Effects of a brief motivational video on primary and secondary school students: evidence on role models from a RCT in Naples

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December 2021

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1   Introduction

The detrimental link between low aspirations and poverty, often addressed in the literature as "aspiration trap", helps explaining why poor people tend to under-aspire, ceteris paribus, compared to people coming from a higher socio-economic background. Poverty is both a cause of lower aspirations, as poor people tend to have lower and more fragile tools and means to aspire, and an effect, as low aspiration leads to lower investments in education and in turn lower wages (Appadurai, 2004; Ray, 2006; La Ferrara, 2019).

Several interventions have been tested and implemented to break this vicious circle and increase aspirations, which range from organizing tutoring programs and academic counselling (Carlana et al., 2017) to institutional changes in the political rules (Beaman, 2012) and the provision of statistical information on the benefits of investing in education (Nguyen, 2008). One further option is the use of a role model: a person, real or fictitious, who shares the targets' experiences and with whom they can identify.

Meeting a role model is a low-cost intervention, and it has proved itself an efficient tool in shaping aspirations and behaviours especially on most fragile categories – such as immigrants or female students (Carlana et al., 2018; Porter and Serra, 2019). Role model interventions in the literature can be either in person (Nguyen, 2008; Kipchumba et al. 2021; Porter and Serra, 2019; Hazari et al., 2013) or in a digital format through the use of TV shows, movies, and edutainment (Bernard et al, 2014; Bjorvan et al. 2015; Riley, 2017; Benerjee et al., 2019). While the first option allows live interaction between the treated sample and the role model, the second one has lower costs and can be easily extended to involve a larger group of people. This research study analyses the effect of a role model video on primary and secondary school students. Building on the existing literature on the effect of role models in shaping students'

behaviour, performance and aspirations, this experiment contributes to it in two ways: first, it relies on a brief motivational video that lasts approximately 1 minute. This very short and at the same time virtual intervention is a novelty in the literature, where pre-recorded interventions are in the form of movies or TV shows, and therefore last longer (Bjorvan et al. 2015; Riley, 2017). Shorter interventions are instead a feature of some in-person events with real role models taking the stage and interacting with the sample (Nguyen, 2008). Second, this experiment is conducted in a school in Naples, Italy: it allows to analyse the effects of role models in a developed country on a sample of primary and secondary school students from fragile socio-economic backgrounds.

The second research question looks at the gender of the actor in the video: does the exposure to the treatment generate different effects when the gender of the actor is the same as the gender of the respondent, compared to the case in which the two are different? This second questions builds on several findings on the effect of the role model being related to their gender (Porter and Serra, 2019; Kipchumba et al., 2021).

The outcomes of interest can be grouped in three categories: self-reported outcomes, outcomes emerging from a task, and aspirations. The first family consists of three indexes that measure the level of self-confidence and independence, the level of gender bias, and the level of well-being. The second category consists of measures of effort, cognitive abilities, altruism, trust in others, relationship with the social network; they are measured through a series of small tasks and games performed by the respondent. The last category measures school and career aspirations.

The motivational video is expected to generate an effect on the above-mentioned outcomes in two main ways: the first is by self-identification in the character of the video, which in turn would boost self-confidence and reassure the respondent that anything is achievable besides any current difficulty. The second channel goes through identification of other peers with the actor/actress in the video, that would drive a reshape of the perception the respondent has of

the people around them and of what they can achieve in life. The effect of the video through the first channel is expected to cause a change in the measures of independence, well-being, effort, trust in oneself, and school and career aspirations, and to depend on how well the viewer identifies in the role model. The effect of the video through the second channel is expected to manifest itself in the measures of altruism, trust in others, and relationship with classmates. The video of the female actress is expected to cause a lower shift in the measure of gender bias. Section 2 presents a description of the experimental setting; the sample characteristics are described in Section 3. Section 4 describes the experiments; Section 5 presents the outcomes of interests and how they are measured; Section 6 describes the empirical framework. Section 7 explores the overall results from the randomized intervention; Section 8 looks into some heterogeneity effects. Section 9 concludes.

2   Context

What follows is based on results collected by means of in-person interviews in a primary and secondary school in Naples. The interviews were conducted in the month of May 2021 by a team of 9 enumerators, priorly recruited and trained by the research team and I. The enumerators were young adults (between 20 and 35 years old) with prior experience in dealing with children and teenagers coming from a fragile socio-economic background. They were both Italian and non-Italian, and everyone lived in Naples and was able to speak the Neapolitan dialect: this was crucial not only to gain the trust of the interviewed students, but also to effectively communicate with them, as a lot of the students were used to express themselves in a mix of Italian and Neapolitan dialect.

Each enumerator was instructed to create a dialogue with the respondent, more similar to a chat with a confident than to a formal interview: this was done to remove as much as possible any barrier between the enumerator and the respondent, and promote a relaxed and

confidential environment where the students felt free to open themselves. The duration of each interview was approximately 50 minutes on average, with usually longer interviews taking place in primary school. The interview consisted of a number of questions inquiring on children's aspirations, zest, grist, impulsivity, empathy, believes about success, gender bias, and social intelligence. The questions were alternated to small tasks and games, including dictator and trust games, mazes, raven matrices, and a game aiming at grasping the social network of the interviewed student in the classroom. For the interview to take place, the student had to hand in an authorization signed by a parent. Moreover, before the beginning of the interview, each student was explicitly told that their participation was fully voluntary and they could end the interview at any time, or skip any questions without the need to justify their choices. The questionnaire and the treatment interventions were designed by the research team and I and were subject to IRB approval by the Bocconi Ethics Committee.

3   Sample characteristics

Out of a population of 465 students of a primary and secondary school in Naples, data were collected for 295 of them. Persistent absenteeism and lack of the necessary consent signed by the parents are the two most relevant reasons why only 64% of the total available population was interviewed.

Of the interviewed sample, 20% was attending secondary school at the moment of the data collection (May 2021), with the vast majority attending elementary school. These data partly reflect the fact that the available population was originally made by 30% secondary school students and 70% elementary school ones. However, this figure alone is not sufficient to explain the under-representation of secondary school students in the interviewed sample, which is instead due to the greater difficulties faced in collecting the signed consensuses among the secondary school children. Of the total sample of secondary school students in the selected schools, only

44% were actually interviewed, while the same figure for the primary school is a solid 72%.

The sample is balanced in terms of gender composition, with 150 boys and 145 girls. This figure is balanced also when separately looking at primary and secondary school subgroups.

When it comes to the origin of the students, 16% of the sample does not know their nationality; this is not particularly surprising as the sample is made of young and in some cases very young children, which are not entirely familiar with the notion of nationality yet, as confirmed by their teachers. 59% of the sample is made of Italians, 25% have instead a foreign nationality. Some 10% of the respondents do not know the nationality of their parents. Overall, 33% reports at least one of their parents having a foreign nationality, with 71 respondents (26% of the sample) stating they have both parents with a foreign nationality.

When asked about their parents, 8% of the respondents reports to have only one parent. Moreover, some 15% has a father who does not live with them, as opposed to less than 2% for the mothers. There is no respondent reporting that both parents are absent from their life.

Table 1 reports the results of a balance check meant to assess whether the sample is indeed balanced in its demographic characteristics between control and treatment groups, as one would expect under randomization. The average student interviewed is around 9 years old, and this is true for all three treatment arms, without significant differences. About half of the sample is female, without significant differences between treatments and control groups. The sample is balanced also in terms of respondents' nationality and their parents' origin. The only variable slightly unbalanced is the one related to the grade (primary versus secondary) of the respondent, with more primary school students in the control than in the treatment groups; the difference is significant at 10% significance level.

Table 1: Balance table

	Mean C	Mean T1	Mean T2	Diff T1-C	P-val T1-C	Diff T2-C	P-val T2-C
Primary school	0.86	0.77	0.76	-0.10	0.08	-0.10	0.07
	(0.35)	(0.42)	(0.43)	(0.05)		(0.06)	
Age	9.04	9.38	9.23	0.33	0.34	0.18	0.62
	(2.25)	(2.46)	(2.69)	(0.34)		(0.37)	
Female	0.55	0.47	0.51	-0.08	0.25	-0.04	0.61
	(0.50)	(0.50)	(0.50)	(0.07)		(0.07)	
Immigrant	0.27	0.30	0.32	0.03	0.62	0.06	0.42
	(0.44)	(0.46)	(0.47)	(0.07)		(0.07)	
Immigrant mother	0.29	0.32	0.33	0.03	0.68	0.03	0.63
	(0.46)	(0.47)	(0.47)	(0.07)		(0.07)	
Immigrant father	0.29	0.30	0.33	0.01	0.88	0.04	0.55
	(0.46)	(0.46)	(0.47)	(0.07)		(0.07)	

Note: parentheses contain standard deviations in columns 1, 2 and 3; robust standard errors in columns 4 and 6.

4   Intervention

The intervention consists in showing a short motivational video to a randomly selected sample of students. Treatment assignment is stratified by grade – primary and secondary school – and is performed at the individual level prior to the intervention. During the interview, after the first session meant to collect the demographics and data on the family of the respondent, a video was shown to the respondent on the tablet given to the enumerator. The control group was shown a video of an actor or an actress thanking them for participating in the data collection; the gender of the actor was chosen to match the gender of the respondent. The treatment group was shown a motivational video in which an actor or an actress tells the story of how, starting from a situation of fragility during primary or middle school, at some point in their life they found their passion, and this was the key to their current happiness. The purpose of the video treatment is to inspire confidence in the viewer, by instilling in them the idea that even if their situation in school and family is hard and they feel they do not fit, they can still be successful in life. Both actors were people living in Naples but originally – and visibly – of a nationality other than Italian, aged between 20 and 30 years old, and both speaking in a Neapolitan accent: the reason we chose actors with these characteristics was to increase the chances the respondent would relate to them, considering the fact that a large portion of the sample are first- or second-generation immigrants. In the treatment video, the story does not include the specific steps in which they managed to find their passions and achieve their current happiness: this was done intentionally, in order not to link this message of hope to one specific set of life choices, but to leave it as open as possible. Both pairs of treatment and control videos were self-recorded in a very spontaneous manner with the internal camera of a cell-phone, and the only identifiable element of the video was the face of the actors (see *Appendix 1* for the scripts and pictures of the videos).

A second source of variation comes from the randomization of the gender of the actor in the video shown to the treated group: one third of the sample watched a motivational video with

an actor of the same gender as the respondent (T1), one third watched a motivational video with an actor of the opposite gender of the respondent (T2), one third watched a control video (C). The randomization was performed within levels of school – primary and secondary – to reflect the different share these two subgroups take in the original population of the schools selected for this experiment. Despite the fact that the same script was given to both actors before recording the video, the two treatment videos were reinterpreted by the actors and tailored to their own real personal stories: this lead to the videos being slightly different from one another; in particular, the video with a female actress explicitly mentions an initial situation of difficulty with her teachers, and then the fact that she pursued a career as an artist; these elements were not part of the male actor's story, who instead mentioned initial difficulties at school and struggles from his family, without explicit reference to his career choice. These slight differences may affect the interpretation of the experimental results both in terms of the sub-sample of students who self-identifies in them and in terms of career aspirations for those watching the video with a female actress.

The treatment videos were shown during the first and only round of interviews, minutes before the main outcomes were collected. This implies that this RCT does not envisage the collection of baseline data by design, and that the identification relies on the randomization of the treatment between arms.

5 Outcomes of interest

The outcomes of interest can be split into three subgroups: aspirations, self-reported outcomes, and outcomes emerging from the tasks performed during the interviews. In this section, I will analyse all three types of outcomes and how they were measured.

a   Aspirations

A first category of outcomes is related to the aspirations of the students. The motivational video was designed in such a way to boost confidence in the students and assure them that they would be able to achieve anything they set their minds up to, no matter the initial difficulties and the potential adverse opinion of others. The expected effect of the video would therefore include an increase in aspirations.

The following two open questions were asked during the interview:

- "Which school, if any, would you like to attend when you grow up?"

- "What would you like to become when you grow up?"

The answers to the first question were then codified into three classes, corresponding to the Italian classification of post-secondary schools: vocational school (3 or 5 year schools teaching a set of skills directly implementable in the workplace), technical institute (5 years of high school which can give access to university but also directly employable after the end of the studies), academic track (or "Liceo" in Italian, a track which does not teach skills directly employable in jobs but is designed to guide students to University studies). Moreover, the following two categories where added: no school and don't know. The answer to the second question were codified into 7 categories, ordered by level of prestige.

b   Self-reported outcomes

Self-reported outcomes are collected through a series of closed-form questions aimed at capturing the level of independence of the respondents, possible gender biases, and their overall wellbeing. Three aggregate indexes constitute the final outcomes analysed in this section.

The first index is based on four distinct groups of questions: whether the perception of personal success is more dependent on personal rather than external factors, whether personal success

can be hindered more by personal rather than external factors, the level of grit, beliefs about effort and diligence. All questions of this section had a 4-level agreement scale, on which the respondent could locate themselves. The answers where then converted in dummies opposing the highest level of agreement to the other three[1], and then combined to form the indexes for each group of questions. Finally, the groups were combined to form the aggregate index.

$$group_{ij} = \sum_{q \epsilon group_{ij}} \frac{agree_{iq}}{N_{iq}} \tag{1}$$

$$index_i = \sum_j \frac{group_{ij}}{N_{ij}} \tag{2}$$

Where $index_i$ is the value of the index for student i, $group_{ij}$ is the answers of student i to the groups of questions (j= success, obstacles, grit, effort), q is the individual question in each group, $agree_{iq}$ is a dummy that takes value 1 if the respondent i answers "strongly agree" to question q, N_{iq} and N_{ij} are respectively the number of questions respondent i answered in each group and the number of groups in the index (4). The list of questions can be found in *Appendix 2*. The index ranges from 0 to 1, where 1 represents a student who believes personal success is highly dependent on personal factors and has high level of grit and confidence. The exposure to the video treatment could affect this outcome by inspiring the viewer optimism and making them believe that their goals are achievable notwithstanding an initial situation of difficulty, therefore boosting their self-confidence, grit, and trust in their abilities of achieving success.

The second index, constructed to capture the level of gender bias of the respondent, is built as a binary variable taking values 0 for no bias and converging to 1 for higher levels of bias. It is measured combining two groups of questions: first, a series of questions related to the self-reported gender bias; as for the previous questions, answers from a 4-level agreement scale were converted into a dummy and then combined to generate an index closer to 1 the higher

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[1]The choice was based on the fact that the majority of students agreed generally with the statement, therefore the division between "agree" and "strongly agree" is found to be more informative than any other split of the answers.

the gender bias. Then, in a second series of questions, the respondent was presented with a list of 11 jobs, and had to say whether each job was appropriate for a man, a woman, or both. A dummy was created equal 0 for the answer "both", or 1 for either "man" or "woman"; all questions were then combined into a binary index closer to 1 the higher the gender bias. The aggregate index combines both groups of questions:

$$group_{ij} = \sum_{q \epsilon group_j} \frac{bias_{iq}}{N_{iq}} \tag{3}$$

$$index_i = \sum_{j} \frac{group_{ij}}{N_{ij}} \tag{4}$$

where the methodology is the same as before, with small differences: $bias_{iq}$ is a binary variable equal to 1 if student i shows gender bias; N_{ij} is 2. The full list of questions can be found in *Appendix 2*. The exposure of the video treatment could have two different effects on gender bias: on one hand, watching the video treatment with a female actress, could change the perception of what women can achieve and report lower levels of bias. On the other hand, watching the treatment video with a male actor can increase the level of gender bias of female students; in this case, the students would start believing only man can achieve their goals and therefore updating their believes on gender norms accordingly.

The third index is a dummy that tends to 1 the higher the level of physical and psychological wellbeing of the respondent. Psychological wellbeing was measured through a number of questions inquiring on the level of safety, happiness, self-esteem, and autonomy of the respondent. Physical wellbeing is measured through a series of questions in which the respondent is asked to recall and report their well-being and symptoms of distress over the past week (see *Appendix 2* for the full list of questions). All questions in this index were originally answered on a 4-level agreement scale, then converted into indicators and combined together in the aggregate index in the same way as the first index was built. Video treatment is expected to boost this index by reassuring the viewer when they think about themselves, their situation, and the impact

this can have on their future.

c   Tasks

Finally, a number of small tasks and games were performed to measure the effort exerted by the respondent, their cognitive abilities, the expectations of their own performance in comparison to the one of their classmates, their levels of altruism and trust towards classmates, perception of the relationship with classmates.

After seeing the treatment video, the student would feel more empowered and self-confident, and this in turn could increase the effort they exert in performing a task. As in Afridi et al. (2019), the level of effort is measured through the successful completion of two mazes of increasing difficulty within a pre-defined timeframe. The outcome of interest is the number of mazes completed. The use of a maze allows the respondent to exert effort, without it being influenced by cognitive skills in disciplines like maths or Italian. In order to incentivize efforts, students were rewarded with one sticker per maze completed in time. Primary school students completed an easy and a medium-difficulty maze, secondary school students instead performed the medium and the difficult maze. This, together with the larger appreciation of the reward stickers among younger children, might help explain the higher overall level of success for the primary students.

The treatment video is expected to boost self-confidence in the viewer, and therefore decreasing the gap between the student's known performance in cognitive ability tasks and the expected performance of the classmates. Cognitive ability is measured through the number of successfully completed Raven's matrices within a specified period of time (Alan et al., 2017; Cadsby et al., 2019). Two matrices were randomly chosen out of four available; a trial raven matrix was shown before the beginning of the game, in order to make the respondent familiar with it. There was no distinction in the matrices shown to the primary and secondary school students. To incentivize correct answers, the students were compensated with one sticker for each maze and matrix

correctly completed, and this information was communicated before the beginning of the task. See *Appendix 3* for additional information on these tasks. After being told how many Raven's matrices were correctly completed, students where then asked to guess the average number of successfully completed matrices by their classmates. The difference between one own number of completed matrices and the reported guess is a measure of confidence of the respondent, when compared to the rest of the classroom.

Besides increasing trust in oneself, watching a motivational video is expected to positively affect the perception of peers. This would translate into improved measures of altruism, trust, and social network. Altruism is measured through the number of stickers sent to another classmate in a dictator game, in which the respondent had 3 stickers at their disposal and had to choose how many stickers were to be sent as a gift to the paired classmate: those not sent to the classmate were automatically property of the respondent (Alan et al., 2017). A trust game was used to measure the level of trust in classmates: the respondent was presented with 3 stickers, and had to decide how many stickers to put in an envelope. A randomly selected classmate would then receive twice as many stickers as the ones in the envelope, and could in turn decide if and how many stickers out of those received to send back to the respondent (Alan et al., 2017). Finally, the respondent played a game in which they had to associate to each classmate's name an emoji corresponding to the perception of the relationship they had with that classmate: best friend, a nice friend, an unpleasant friend.

Notice that all tasks were performed during the interview, and therefore answers are confidential and are known exclusively by researchers and the interviewers; this was done to ensure answers were not influenced by the fear of being heard by teachers or classmates. See *Appendix 3* for a picture of the emoji.

6 Methodological framework

This study aims to answer to two key research questions: the first one analyses the effects of being exposed to the motivational video, as opposed to being in the control group; the second one analyses the effect of being treated with a video whose actor has the same sex of the respondent, as opposed to being treated with a video whose actor has opposite gender.

To answer to the first research question, I run the following regression:

$$y_i = \alpha + \beta V_i + \gamma X_i + \varepsilon_i \tag{5}$$

where y_i is the outcome of interest for student i, V_i is a dummy that assumes value 1 if the student watched the treatment video and 0 if they watched the control; X_i is a vector of controls, including a dummy for the educational level of the respondent, equal to 1 if the student attends elementary school; a dummy for the student being a female; the age of the respondent; dummies controlling for whether the student and/or at least one parent is an immigrant; a dummy for whether the student does not have a parent.

To answer to the second research question, a similar regression is run, with one additional element: a dummy S equal to one if student i watched a treatment video whose actor was of their same gender:

$$y_i = \alpha + \beta V_i + \gamma S_i + \delta X_i + \varepsilon_i \tag{6}$$

To explore the differential effect of the gender of the actor on gender bias, I run the following regression:

$$genderbias_i = \alpha + \beta_1 VF_i + \beta_2 VM_i + \delta X_i + \varepsilon_i \tag{7}$$

where $genderbias_i$ is the aggregate measure of gender bias for individual i; VF_i is a binary variable that takes value 1 if the individual watched a video treatment with a female actor; VM_i is a binary variable that takes value 1 if the individual watched a video treatment with

a male actor. To deeper understand the channel of transmission of the effect of the treatment to the measure of gender bias, I add the interaction between the gender of the respondent (F_i equals 1 if the respondent is female) and VF_i and VM_i:

$$genderbias_i = \alpha + \beta_1 VF_i + \beta_2 VM_i + \gamma_1(VM_i * F_i) + \gamma_2(VF_i * F_i) + \delta X_i + \varepsilon_i \qquad (8)$$

7 Results

This section explores the results of the experiment. It is divided in three subsections, corresponding to the above-mentioned outcome categories: aspirations, self-reported outcomes, and outcomes resulting from tasks.

a Results on aspirations

School preferences for the control group show that the academic track is the most popular response with 43% of the choices. 27% of the students is not sure about the future school, yet; vocational school is selected by $\frac{1}{4}$ of the control sample. Among the 6% affirming that they will not continue studying after middle school, none of them were attending secondary school at the time of the interview (even though the difference between school levels is not statistically significant); less than 2% of the female students in the control group chose this option and this difference across gender is statistically significant (p=0.05). Moreover, female students in the control group tend to report lower preferences for technical institutes (p=0.04) and higher preferences for vocational schools (p=0.05) compared to their male counterparts. There are no significant differences across immigrant status.

Table 2 and *3* collect the results of both treatments on school aspirations. The video treatment increases the likelihood the respondent chooses the "academic track" by 28.5% a standard de-

Table 2: Results for school aspirations, pt.1

VARIABLES	(1) Vocational	(2) Vocational	(3) Technical	(4) Technical	(5) Academic	(6) Academic
Treatment	-0.080*	-0.089*	-0.006	0.037	0.142*	0.137
	(0.096)	(0.094)	(0.899)	(0.523)	(0.052)	(0.111)
Same sex treatment		0.017		-0.079		0.009
		(0.705)		(0.137)		(0.915)
Mean control	0.14	0.14	0.09	0.09	0.43	0.43
Observations	221	221	221	221	221	221
R-squared	0.086	0.086	0.090	0.101	0.060	0.060

Robust pval in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, one parent only

Table 3: Results for school aspirations, pt.2

VARIABLES	(1) No school	(2) No school	(3) Don't know	(4) Don't know
Treatment	0.002	-0.016	-0.075	-0.054
	(0.957)	(0.651)	(0.230)	(0.454)
Same sex treatment		0.033		-0.041
		(0.304)		(0.507)
Mean control	0.06	0.06	0.27	0.27
Observations	221	221	221	221
R-squared	0.105	0.109	0.056	0.058

Robust pval in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, one parent only

viation, at a 10% significance level. This effect becomes insignificant when controlling for the gender-concordance with the actor (p=0.11), which nevertheless contributes to the first effect in the same direction. There is a negative effect of the video treatment on the preferences for vocational school, which remains significant in both specifications. The effect on the "no school" choice is not statistically significant (p=0.65). There seems to be a decrease in people affirming not to know their future school by 17% of a standard deviation compared to the control group, and the combined effect is even stronger when adding the control for same sex actor; however, these effects are not statistically significant (p-values at 0.23 and 0.45).

Concerning career aspirations, 29% of the control group aspires to work in the service category, which includes those jobs that entail a close contact with the public: hairdresser, restaurant owner, bartender, beautician, salesperson, etc. 24% wants to do a job in the most prestigious category, which consists of athletes – the professional footballer category by itself represents 7% of the preferences of the control group – artists, models, youtuber, designers, politicians, etc. The third large class of jobs chosen by the control group is the one of the self-employed workers (dentist, lawyers, etc.); it is followed by the group of teachers and nurses (8%), the one of policemen and military men (4%), the group of workmen and craftsmen (4%) and the group of employees (1%). The category of teachers and nurses is chosen significantly more at the secondary school compared to the primary one (p-value at 4%), and by female students compared to males (p-value at 5%). Female students report to aspire to work by 22 percentage points more in the service category than males, and the difference is significant at the 5% level. The effects of treatments on career aspirations are presented in *Table 4* and *Table 5*. The positive effect of video treatment on the likelihood of choosing the "workman" category is more than offset by the opposite effect of same sex actor, this last effect being significant at the 10% significance level; the combined magnitude of the two effects is a decrease by 43% of a standard deviation compared to the control group. There is a small, non-significant decrease of the preferences allocated to the "sector" category (p-values at 0.73 and 0.8). The positive effect on the

"employee" category is entirely due to the same sex actor treatment, with a magnitude of 12% s.d. (p=0.32). The two treatments have opposite effects on the "teacher/nurse" category, but none is significant (p=0.78 for video treatment and p=0.61 for same sex actor). The treatment has a negative, insignificant effect on the "policeman" category of 4% s.d. (p-value at 0.5 and 0.53). The preferences towards "self-employed" professions are lower than the control group as well by 6% s.d., and the effect of the same gender actor partly counteracts this effect but none of these effects are statistically significant (p-value at 0.62 and 0.64). Significant at the 10% significance level is instead the effect of video treatment on the most prestigious category of jobs, with an increase in preferences by 28% s.d., which becomes even higher in the second regression. However, this last effect might be due to a Hawthorne effect, with the respondents being possibly influenced by the video to give an answer that they believe is in line with the interviewer's expectations. Notice also that the actors in the videos explicitly mention works that can be classified in the top category, which can itself influence the respondent's answers.

Table 4: Results for career aspirations, pt.1

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Workman	Workman	Services	Services	Employee	Employee
Treatment	0.008	0.038	-0.022	-0.017	0.007	-0.000
	(0.753)	(0.284)	(0.725)	(0.807)	(0.325)	(0.999)
Same sex treatment		-0.056*		-0.009		0.013
		(0.079)		(0.897)		(0.319)
Mean control	0.04	0.04	0.28	0.28	0.01	0.01
Observations	221	221	221	221	221	221
R-squared	0.024	0.039	0.141	0.141	0.025	0.032

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, one parent only

Table 5: Results for career aspirations, pt.2

VARIABLES	(1) Teacher	(2) Teacher	(3) Army	(4) Army	(5) Self-employed	(6) Self-employed	(7) Artist/ Athlete	(8) Artist/ Athlete
Treatment	-0.000	-0.012	-0.016	-0.016	-0.028	-0.032	0.124*	0.137*
	(0.992)	(0.781)	(0.505)	(0.539)	(0.629)	(0.648)	(0.059)	(0.074)
Same sex treatment		0.022		0.000		0.007		-0.026
		(0.611)		(0.988)		(0.918)		(0.742)
Mean control	0.08	0.08	0.04	0.04	0.23	0.23	0.24	0.24
Observations	221	221	221	221	221	221	221	221
R-squared	0.027	0.028	0.021	0.021	0.098	0.098	0.046	0.046

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, one parent only

b Results on self-reported outcomes

The overall level of independence for the control group lies in the middle of the scale (0.5), with .12 standard deviation from the mean. There is a significant difference between genders, with male students in the control group displaying a higher index of independence by 8.1 percentage points, compared to females (p=0). The level of well-being is below the 50th percentile (which is .70), indicating the presence of outliers in the left part of the distribution. Finally, the level of gender bias is generally low, with a larger standard deviation. Notice that the level of gender bias is substantially higher at the primary school compared to the secondary school (by 20 percentage points, p=0).

By regressing the first aggregate index on the dummy for being part of the treatment and on the vector of controls, it emerges that being exposed to treatment increase one's self-confidence and independence as measured through the first of the three self-reported indexes by 3.5 percentage points compared to the control group (p=0.07). This represents an improvement of 29% of a standard deviation. This effect becomes however slightly smaller and insignificant (p=0.16) when including in the regression the dummy for watching a treatment video with an actor of the same sex as the respondent. In turn, this last effect of the gender of the actor is negligible: it has a magnitude of 6% of a standard deviation, and is insignificant (*Table 6*).

The video treatment is followed by a decrease in gender bias (*Table 8*), represented by a decrease of the related index by 5.4 percentage points, which correspond to 25% of a standard deviation (p=0.06). This seems to suggest that the first of the two channels described above is in place: the exposure to the successful story of the female role model makes students rethink about their believes on gender norms. Indeed, when running the second regression, it is clear that the effect is exclusively caused by the treatment video with a female actress. A deeper analysis in last column confirms the prior intuition: males students watching a video treatment with a female actress see a decrease in their gender bias.

Finally, the exposure to the video treatment has no detectable effect on the measure of

Table 6: Results on independence and wellbeing

VARIABLES	(1) Independence	(2) Independence	(3) Wellbeing	(4) Wellbeing
Treatment	0.035*	0.031	-0.025	-0.021
	(0.071)	(0.163)	(0.362)	(0.548)
Same sex treatment		0.008		-0.008
		(0.661)		(0.825)
Mean control	0.5	0.5	0.66	0.66
Observations	176	176	192	192
R-squared	0.139	0.140	0.047	0.047

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent

Table 7: Additional results on wellbeing

VARIABLES	(1) Wellbeing	(2) Wellbeing	(3) Wellbeing
Treatment*VM		0.025	0.043
		(0.449)	(0.344)
Treatment*VF		-0.079**	-0.052
		(0.016)	(0.312)
Treatment*VM*Female			-0.038
			(0.572)
Treatment*VF*Female			-0.054
			(0.406)
Female	-0.060**	-0.057**	-0.025
	(0.031)	(0.037)	(0.566)
Treatment	-0.025		
	(0.362)		
Mean control	0.66	0.66	0.66
Observations	192	192	192
R-squared	0.047	0.095	0.098

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent
VM (VF) is a dummy that takes value 1 if the student watched a video with a male (female) actor.

Table 8: Results on gender bias

	(1)	(2)	(3)
VARIABLES	Gender bias	Gender bias	Gender bias
Treatment*VM		-0.029	-0.045
		(0.384)	(0.350)
Treatment*VF		-0.083**	-0.083*
		(0.012)	(0.073)
Treatment*VM*Female			0.035
			(0.614)
Treatment*VF*Female			0.003
			(0.958)
Female	-0.038	-0.037	-0.051
	(0.148)	(0.157)	(0.286)
Treatment	-0.054*		
	(0.057)		
Mean control	0.34	0.34	0.34
Observations	195	195	195
R-squared	0.237	0.248	0.250

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent
VM (VF) is a dummy that takes value 1 if the student watched a video with a male (female) actor.

wellbeing, if anything depressing it by 13% (p=0.36) of a standard deviation in the first regression, and by slightly less (11%, p=0.54) in the second one, where the effect is strengthened by the same gender actor (*Table 6*). However, a closer look at this measure (*Table 7*) highlights an important and unexpected fact: the video with a female actress seems to cause a significant decrease in well-being, both on male and female respondents (p=0.02). This effect may be due to a "comparison to a model" dynamic, according to which the respondent compares themselves to the actress and ends up believing they are not as beautiful, this causing them a sense of discomfort.

c   Results on task outcomes

The non-treated students completed slightly more than 1 maze out of 2 and half matrix out of 2 on average. One caveat here is that the number of mazes correctly completed is substantially higher among primary school students than secondary school ones (by 0.65 mazes, p=0). This result, which may be surprising at first sight, is better understood if we think that the mazes presented to secondary school students were more difficult than the one primary school students faced, and maybe the level was set too high for secondary school students or the time given was too low.

Notwithstanding results in past literature showing that women tend to perform worse than males in tasks if there is a time constraint, data on the maze performance do not display significant differences between gender groups. On the contrary, there is a significant difference when Raven's matrices are taken into account, with female students displaying higher cognitive ability measures than the males (p=0.02).

The students in the control group believe they were substantially less able than their classmates in solving the matrices, with female students being significantly more confident than males by 33 percentage points (p=0.03). The control group gave away more than 1.5 stickers in the

dictator game, and slightly more in the trust game. They classify most of their classmates as being nice; in second place in terms of tags come the classmates classified as best friends; less than 4 classmates on average were classified as unpleasant.

Table 9 shows the effects of both treatments on the measures of effort, cognitive abilities, and self-confidence in performing the task. There is a non-significant, positive effect of watching the treatment video on the effort exerted in completing the task (resulting in an increase of this measure of 10.5% s.d., p=0.42). An even larger effect is found when looking together at the effect of video treatment and treatment with same sex actor. However, these effects are not statistically significant.

Being exposed to the treatment seems to have no effect on the level of measured cognitive ability (the effect is a decrease of 5% of a standard deviation, p=0.75), nor is there a differential effect by gender of the actor (p=0.81).

The difference between one's number of completed matrices and the amount the respondent guesses other students have completed is not significantly affected by watching the video; if anything, it is higher for treated students compared to the control group, indicating an increase in the level of confidence of the respondents of 11% of a standard deviation (p=0.5). The magnitude of this effect is even higher when looking at the second regression, showing that watching a treatment video with an actor of the same sex as the respondent generates an effect in the opposite direction – decreasing the confidence measure (p=0.15).

Regression results on the altruism and trust measures are collected in *Table 10*. Treated students seem to be less incline to donate stickers in the dictator game, but this effect is very small (1% of a standard deviation) and not significant (p=0.93). This effect is more than offset by the second type of treatment, which by itself generates a non-significant increase in the number of stickers sent by 6.5% standard deviations (p=0.67).

On the other hand, treatment significantly increases trust in others as measured by the amount of stickers sent during the trust game by 28 percentage points, which corresponds to a 31% im-

provement in terms of standard deviation compared to the control group (p=0.03). This effect is robust in magnitude when adding the dummy for same gender actor to the list of regressors, and the level of significance is at 7%.

Finally, the amount of friends measured by the results from the emoji game are not affected by the video treatment (*Table 11*). If anything, treated students tend to identify more unpleasant friend (by 11% of a standard deviation, p=.38)) and nice friends (by 12% of a standard deviation, p=.38), and less best friends than the control group (by 14% of a standard deviation, p=.3). When interacting the treatment with the gender of the actor, it increases the overall effect for unpleasant friends (p=0.58), nullifies the positive effect on nice friends (p=0.14), and slightly decreases the negative effect on best friends (p=0.26); none of these effects are statistically significant.

Overall, the video treatment was effective in boosting trust towards oneself and the others, increasing grit and lowering gender biases, but ineffective in fostering altruism and improving effort and cognitive skills.

Table 9: Results on maze and matrix tasks

VARIABLES	(1) Mazes	(2) Mazes	(3) Matrices	(4) Matrices	(5) Guess	(6) Guess	(7) Difference	(8) Difference
Treatment	0.071	0.039	-0.029	-0.025	-0.117	-0.153	0.085	0.128
	(0.424)	(0.717)	(0.756)	(0.815)	(0.167)	(0.124)	(0.495)	(0.371)
Same sex treatment		0.060		-0.007		0.068		-0.081
		(0.560)		(0.945)		(0.485)		(0.577)
Mean control	1.11	1.11	0.51	0.51	1.58	1.58	-1.07	-1.07
Observations	221	221	221	221	220	220	220	220
R-squared	0.211	0.212	0.051	0.051	0.053	0.055	0.031	0.032

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent

Table 10: Results on dictator and trust games

	(1)	(2)	(3)	(4)
VARIABLES	Dictator	Dictator	Trust	Trust
Treatment	-0.012	-0.046	0.281**	0.275*
	(0.931)	(0.777)	(0.033)	(0.069)
Same sex treatment		0.063		0.009
		(0.675)		(0.948)
Mean control	1.59	1.59	1.71	1.71
Observations	221	221	219	219
R-squared	0.056	0.056	0.044	0.044

Robust pval in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent

Table 11: Results on emoji task

VARIABLES	(1) Unpleasant friends	(2) Unpleasant friends	(3) Best friends	(4) Best friends	(5) Nice friends	(6) Nice friends
Treatment	0.353	0.258	-0.546	-0.636	0.510	0.994
	(0.388)	(0.588)	(0.301)	(0.267)	(0.385)	(0.141)
Same sex treatment		0.178		0.168		-0.904
		(0.670)		(0.723)		(0.141)
Mean control	3.27	3.27	5.39	5.39	8.28	8.28
Observations	221	221	221	221	221	221
R-squared	0.137	0.138	0.182	0.182	0.032	0.041

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent

8 Additional heterogeneous effects

One sub-group that can be identified within the sample is the one of immigrants. Among students in the control group, immigrants display a significantly lower measure of gender bias compared to the rest of the group (difference magnitude of 16 percentage points, p=0). Moreover, they tend to report on average 2 best friends less than the others in the emoji game (p=0.05). Finally, they tend to choose less the service category (p-value at 4%), as well as the self-employed professions (p-value at 1%).

I analyse the heterogeneous effects of the treatment with respect to the sub-sample of immigrant students as the actor and actress were specifically chosen to inspire them. First, *Table 12* shows the positive effect of the video treatment on the independence index becomes larger in magnitude and has higher significance (p=0.04) when adding both interaction terms between immigrant and treatments. In turn, this specification highlights a specific effect for this sub-group of students, who see a decrease in their level of independence and grit following the video treatment (p=0.1).

When it comes to gender bias, it appears that the treatment increases this measure in the subgroup of foreign nationality students (p=0.02), and this remains true when adding the interaction between immigrant status and the gender of the actor (p=0.08). Furthermore, it appears that this effect is caused by both treatment videos, irrespective of the gender of the actor (*Table 13*).

The video treatment has a statistically significant differential effect on the immigrant category when it comes to trust towards the other (p=007), which however is not significant when adding the interaction term between immigrant status and the second kind of treatment (p=0.35). It appears that the effect is fully driven by those students watching a treatment video with the male actor – regardless of the gender of the respondent (*Table 14*).

Finally, the positive effect on the choice of the profession freelancer caused by the video treatment with a female actor is nullified when the video is watched by an immigrant (*Table 15*).

Table 12: Differential effect on independence index by nationality

VARIABLES	(1) Index	(2) Index	(3) Index	(4) Index	(5) Index
Treatment	0.035*	0.031	0.048*	0.053**	
	(0.071)	(0.163)	(0.050)	(0.035)	
Same sex treatment		0.008	0.008	-0.002	
		(0.661)	(0.681)	(0.925)	
Treatment*Immigrant			-0.059	-0.075*	
			(0.145)	(0.097)	
Same sex treatment*Immigrant				0.032	
				(0.438)	
Immigrant	-0.135***	-0.134***	-0.088	-0.089	-0.089
	(0.004)	(0.004)	(0.130)	(0.127)	(0.128)
Treatment*VM					0.056**
					(0.027)
Treatment*VF					0.047*
					(0.061)
Treatment*VM*Immigrant					-0.062
					(0.175)
Treatment*VF*Immigrant					-0.056
					(0.213)
Mean control	0.5	0.5	0.5	0.5	0.5
Observations	176	176	176	176	176
R-squared	0.139	0.140	0.151	0.154	0.151

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent
VM (VF) is a dummy that takes value 1 if the student watched a video with a male (female) actor.

Table 13: Differential effect on gender bias index by nationality

VARIABLES	(1) Bias	(2) Bias	(3) Bias	(4) Bias	(5) Bias
Treatment	-0.054*	-0.044	-0.086**	-0.082**	
	(0.057)	(0.161)	(0.023)	(0.036)	
Same sex treatment		-0.018	-0.019	-0.026	
		(0.572)	(0.552)	(0.501)	
Treatment*Immigrant			0.140**	0.128*	
			(0.017)	(0.082)	
Same sex treatment*Immigrant				0.024	
				(0.735)	
Immigrant	-0.078	-0.079	-0.188**	-0.189**	-0.187**
	(0.210)	(0.209)	(0.025)	(0.023)	(0.016)
Treatment*VM					-0.080**
					(0.046)
Treatment*VF					-0.115***
					(0.006)
Treatment*VM*Immigrant					0.181**
					(0.013)
Treatment*VF*Immigrant					0.111*
					(0.075)
Mean control	0.34	0.34	0.34	0.34	0.34
Observations	195	195	195	195	195
R-squared	0.237	0.238	0.258	0.259	0.274

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent
VM (VF) is a dummy that takes value 1 if the student watched a video with a male (female) actor.

Table 14: Differential effect on trust by nationality

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Trust	Trust	Trust	Trust	Trust
Treatment	0.281**	0.275*	0.124	0.187	
	(0.033)	(0.069)	(0.468)	(0.302)	
Same sex treatment		0.009	0.010	-0.115	
		(0.948)	(0.948)	(0.547)	
Treatment*Immigrant			0.514*	0.305	
			(0.072)	(0.354)	
Same sex treatment*Immigrant				0.396	
				(0.191)	
Immigrant	-0.026	-0.025	-0.440	-0.434	-0.396
	(0.956)	(0.958)	(0.427)	(0.414)	(0.452)
Treatment*VM					0.089
					(0.623)
Treatment*VF					0.176
					(0.340)
Treatment*VM*Immigrant					0.898***
					(0.004)
Treatment*VF*Immigrant					0.218
					(0.489)
Mean control	1.71	1.71	1.71	1.71	1.71
Observations	219	219	219	219	219
R-squared	0.044	0.044	0.059	0.066	0.083

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent
VM (VF) is a dummy that takes value 1 if the student watched a video with a male (female) actor.

Table 15: Differential effect on career aspirations by nationality

VARIABLES	(1) Artist/ Athlete	(2) Artist/ Athlete	(3) Artist/ Athlete	(4) Artist/ Athlete	(5) Artist/ Athlete
Treatment	0.124*	0.137*	0.185**	0.173*	
	(0.059)	(0.074)	(0.033)	(0.057)	
Same sex treatment		-0.026	-0.027	-0.004	
		(0.742)	(0.737)	(0.970)	
Treatment*Immigrant			-0.159	-0.121	
			(0.289)	(0.498)	
Same sex treatment*Immigrant				-0.072	
				(0.677)	
Immigrant	-0.165	-0.168	-0.040	-0.041	-0.020
	(0.430)	(0.422)	(0.866)	(0.865)	(0.936)
Treatment*VM					0.053
					(0.526)
Treatment*VF					0.316***
					(0.001)
Treatment*VM*Immigrant					-0.031
					(0.860)
Treatment*VM*Immigrant					-0.305*
					(0.072)
Mean control	0.24	0.24	0.24	0.24	0.24
Observations	221	221	221	221	221
R-squared	0.046	0.046	0.051	0.052	0.085

Robust pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Controls include: school level, gender, immigrant status, mother's immigrant status, father's immigrant status, only one parent

VM (VF) is a dummy that takes value 1 if the student watched a video with a male (female) actor.

One small caveat here is that respondents self-identified themselves as immigrant or not before the treatment, and in certain cases this classification was hard to do especially for very young primary school children.

9   Conclusion

Exposure to a motivational video treatment interpreted by a role model increases the measures of self-confidence and perceived independence of the respondent, regardless of the gender of the actor in the video. However, the video does not lead to an improvement in the effort and cognitive skills of the students in the treatment group. This lack of effect in these outcomes directly speaks to the literature: Riley (2017) finds an effect on exam performance because the video showed a character with a positive academic behaviour. On the contrary, the video shown for this research did not mention effort in school.

I find a significant effect on school and career aspirations, which are overall higher among the treated students, in a comparable way as the literature (Porter and Serra, 2019). One caveat here may be some hidden form of Hawthorne effect which cannot be ruled out with the available data. One other interpretation suggests that children update their aspirations based on the role model experience, without tailoring it to their own situation and passion. Both qualitative and quantitative[2] data collected during the interviews point out in this direction: children seem to lack information to make informative choices, and when provided with an example of a career path that goes beyond their everyday experience, they tend to follow it. In light of this result, it emerges the importance of providing children with a variety of examples about available career paths that are not those they can encounter in their everyday life.

When it comes to the effect of the video on the relationships, there seems to be no major

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[2]When asked about their career aspirations, some students replied they want to become an enumerator. This is clearly an example of this mechanism in place, where students face for the first time this new job by talking with an enumerator and update their aspirations accordingly.

differences between treated and control groups. If anything, there is a positive effect on trust towards the others. Finally, there is an effect of the female role model on gender bias, which is significantly lower among the male treated students.

The main limitation of this kind of analysis is the fact that outcome data are collected right after showing the video, and therefore it is possible to measure only short-term effects of the treatment.

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11   Appendix 1

Below are the scripts of the video shown during the interviews.

- Control video, female actress: "I would like to thank you for agreeing to participate to the survey. Remember to answer in a sincere way and that you will not be judged based on your answers. Most of all, remember that you are doing something very important to the researchers. Many, many thanks."

- Control video, male actor: "Hi! Thank you for agreeing to participate to the survey. Your answers are very important to the researchers, because thanks to those new activities and spaces for children will be created[3], to help then learning while having fun. Remember: answer in a sincere way, as your answers will never be used to judge you nor they will be communicated to others, but only to know you better."

- Treatment video, female actress: "Hi, I'm Alexandra, I'm 24-year-old and 12 years ago I moved to Italy. When I was at school, I did not feel enough compared to my classmates, I did not feel up to being able to do whatever I wanted to. It was probably due to the fact that some teachers kept saying to me that I would have not done anything good with my life. However, I remember that since when I was a child, I wanted to study art. Of course, I have never studied the right post-secondary school because the older ones kept saying to me that there was no job [in that field]. Lucky enough, I was brave enough to start the "Accademia di Belle Arti" [comparable to a university in figurative arts]. This was the best choice I could ever make. After three years I worked on my project facing several challenges, I am finally about to realize my first movie".

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[3]The project of this thesis is part of a wider intervention in collaboration with a local NGO, aimed at giving support to most fragile children in the sample. However, this goes beyond the scope of the thesis.

- Treatment video, male actor: "Hi! Thank you for agreeing to participate to this survey. Today, I would like to tell you about my story. During school, for me it was not that easy, and seeing the sacrifices that my parents had to do every day was even harder. Moreover, I was not particularly talented for any subject and therefore I thought that after finishing the school, I would have not known what to do. What I learnt is that you have to understand what you really like and invest on your passions. Today, I am peaceful when I think about the results I achieved and I am happy about the path I walked through. Enjoy the rest of the survey!"

Figure 1 shows a screenshot taken from the two treatment videos; the same actors recorded also the control videos.

Figure 1: Screenshots from the two treatment videos
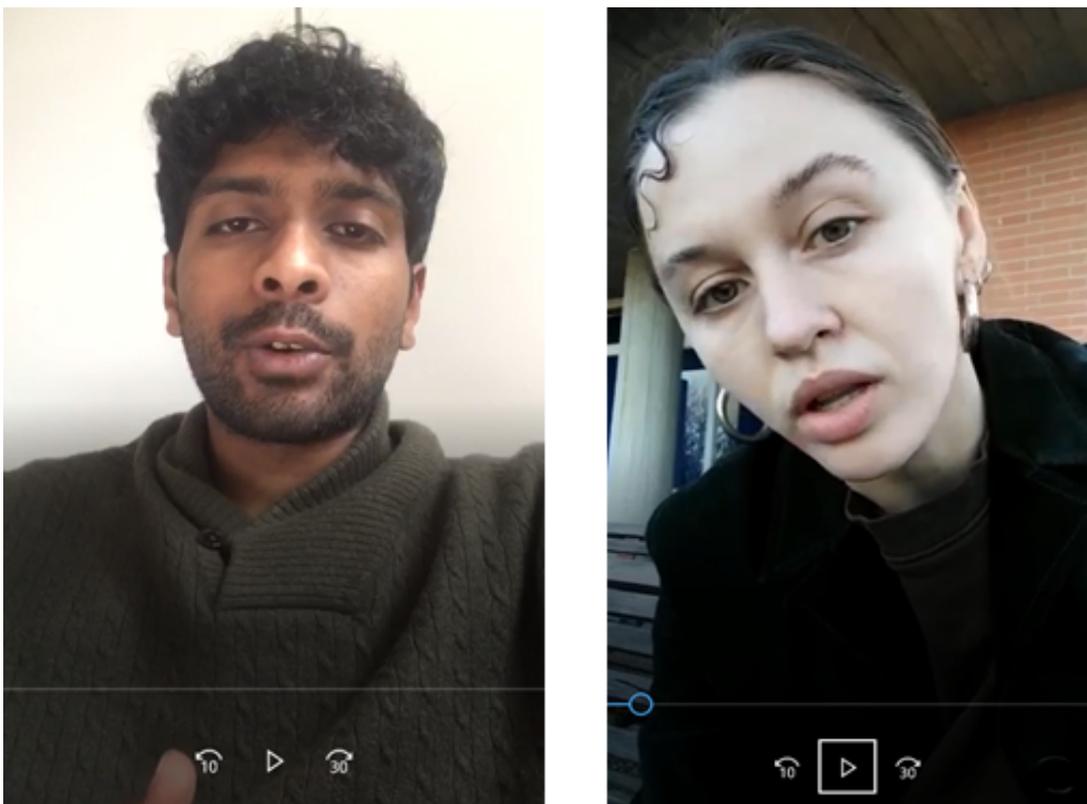
12 Appendix 2

This section explores in detail the questions that are used to build the outcome indexes.

The index that measures the level of student confidence and independence builds on the following questions, with answers on a 4-level agreement scale. Questions were then transformed into dummies equal to 1 if the answer was the highest level of agreement[4]. For questions with *, the agreement scale was reversed in building the index, in order to have an index consistent with the overall question. Questions on grit and believes on effort and diligence are largely based on Alan et al. (2017).

- Questions on the perception of success:

  "To achieve your goals, which of the following is important to you?"

    - Your motivation

    - Help from your family*

    - Help from your teachers*

    - Help from your friends*

- Questions on the perception of obstacles to success

  "Which of the following can hinder your success?"

    - Lack of money*

    - My family's ideas on my future*

    - My personal projects outside school

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[4]The choice was based on the fact that the majority of students agreed generally with the statement, therefore the division between "agree" and "strongly agree" is found to be more informative than any other split of the answers.

- I don't like school subjects

- My friends / the people I spend time with*

- Questions on the level of grit

  - I can do things independently

  - If I have a problem, I can fix it

  - If I think I can lose at a game, I don't want to continue playing*

  - When I receive a bad result on a test, I spend less time on this subject and focus on other subjects that I'm actually good at*

  - I prefer hardest homework that makes me reflect a lot, rather than easy homework that I can complete easily

- Questions about effort and diligence

  - If one is not good in a subject, exerting lot of effort will not help you becoming good in that subject.*

  - Drawing or playing an instrument are skills that anybody can learn.

  - Truly intelligent people do not need to try hard.*

  - If I study and exert enough effort, I could be the best student of the class.

The second index is a measure of gender bias, and builds on the following questions.

- Self-reported gender bias

  - From a biological point of view, scientific skills are equal in men and women.*

  - Earning money for the family is exclusive responsibility of men.

  - Taking care of the house and children is exclusive responsibility of the women.

    – If he tries hard enough, a poor but intelligent man can become rich.**

    – If she tries hard enough, a poor but intelligent woman can become rich.**

- Gender bias in jobs

  "Now I will tell you a number of jobs. Do you think they are men's jobs, women's jobs, or both could do them?"

  List of jobs: babysitter, politician, house cleaner, salesperson, chief, dancer, scientist, astronaut, teacher, athlete, policeman.

The first group is based on questions on a 4-level agreement scale. Questions were then transformed into dummies equal to 1 if the answer was the highest level of agreement[5]. For questions with *, the agreement scale was reversed in building the index, in order to have an index consistent with the overall question. Question with ** where combined together, and the absolute value of the difference was inserted in the index. For the second group of questions, a dummy was created equal 0 for the answer "both", or 1 for either "man" or "woman"; all questions were then combined into a binary index closer to 1 the higher the gender bias.

The third index measures overall wellbeing, and is based on the following questions:

- Psychological wellbeing

  – Do you think you can do whatever you want in your life?

  – Are you happy in general?

  – Are you satisfied with who you are?

  – Do you feel safe in general?

- Wellbeing over the last week

  – Where you brave or scared?

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[5]The choice was based on the fact that the majority of students agreed generally with the statement, therefore the division between "agree" and "strongly agree" is found to be more informative than any other split of the answers.

- Were you full of energies or weak?

- Were you relaxed or worried?

- Were you calm or couldn't help to stay seated?

- Were you hungry or couldn't eat much?

- Did you sleep well or not?

- Were you happy or sad?

- Were you peaceful or angry?

- Were you physically ok or had stomach ache/headache?

- Did you feel you were important or unworthy?

- Did you feel surrounded by people who loved you or you felt alone?

The first group of questions were on a 4-level agreement scale. Questions were then transformed into dummies equal to 1 if the answer was the highest level of agreement[6]. The second groups of questions (Le Bris, 2017), also on a 4-level agreement scale, were converted into dummies equal 1 for the two positive answers, 0 otherwise.

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[6]The choice was based on the fact that the majority of students agreed generally with the statement, therefore the division between "agree" and "strongly agree" is found to be more informative than any other split of the answers.

13   Appendix 3

This section provides further information on the tasks performed by the respondents during the interview.

Figure 2 shows the mazes administered to the students: the first and the second were shown to primary school students; the second and the third were shown to secondary school students.
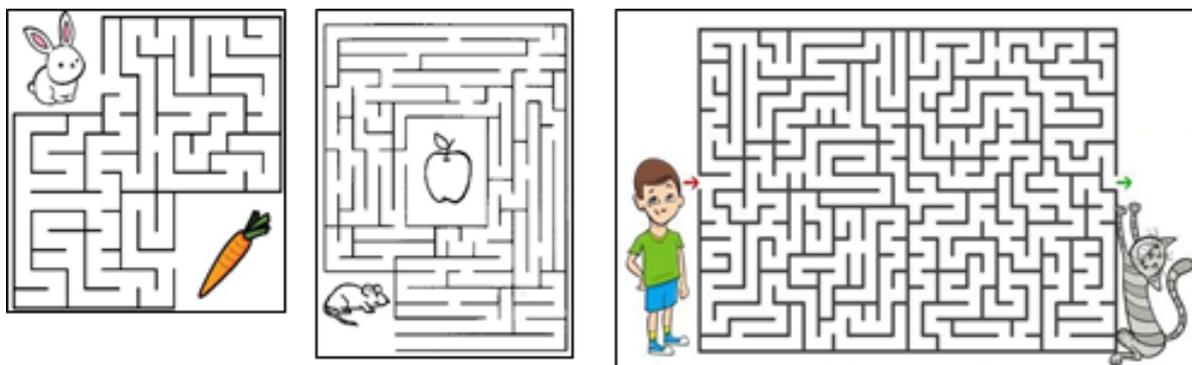
Figure 2: Mazes

Figure 3 collects the four Raven matrices and the trial one (the first in the figure).
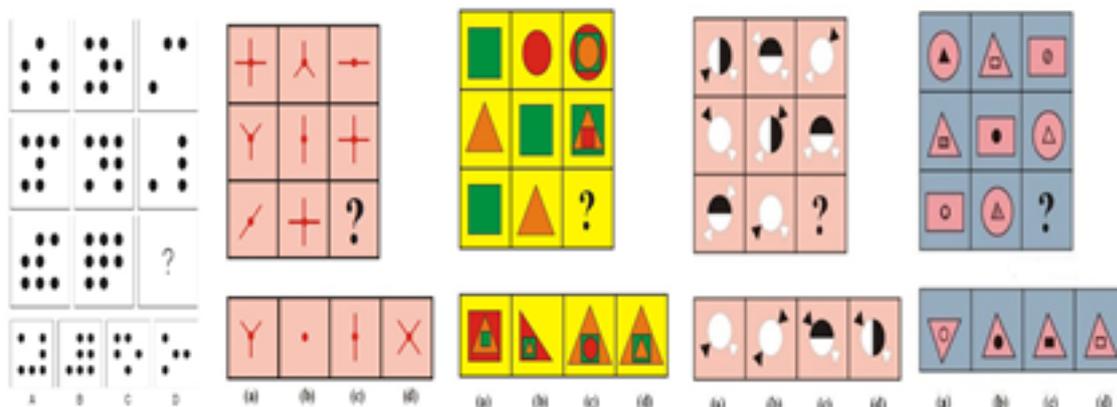
Figure 3: Raven's matrices

Figure 4 shows the three emoji to be associated with classmates' names read by the enumerator.

Figure 4: Emoji