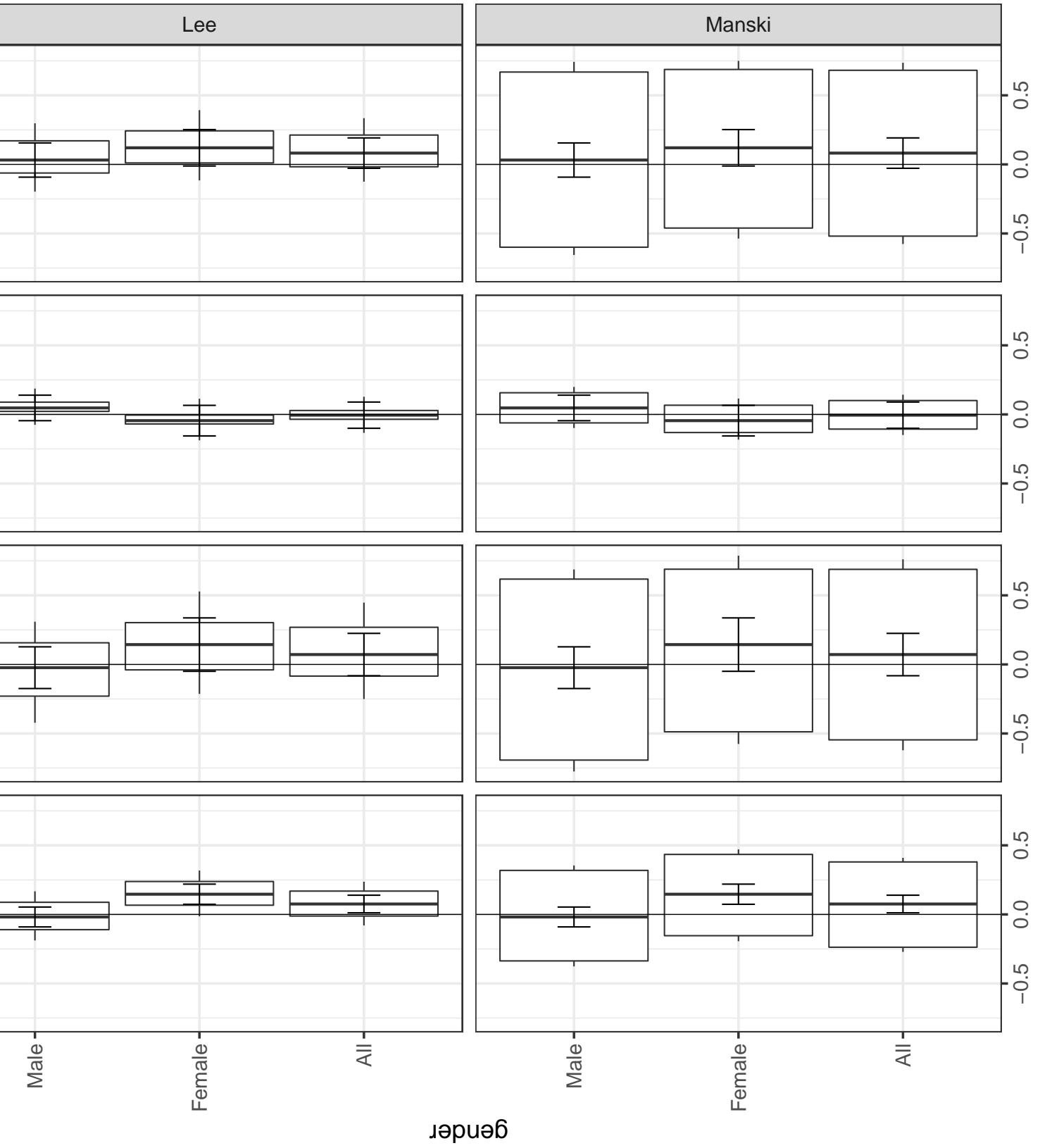


Figure A8: Bounds on impact on mind-set
Note: Bounds on the treatment effects presented in Table 7. In each panel, the box represents the point estimates of the lower and upper bounds, with a

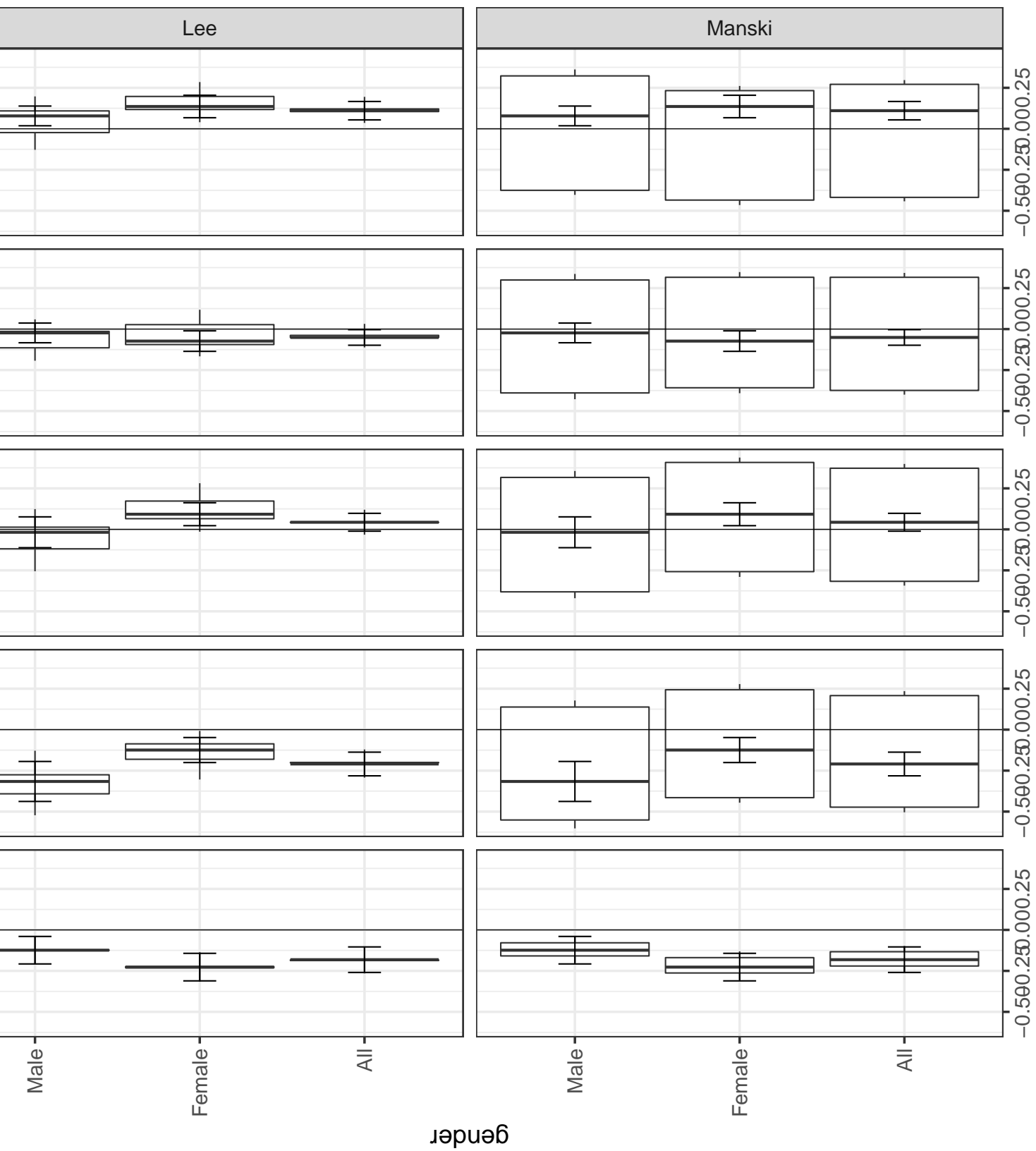


Figure A9: Bounds on impact on long-term outcomes
Note: Bounds on the treatment effects presented in Table 8. In each panel, the box represents the point estimates of the lower and upper bounds, with a

A.2 Additional tables

Table A1: Treatment-Control Balance (males)

	Treatment status			Difference	<i>p</i> -value
	All	Control	Treated		
Age	18.279 (0.079)	18.287 (0.091)	18.268 (0.148)	-0.019 (0.172)	0.913
Household with no parents	0.258 (0.014)	0.236 (0.018)	0.292 (0.022)	0.056 (0.028)	0.046
Access to TV	3.415 (0.062)	3.381 (0.094)	3.468 (0.069)	0.087 (0.115)	0.448
Business stream	0.296 (0.067)	0.238 (0.081)	0.385 (0.112)	0.147 (0.137)	0.283
Business knowledge	0.234 (0.020)	0.271 (0.027)	0.178 (0.023)	-0.094 (0.035)	0.008
Business ambitions	0.143 (0.014)	0.126 (0.017)	0.170 (0.025)	0.044 (0.030)	0.140
O-level failure rate for school	0.573 (0.025)	0.582 (0.027)	0.559 (0.050)	-0.024 (0.056)	0.668
Number of schools	43	22	21		
Number of individuals	949	572	377		

Note: For details, see Table 2. Joint *p*-value of the explanatory variables in a regression predicting treatment on background variables: $p < 0.001$.

Table A2: Treatment-Control Balance (females)

	Treatment status			Difference	<i>p</i> -value
	All	Control	Treated		
Age	17.624 (0.052)	17.561 (0.068)	17.676 (0.077)	0.116 (0.101)	0.253
Household with no parents	0.257 (0.011)	0.225 (0.015)	0.283 (0.014)	0.058 (0.021)	0.005
Access to TV	3.396 (0.062)	3.318 (0.108)	3.460 (0.067)	0.143 (0.125)	0.256
Business stream	0.452 (0.078)	0.462 (0.120)	0.444 (0.105)	-0.018 (0.157)	0.911
Business knowledge	0.276 (0.024)	0.307 (0.038)	0.249 (0.031)	-0.058 (0.049)	0.232
Business ambitions	0.094 (0.012)	0.088 (0.013)	0.099 (0.019)	0.012 (0.023)	0.620
O-level failure rate for school	0.555 (0.022)	0.565 (0.026)	0.547 (0.035)	-0.018 (0.043)	0.670
Number of schools	42	21	21		
Number of individuals	1183	537	646		

Note: For details, see Table 2. Joint *p*-value of the explanatory variables in a regression predicting treatment on background variables: $p = 0.013$.

Table A3: Treatment-Control Balance (lab sample)

	All	Treatment status		Difference	<i>p</i> -value
		Control	Treated		
Male	0.444 (0.028)	0.513 (0.037)	0.365 (0.035)	-0.148 (0.050)	0.003
Age	17.910 (0.061)	17.940 (0.078)	17.875 (0.099)	-0.064 (0.125)	0.606
Household with no parents	0.254 (0.011)	0.229 (0.013)	0.283 (0.015)	0.054 (0.020)	0.006
Access to TV	3.408 (0.055)	3.348 (0.091)	3.477 (0.056)	0.129 (0.106)	0.222
Business stream	0.385 (0.073)	0.346 (0.104)	0.429 (0.104)	0.083 (0.145)	0.569
Business knowledge	0.264 (0.020)	0.289 (0.030)	0.235 (0.027)	-0.054 (0.040)	0.173
Business ambitions	0.108 (0.011)	0.101 (0.012)	0.116 (0.019)	0.015 (0.022)	0.493
O-level failure rate for school	0.564 (0.023)	0.572 (0.026)	0.554 (0.040)	-0.019 (0.047)	0.695
Number of schools	43	22	21		
Number of individuals	1915	1025	890		

Note: For details, see Table 2. Joint *p*-value of the explanatory variables in a regression predicting treatment on background variables: $p < 0.001$.

Table A4: Treatment-Control Balance (admin sample)

	All	Treatment status		Difference	<i>p</i> -value
		Control	Treated		
Male	0.447 (0.028)	0.518 (0.038)	0.369 (0.034)	-0.149 (0.051)	0.003
Age	17.910 (0.062)	17.930 (0.080)	17.888 (0.097)	-0.042 (0.124)	0.733
Household with no parents	0.258 (0.011)	0.230 (0.013)	0.288 (0.016)	0.057 (0.020)	0.005
Access to TV	3.408 (0.054)	3.358 (0.091)	3.461 (0.055)	0.103 (0.105)	0.325
Business stream	0.384 (0.072)	0.347 (0.104)	0.424 (0.103)	0.078 (0.144)	0.589
Business knowledge	0.257 (0.019)	0.289 (0.027)	0.222 (0.026)	-0.067 (0.037)	0.071
Business ambitions	0.113 (0.011)	0.104 (0.011)	0.123 (0.020)	0.019 (0.023)	0.406
O-level failure rate for school	0.565 (0.022)	0.577 (0.025)	0.552 (0.039)	-0.025 (0.045)	0.587
Number of schools	43	22	21		
Number of individuals	2039	1059	980		

Note: For details, see Table 2. Joint *p*-value of the explanatory variables in a regression predicting treatment on background variables: $p < 0.001$.

Table A5: Treatment-Control Balance (long term sample)

	All	Treatment status		Difference	<i>p</i> -value
		Control	Treated		
Male	0.447 (0.048)	0.486 (0.063)	0.406 (0.074)	-0.081 (0.096)	0.401
Age	18.063 (0.116)	17.986 (0.128)	18.145 (0.196)	0.159 (0.231)	0.493
Household with no parents	0.271 (0.024)	0.219 (0.031)	0.326 (0.034)	0.107 (0.045)	0.018
Access to TV	3.459 (0.086)	3.361 (0.148)	3.562 (0.081)	0.201 (0.167)	0.229
Business stream	0.363 (0.076)	0.342 (0.104)	0.384 (0.112)	0.042 (0.152)	0.784
Business knowledge	0.254 (0.025)	0.247 (0.032)	0.261 (0.040)	0.014 (0.051)	0.778
Business ambitions	0.106 (0.019)	0.123 (0.028)	0.087 (0.027)	-0.036 (0.038)	0.341
O-level failure rate for school	0.557 (0.026)	0.565 (0.025)	0.549 (0.047)	-0.016 (0.052)	0.754
Number of schools	42	22	20		
Number of individuals	284	146	138		

Note: For details, see Table 2. Joint *p*-value of the explanatory variables in a regression predicting treatment on background variables: $p = 0.002$.

Table A6: Impact on exposure to the edutainment show, overall impact, full model

	Content question (Incentivized)		Episodes watched (Non-incentivized)	
	Edutainment	Weekend movie	Edutainment	Weekend movie
Treated (edutainment)	1.063*** (0.087)	-0.755*** (0.086)	1.407*** (0.113)	-0.442*** (0.059)
Male	-0.172*** (0.060)	-0.279*** (0.054)	-0.108* (0.063)	-0.057 (0.044)
Age	-0.074*** (0.019)	-0.091*** (0.019)	-0.063** (0.027)	-0.028 (0.018)
Household with no parents	0.034 (0.052)	-0.050 (0.054)	-0.004 (0.053)	-0.001 (0.036)
Access to TV	0.068*** (0.022)	0.070*** (0.021)	0.056** (0.027)	0.037** (0.018)
Business stream	0.077 (0.071)	0.018 (0.073)	0.181** (0.088)	0.004 (0.054)
Business knowledge	0.020 (0.046)	0.131** (0.056)	-0.079 (0.070)	-0.043 (0.038)
Business ambitions	-0.005 (0.078)	-0.133* (0.074)	-0.054 (0.081)	0.039 (0.068)
O-level failure rate for school	-0.895*** (0.236)	-0.599** (0.274)	-1.041*** (0.365)	-0.268 (0.193)
Constant	0.088 (0.065)	0.143** (0.068)	0.055 (0.081)	0.029 (0.054)
Observations	1,915	1,915	1,867	1,899
R ²	0.206	0.134	0.297	0.062

Note: Full version of panel A, Table 4. Standard errors in parentheses (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A7: Impact on exposure to the edutainment show, gender specific effects, full model

	Content question (Incentivized)		Episodes watched (Non-incentivized)	
	Edutainment	Weekend movie	Edutainment	Weekend movie
Treated (edutainment)	1.021*** (0.109)	-0.750*** (0.078)	1.350*** (0.125)	-0.429*** (0.075)
Treated × Male	0.098 (0.121)	-0.011 (0.104)	0.133 (0.126)	-0.030 (0.083)
Male	-0.215*** (0.079)	-0.274*** (0.083)	-0.167** (0.081)	-0.043 (0.070)
Age	-0.073*** (0.019)	-0.091*** (0.019)	-0.063** (0.027)	-0.028 (0.018)
Household with no parents	0.033 (0.052)	-0.050 (0.054)	-0.004 (0.053)	-0.001 (0.036)
Access to TV	0.069*** (0.021)	0.070*** (0.021)	0.057** (0.027)	0.037** (0.018)
Business stream	0.074 (0.071)	0.019 (0.072)	0.178** (0.088)	0.005 (0.053)
Business knowledge	0.021 (0.046)	0.131** (0.056)	-0.078 (0.071)	-0.044 (0.039)
Business ambitions	-0.007 (0.079)	-0.133* (0.074)	-0.057 (0.081)	0.040 (0.068)
O-level failure rate for school	-0.892*** (0.232)	-0.600** (0.273)	-1.038*** (0.364)	-0.269 (0.192)
Constant	0.111 (0.072)	0.140** (0.068)	0.085 (0.084)	0.022 (0.063)
Observations	1,915	1,915	1,867	1,899
R ²	0.206	0.134	0.298	0.062

Note: Full version of panel B, Table 4. Standard errors in parentheses (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A8: Impact on ambitions, overall impact, full model

	Demand for business training									
	Incentivized			Self-report		Rating of having				
	Main	# of courses	any courses	own business	own business	Ambition index				
Treated (edutainment)	0.038 (0.028)	0.084 (0.071)	0.080 (0.072)	0.046 (0.048)	0.134*** (0.033)	0.123*** (0.029)	0.155** (0.062)	0.150** (0.061)	0.279*** (0.084)	0.264*** (0.078)
Male	0.003 (0.014)	-0.034 (0.035)	-0.051 (0.040)	-0.037 (0.027)	-0.058** (0.024)	-0.044* (0.026)	-0.019 (0.052)	-0.007 (0.053)	-0.078 (0.059)	-0.061 (0.061)
Age	0.007 (0.006)	0.020 (0.016)	0.020 (0.016)	0.013 (0.012)	0.013 (0.012)	-0.009 (0.011)	-0.005 (0.019)	-0.005 (0.019)	-0.004 (0.020)	-0.004 (0.020)
Household with no parents	-0.008 (0.014)	0.019 (0.034)	0.019 (0.034)	0.027 (0.026)	0.064** (0.026)	0.008 (0.011)	0.008 (0.044)	0.008 (0.044)	0.073* (0.041)	0.073* (0.041)
Access to TV	0.001 (0.005)	-0.001 (0.013)	-0.001 (0.013)	-0.002 (0.010)	0.008 (0.011)	0.008 (0.011)	0.027 (0.023)	0.027 (0.023)	0.028 (0.027)	0.028 (0.027)
Business stream	-0.018 (0.026)	0.000 (0.070)	0.000 (0.070)	0.018 (0.050)	0.057** (0.028)	0.033 (0.064)	0.033 (0.064)	0.033 (0.064)	0.070 (0.075)	0.070 (0.075)
Business knowledge	0.004 (0.019)	0.019 (0.036)	0.019 (0.036)	0.014 (0.022)	0.028 (0.025)	0.105* (0.056)	0.105* (0.056)	0.105* (0.056)	0.143** (0.061)	0.143** (0.061)
Business ambitions	0.027 (0.027)	0.057 (0.058)	0.057 (0.058)	0.030 (0.041)	0.072** (0.034)	0.143* (0.078)	0.143* (0.078)	0.143* (0.078)	0.200*** (0.077)	0.200*** (0.077)
O-level failure rate for school	0.006 (0.081)	0.098 (0.197)	0.098 (0.197)	0.092 (0.132)	-0.260** (0.102)	-0.105 (0.160)	-0.105 (0.160)	-0.105 (0.160)	-0.495** (0.239)	-0.495** (0.239)
Constant	0.077*** (0.016)	-0.046 (0.115)	0.467*** (0.052)	0.390*** (0.040)	0.603*** (0.030)	0.836*** (0.195)	2.786*** (0.063)	2.774*** (0.335)	1.250*** (0.074)	1.404*** (0.344)
Observations	1,915	1,915	1,902	1,915	1,902	1,897	1,863	1,851	1,859	1,847
R ²	0.004	0.007	0.005	0.004	0.008	0.025	0.007	0.013	0.022	0.039

Note: Full version of panel A, Table 5. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$). Variant definitions of incentivized demand for business training (columns 3–6) is first the count (0,1,2) of courses demanded and then an indicator for whether any courses are demanded.

Table A9: Impact on ambitions, gender specific impact, full model

	Demand for business training						Ambition index		
	Main			Incentivized					
		# of courses	any courses	Self-report	Rating of having own business				
Treated (edutainment)	0.060* (0.033)	0.127 (0.087)	0.118 (0.085)	0.067 (0.061)	0.060 (0.060)	0.112*** (0.039)	0.121 (0.084)	0.268** (0.105)	0.259** (0.107)
Treated × Male	-0.049* (0.027)	-0.098 (0.071)	-0.089 (0.069)	-0.049 (0.055)	-0.044 (0.054)	0.039 (0.046)	0.069 (0.103)	0.025 (0.114)	0.012 (0.107)
Male	0.025 (0.016)	0.009 (0.045)	-0.011 (0.047)	-0.016 (0.037)	-0.027 (0.036)	-0.075* (0.039)	-0.050 (0.071)	-0.089 (0.091)	-0.066 (0.091)
Age	0.007 (0.006)	0.019 (0.016)	0.012 (0.012)	0.012 (0.012)	0.012 (0.012)	-0.009 (0.011)	-0.004 (0.019)	-0.004 (0.020)	-0.004 (0.020)
Household with no parents	-0.008 (0.014)	0.020 (0.034)	0.028 (0.026)	0.028 (0.026)	0.028 (0.026)	0.064** (0.026)	0.007 (0.044)	0.073* (0.041)	0.073* (0.041)
Access to TV	0.001 (0.005)	-0.001 (0.013)	-0.002 (0.010)	-0.002 (0.010)	-0.002 (0.010)	0.008 (0.011)	0.028 (0.023)	0.028 (0.027)	0.028 (0.027)
Business stream	-0.016 (0.026)	0.003 (0.069)	0.020 (0.049)	0.020 (0.049)	0.020 (0.049)	0.057** (0.028)	0.031 (0.063)	0.069 (0.074)	0.069 (0.074)
Business knowledge	0.004 (0.019)	0.018 (0.036)	0.014 (0.022)	0.014 (0.022)	0.014 (0.022)	0.028 (0.025)	0.106* (0.057)	0.143** (0.061)	0.143** (0.061)
Business ambitions	0.028 (0.028)	0.059 (0.058)	0.031 (0.041)	0.031 (0.041)	0.031 (0.041)	0.071** (0.034)	0.141* (0.078)	0.200*** (0.077)	0.200*** (0.077)
O-level failure rate for school	0.005 (0.079)	0.096 (0.193)	0.091 (0.131)	0.091 (0.131)	0.091 (0.131)	-0.259** (0.101)	-0.104 (0.158)	-0.495** (0.239)	-0.495** (0.239)
Constant	0.066*** (0.016)	-0.050 (0.114)	0.445*** (0.057)	0.379*** (0.045)	0.096 (0.222)	0.612*** (0.034)	2.802*** (0.073)	2.780*** (0.335)	1.255*** (0.083)
Observations	1,915	1,902	1,902	1,915	1,902	1,910	1,863	1,851	1,847
R ²	0.006	0.008	0.006	0.005	0.008	0.026	0.007	0.014	0.039

Note: Full version of panel B, Table 5. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$). Variant definitions of incentivized demand for business training (columns 3–6) is first the count (0,1,2) of courses demanded and then an indicator for whether any courses are demanded.

Table A10: Impact on knowledge, overall impact, full model

	Subindices							Knowledge index		
	Macro		Business:							
	Facts		Facts	Concepts	Practice					
Treated (edutainment)	0.105 (0.077)	0.101 (0.077)	0.055 (0.040)	0.045 (0.037)	-0.126 (0.090)	-0.146* (0.078)	-0.034 (0.130)	-0.068 (0.111)	0.001 (0.246)	-0.068 (0.204)
Male	0.308*** (0.057)	0.354*** (0.061)	-0.068* (0.035)	-0.055 (0.036)	0.117** (0.054)	0.172*** (0.052)	0.064 (0.086)	0.181** (0.085)	0.420*** (0.151)	0.652*** (0.154)
Age		-0.053* (0.029)		-0.020 (0.018)		0.006 (0.016)		-0.098*** (0.037)		-0.165*** (0.059)
Household with no parents		0.130* (0.073)		0.033 (0.037)		-0.005 (0.049)		0.041 (0.090)		0.199 (0.142)
Access to TV		-0.043* (0.026)		0.003 (0.016)		0.021 (0.018)		0.041 (0.036)		0.022 (0.059)
Business stream		0.072 (0.072)		0.043 (0.039)		0.260*** (0.087)		0.235** (0.109)		0.611*** (0.205)
Business knowledge		0.080 (0.074)		-0.032 (0.032)		0.027 (0.047)		-0.006 (0.091)		0.069 (0.130)
Business ambitions		0.006 (0.097)		0.058 (0.058)		-0.149** (0.064)		-0.076 (0.123)		-0.161 (0.203)
O-level failure rate for school		-0.191 (0.296)		-0.202** (0.095)		-0.622** (0.248)		-1.144*** (0.280)		-2.159*** (0.746)
Constant	2.046*** (0.056)	3.151*** (0.469)	0.890*** (0.041)	1.323*** (0.322)	1.449*** (0.071)	1.519*** (0.286)	4.016*** (0.097)	6.152*** (0.657)	8.401*** (0.165)	12.145*** (1.021)
Observations	1,915	1,902	1,915	1,902	1,915	1,902	1,915	1,902	1,915	1,902
R ²	0.014	0.020	0.004	0.010	0.011	0.047	0.001	0.026	0.006	0.041

Note: Full version of panel A, Table 6. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A11: Impact on knowledge, gender specific impact, full model

	Subindices								
	Macro			Business:					
	Facts	Facts	Facts	Concepts	Practice	Knowledge index			
Treated (edutainment)	0.029 (0.096)	0.035 (0.094)	0.048 (0.055)	0.045 (0.055)	-0.163 (0.111)	-0.168* (0.099)	-0.111 (0.138)	-0.192 (0.292)	-0.199 (0.243)
Treated × Male	0.176 (0.111)	0.154 (0.113)	0.018 (0.069)	-0.001 (0.066)	0.086 (0.108)	0.052 (0.108)	0.101 (0.159)	0.446 (0.296)	0.306 (0.284)
Male	0.229*** (0.075)	0.284*** (0.078)	-0.076 (0.050)	-0.055 (0.054)	0.079 (0.075)	0.148** (0.069)	-0.010 (0.114)	0.136 (0.110)	0.513*** (0.188)
Age		-0.052* (0.029)		-0.020 (0.018)		0.006 (0.016)		-0.097*** (0.038)	-0.163*** (0.059)
Household with no parents		0.129* (0.073)		0.033 (0.037)		-0.005 (0.049)		0.040 (0.090)	0.198 (0.142)
Access to TV		-0.043 (0.026)		0.003 (0.016)		0.022 (0.018)		0.041 (0.036)	0.023 (0.059)
Business stream		0.067 (0.072)		0.043 (0.040)		0.258*** (0.087)		0.232** (0.108)	0.600*** (0.204)
Business knowledge		0.082 (0.073)		-0.032 (0.032)		0.028 (0.047)		-0.004 (0.091)	0.074 (0.129)
Business ambitions		0.002 (0.098)		0.058 (0.058)		-0.150** (0.064)		-0.079 (0.122)	-0.169 (0.205)
O-level failure rate for school		-0.188 (0.287)		-0.202** (0.096)		-0.621** (0.246)		-1.142*** (0.276)	-2.153*** (0.731)
Constant	2.086*** (0.063)	3.165*** (0.463)	0.894*** (0.049)	1.325*** (0.321)	1.469*** (0.078)	1.524*** (0.285)	4.054*** (0.110)	6.161*** (0.658)	8.503*** (0.181)
Observations	1,915	1,902	1,915	1,902	1,915	1,902	1,915	1,902	1,902
R ²	0.015	0.021	0.004	0.010	0.012	0.047	0.001	0.027	0.042

Note: Full version of panel B, Table 6. Standard errors in parentheses (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A12: Impact on mind-set, overall impact, full model

	Risk		Patience		Compete		Mind-set index	
Treated (edutainment)	0.075 (0.064)	0.083 (0.063)	0.072 (0.153)	0.078 (0.150)	-0.005 (0.095)	-0.020 (0.091)	0.082 (0.110)	0.072 (0.109)
Male	0.028 (0.039)	0.023 (0.039)	-0.227*** (0.086)	-0.172** (0.083)	0.041 (0.045)	0.046 (0.040)	-0.017 (0.067)	0.006 (0.065)
Age		-0.006 (0.014)		-0.019 (0.030)		0.023 (0.016)		0.015 (0.024)
Household with no parents		0.027 (0.048)		-0.052 (0.082)		-0.032 (0.022)		-0.037 (0.054)
Access to TV		0.010 (0.019)		-0.038 (0.040)		-0.010 (0.016)		-0.017 (0.030)
Business stream		-0.088 (0.063)		0.198 (0.163)		0.109 (0.088)		0.135 (0.100)
Business knowledge		0.117*** (0.034)		-0.037 (0.079)		-0.062* (0.036)		0.004 (0.063)
Business ambitions		0.069 (0.057)		-0.215** (0.100)		-0.060 (0.038)		-0.098 (0.070)
O-level failure rate for school		0.115 (0.182)		0.040 (0.428)		-0.452 (0.297)		-0.425 (0.333)
Constant	1.314*** (0.053)	1.309*** (0.286)	3.491*** (0.127)	3.878*** (0.588)	0.354*** (0.081)	0.228 (0.363)	2.772*** (0.094)	2.768*** (0.456)
Observations	1,915	1,902	1,915	1,902	1,914	1,901	1,914	1,901
R ²	0.003	0.012	0.006	0.013	0.002	0.038	0.002	0.011

Note: Full version of panel A, Table 7. Standard errors in parentheses (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A13: Impact on mind-set, gender specific impact, full model

	Risk	Patience	Compete	Mind-set index
Treated (education)	0.146** (0.073)	0.144 (0.193)	-0.045 (0.111)	0.120 (0.132)
Treated × Male	-0.165** (0.074)	-0.167 (0.175)	0.092 (0.084)	-0.089 (0.133)
Male	0.102** (0.049)	-0.153 (0.104)	-0.000 (0.070)	0.022 (0.096)
Age	-0.007 (0.014)	-0.021 (0.030)	0.023 (0.016)	0.014 (0.024)
Household with no parents	0.028 (0.047)	-0.050 (0.082)	-0.033 (0.022)	-0.037 (0.054)
Access to TV	0.009 (0.018)	-0.038 (0.039)	-0.010 (0.016)	-0.017 (0.030)
Business stream	-0.083 (0.062)	0.205 (0.161)	0.106 (0.087)	0.139 (0.100)
Business knowledge	0.115*** (0.034)	-0.041 (0.079)	-0.061* (0.035)	0.002 (0.062)
Business ambitions	0.073 (0.056)	-0.210** (0.098)	-0.062* (0.038)	-0.096 (0.069)
O-level failure rate for school	0.112 (0.175)	0.036 (0.423)	-0.450 (0.295)	-0.427 (0.335)
Constant	1.277*** (0.056)	3.453*** (0.138)	0.375*** (0.090)	2.752*** (0.106)
Observations	1,915	1,915	1,914	1,901
R ²	0.006	0.007	0.004	0.002

Note: Full version of panel B, Table 7. Standard errors in parentheses (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$).

Table A14: Mind-set: Ordered probit models of risk-taking

	(1)	(2)	(3)	(4)
Treated (edutainment)	0.111 (0.095)	0.123 (0.095)	0.217** (0.109)	0.215** (0.104)
Treated × Male			-0.246** (0.110)	-0.215* (0.112)
Male	0.046 (0.058)	0.040 (0.058)	0.156** (0.074)	0.138* (0.075)
Age		-0.012 (0.020)		-0.013 (0.020)
Household with no parents		0.041 (0.071)		0.042 (0.071)
Access to TV		0.014 (0.028)		0.014 (0.028)
Business stream		-0.135 (0.094)		-0.127 (0.093)
Business knowledge		0.176*** (0.052)		0.173*** (0.051)
Business ambitions		0.105 (0.084)		0.111 (0.083)
O-level failure rate for school		0.158 (0.273)		0.154 (0.264)
Cutoffs:				
(0,1)	-1.256 (0.085)	-1.315 (0.421)	-1.202 (0.091)	-1.298 (0.414)
(1,2)	0.342 (0.085)	0.295 (0.425)	0.399 (0.090)	0.314 (0.418)
(2,3)	1.624 (0.088)	1.588 (0.430)	1.684 (0.093)	1.609 (0.422)
Observations	1,915	1,902	1,915	1,902

Note: Ordered probit models of the number of risky decisions taken (0–3). Intercept of linear index normalized to zero. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$).

Table A15: Mind-set: Ordered probit models of patience

	(1)	(2)	(3)	(4)
Treated (edutainment)	0.048 (0.103)	0.053 (0.100)	0.095 (0.130)	0.114 (0.129)
Treated × Male			-0.108 (0.117)	-0.143 (0.109)
Male	-0.150*** (0.057)	-0.114** (0.056)	-0.102 (0.069)	-0.049 (0.058)
Age		-0.013 (0.020)		-0.014 (0.020)
Household with no parents		-0.037 (0.054)		-0.037 (0.055)
Access to TV		-0.025 (0.026)		-0.025 (0.026)
Business stream		0.132 (0.109)		0.137 (0.109)
Business knowledge		-0.027 (0.052)		-0.029 (0.052)
Business ambitions		-0.142** (0.066)		-0.138** (0.065)
O-level failure rate for school		0.030 (0.284)		0.027 (0.281)
Cutoffs:				
(0,1)	-1.770 (0.116)	-2.031 (0.371)	-1.746 (0.123)	-2.019 (0.373)
(1,2)	-1.353 (0.095)	-1.619 (0.378)	-1.320 (0.103)	-1.607 (0.380)
(2,3)	-0.645 (0.080)	-0.905 (0.386)	-0.620 (0.087)	-0.892 (0.387)
(3,4)	0.009 (0.086)	-0.250 (0.392)	0.033 (0.093)	-0.237 (0.393)
(4,5)	0.685 (0.091)	0.426 (0.393)	0.710 (0.097)	0.439 (0.395)
(5,6)	1.111 (0.101)	0.857 (0.399)	1.136 (0.107)	0.870 (0.400)
Observations	1,915	1,902	1,915	1,902

Note: Ordered probit models of the number of times participants waited for higher returns (0–6). Intercept of linear index normalized to zero. Standard errors in parentheses are clustered on schools (*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$).

Table A16: Long-term behavior, overall impact, full model

	Long-term survey					
	Administrative	Passed final exam	Currently a student	Started a business	Currently employed	Moved
Treated (edutainment)	-0.182** (0.078)	-0.198*** (0.059)	-0.210*** (0.072)	0.043 (0.054)	-0.051 (0.048)	0.111** (0.056)
Male	0.022 (0.033)	0.102*** (0.029)	-0.072 (0.071)	-0.020 (0.061)	-0.037 (0.039)	-0.107* (0.054)
Age		-0.060*** (0.009)	-0.095*** (0.025)	-0.006 (0.028)	0.004 (0.019)	0.038 (0.028)
Household with no parents		0.043* (0.023)	-0.049 (0.053)	-0.065 (0.069)	0.033 (0.046)	0.206*** (0.064)
Access to TV		-0.006 (0.012)	-0.040* (0.023)	-0.012 (0.025)	-0.011 (0.025)	-0.001 (0.026)
Business stream		0.111* (0.058)	-0.000 (0.070)	-0.030 (0.059)	-0.001 (0.055)	0.005 (0.055)
Business knowledge		0.058** (0.029)	0.049 (0.063)	0.031 (0.066)	-0.010 (0.034)	-0.049 (0.070)
Business ambitions		-0.087** (0.034)	-0.031 (0.092)	-0.007 (0.102)	0.101 (0.075)	-0.085 (0.076)
O-level failure rate for school		-0.894*** (0.192)	-0.394* (0.210)	0.361** (0.173)	0.072 (0.085)	-0.410** (0.165)
Constant	0.644*** (0.060)	2.159*** (0.181)	0.644*** (0.055)	0.279*** (0.046)	0.162*** (0.041)	0.243*** (0.039)
Observations	2,039	2,029	284	282	282	279
R ²	0.035	0.162	0.047	0.003	0.009	0.023

Note: Full version of panel A, Table 8. Standard errors in parentheses (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A17: Long-term behavior, gender specific impact, full model

	Administrative		Long-term survey				
	Passed final exam	Currently a student	Started a business	Currently employed	Moved		
Treated (edutainment)	-0.227*** (0.084)	-0.124 (0.076)	0.092 (0.070)	-0.073 (0.063)	0.136** (0.069)	0.104 (0.077)	
Treated × Male	0.103 (0.064)	-0.192 (0.139)	-0.110 (0.123)	0.050 (0.077)	-0.058 (0.081)	-0.089 (0.093)	
Male	-0.026 (0.047)	0.020 (0.078)	0.032 (0.068)	-0.061 (0.060)	-0.058 (0.057)	-0.065 (0.075)	
Age	-0.060*** (0.009)	-0.089*** (0.026)	-0.004 (0.029)	0.003 (0.019)	0.040 (0.028)	0.040 (0.028)	
Household with no parents	0.043* (0.023)	-0.050 (0.053)	-0.065 (0.069)	0.033 (0.045)	0.206*** (0.064)	0.206*** (0.064)	
Access to TV	-0.006 (0.012)	-0.041* (0.023)	-0.012 (0.025)	-0.010 (0.025)	-0.001 (0.026)	-0.001 (0.026)	
Business stream	0.108* (0.057)	0.014 (0.067)	-0.026 (0.055)	-0.006 (0.056)	0.012 (0.056)	0.012 (0.056)	
Business knowledge	0.059** (0.029)	0.045 (0.064)	0.030 (0.066)	-0.009 (0.033)	-0.051 (0.069)	-0.051 (0.069)	
Business ambitions	-0.089*** (0.034)	-0.030 (0.088)	-0.007 (0.102)	0.101 (0.076)	-0.085 (0.075)	-0.085 (0.075)	
O-level failure rate for school	-0.894*** (0.190)	-0.434** (0.187)	0.349** (0.172)	0.086 (0.089)	-0.428*** (0.165)	-0.428*** (0.165)	
Constant	0.669*** (0.064)	0.600*** (0.056)	0.253*** (0.046)	0.173*** (0.047)	0.230*** (0.046)	-0.272 (0.448)	
Observations	2,039	284	282	282	279	279	
R ²	0.038	0.056	0.007	0.010	0.025	0.028	

Note: Full version of panel B, Table 8. Standard errors in parentheses (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A18: Impact on social preferences

	Incentivized		Unfairness of salary inequality
	Money for self	Proportional bonus	
Panel A: Overall impact			
Treated (edutainment)	0.006 (0.018)	0.013 (0.035)	0.050 (0.076)
Observations	1,902	1,902	1,897
R^2	0.014	0.018	0.005
Panel B: Gender specific impact			
Treated (edutainment)	0.022 (0.022)	0.035 (0.038)	0.024 (0.093)
Treated \times Male	-0.037* (0.021)	-0.051 (0.045)	0.061 (0.116)
Male	0.029* (0.017)	0.078*** (0.030)	-0.123 (0.079)
Treatment on Males	-0.015 (0.019)	-0.016 (0.044)	0.085 (0.099)
Observations	1,902	1,902	1,897
R^2	0.016	0.019	0.005
Panel C: Statistics on dependent variable (in control group)			
Mean	0.619	0.728	3.966
Standard deviation	0.212	0.445	1.550

Note: The table reports linear regressions in which the dependent variable is: column 1, the share of money the participant allocated to him- or herself out of 2000 TSh in a real-effort dictator game; column 2, an indicator variable taking the value one if the participant in a spectator choice decided to divide proportionality (and not equally) in a spectator choice involving two other participants; column 3, the participant's response to an hypothetical question about whether an income difference between a teacher and a doctor is fair (1-5, 1-the income difference is completely fair, 5-the income difference is completely unfair). Treated: indicator variable for the participant being in the treatment group. Treated \times Male: interaction variable between Treated and Male. Male: indicator variable taking the value one if the participant is a male. Also included in the regressions but not reported are the other background variables reported in Table 2. See Tables A19 and A20 for full regressions including all controls. Treatment on Males: the linear combination of Treated and Treated \times Male. Standard errors in parentheses are clustered on schools (* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$).

Table A19: Impact on social preferences, overall impact, full models

	Incentivized				Unfairness of salary inequality	
	Money for self		Proportional bonus			
Treated (edutainment)	0.002 (0.017)	0.006 (0.018)	0.019 (0.037)	0.013 (0.035)	0.066 (0.079)	0.050 (0.076)
Male	0.012 (0.011)	0.012 (0.013)	0.028 (0.021)	0.055** (0.022)	-0.117** (0.058)	-0.095 (0.065)
Age		0.004 (0.005)		-0.026*** (0.009)		-0.016 (0.031)
Household with no parents		-0.027*** (0.009)		0.020 (0.024)		0.069 (0.076)
Access to TV		-0.002 (0.005)		-0.004 (0.011)		-0.027 (0.029)
Business stream		-0.019 (0.017)		0.039 (0.029)		0.041 (0.080)
Business knowledge		0.031** (0.014)		-0.001 (0.024)		-0.040 (0.083)
Business ambitions		-0.036** (0.015)		-0.008 (0.027)		-0.045 (0.121)
O-level failure rate for school		-0.055 (0.040)		-0.264** (0.121)		-0.447** (0.227)
Constant	0.613*** (0.013)	0.596*** (0.103)	0.714*** (0.022)	1.317*** (0.178)	4.026*** (0.067)	4.641*** (0.605)
Observations	1,915	1,902	1,915	1,902	1,910	1,897
R^2	0.001	0.014	0.001	0.018	0.002	0.005

Note: Full version of panel A, Table A18. Standard errors in parentheses are clustered on schools

(* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)

Table A20: Impact on social preferences, gender-specific impact, full models

	Incentivized				Unfairness of salary inequality	
	Money for self		Proportional bonus			
Treated (edutainment)	0.019 (0.021)	0.022 (0.022)	0.034 (0.040)	0.035 (0.038)	0.036 (0.095)	0.024 (0.093)
Treated × Male	−0.041* (0.022)	−0.037* (0.021)	−0.036 (0.043)	−0.051 (0.045)	0.071 (0.117)	0.061 (0.116)
Male	0.031* (0.016)	0.029* (0.017)	0.044 (0.028)	0.078*** (0.030)	−0.149** (0.072)	−0.123 (0.079)
Age		0.003 (0.005)		−0.027*** (0.009)		−0.015 (0.031)
Household with no parents		−0.027*** (0.009)		0.020 (0.024)		0.069 (0.076)
Access to TV		−0.002 (0.005)		−0.004 (0.011)		−0.026 (0.029)
Business stream		−0.018 (0.017)		0.040 (0.029)		0.039 (0.079)
Business knowledge		0.030** (0.014)		−0.001 (0.024)		−0.040 (0.083)
Business ambitions		−0.035** (0.015)		−0.006 (0.028)		−0.047 (0.121)
O-level failure rate for school		−0.056 (0.038)		−0.265** (0.119)		−0.446** (0.227)
Constant	0.603*** (0.014)	0.593*** (0.102)	0.705*** (0.024)	1.313*** (0.179)	4.042*** (0.071)	4.647*** (0.601)
Observations	1,915	1,902	1,915	1,902	1,910	1,897
R ²	0.003	0.016	0.002	0.019	0.002	0.005

Note: Full version of panel B, Table A18. Standard errors in parentheses are clustered on schools

(* : $p < 0.10$, ** : $p < 0.05$, *** : $p < 0.01$)