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DISCUSSION PAPER SERIES

IZA DP No. 17733

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ABSTRACT

Top-Performing Girls Are More Impactful Peer Role Models than Boys, Teachers Say*

We examine teachers' perceptions toward top performing students and their role model influence on others in an online survey-based experiment. We randomly expose teachers to profiles of top performing students and inquire whether they consider the profiled top performers to be influential role models. These profiles varied by gender and field of study (STEM or Non-STEM). Our findings show that teachers perceive top-performing girls as more influential peer role models compared to top-performing boys. We also investigate the qualities teachers perceive top performers who are successful role models to have. We show that teachers associate a greater sense of learning autonomy and sense of being an example with top-performing girls compared to top-performing boys. Estimated effects are more pronounced among teachers with children and teachers in urban areas. Administrative data from a representative sample show limited observed differences between top-performing boys' and girls' educational outcomes that could justify the differences in teachers' gender perceptions. These findings carry significant implications for education, as teachers play a crucial role in the cultivation of positive externalities between students.

JEL Classification: I21, I24, J16, D83, C90

Keywords: teacher gender stereotypes, randomized controlled trial, peer role models, STEM

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Significance Statement

We elicit teacher perceptions about top performers, who hold the potential of influencing the education production function of other students. If teachers consistently perceive some students, even top performers, as less impactful role models, teachers may limit the set or impact of available role models in the classroom, potentially limiting the positive externalities between students. Teachers are found to perceive top-performing girls as more impactful role models than top-performing boys in an online survey-based randomized experiment. Additionally, we explore the qualities linked to top performers' role model status, finding that teachers perceive top-performing girls to possess an increased sense of learning autonomy and sense of being an example compared to top-performing boys.

1 Introduction

Role models are exceedingly valuable in a person's life (Di, 2024; Riley, 2024). They are usually exemplary individuals who inspire others to ideate a potential self and take steps to realize their potential Gladstone and Cimpian (2021); Haider, Snead, and Bari (2016); Morgenroth, Ryan, and Peters (2015). Standard classroom-based instruction, in particular, relies heavily on role model influences among peers. This is based on the "shining light" paradigm, which suggests that having exemplary students in the classroom has positive externalities for other students through imitation and motivation Lavy, Silva, and Weinhardt (2012); Sacerdote (2011); Zhang and Pu (2017). To date, peer role models are believed to [1] increase the effectiveness of schooling, and [2] facilitate positive behavioral spillovers, amplifying education intervention effects Neumark and Gardecki (1996); Porter and Serra (2020).

Teachers play a vital role in guiding and inspiring students to look up to certain peers as role models (Audley-Piotrowski, Singer, and Patterson, 2015). They may, for instance, guide students to emulate the study habits of diligent classmates. As a result, role model influences in observational outcomes, such as test scores, may be confounded by teachers who may or may not facilitate peer role model influences in their classrooms. Whether teachers create a classroom culture that is conducive to role model interactions may depend on their own perceptions and stereotypes. For example, research has shown that teachers may have significant gender stereotypes (Carlana, 2019; Lavy, 2008; Lavy and Megalokonomou, 2024; Lavy and Sand, 2018; Sabarwal, Abu-Jawdeh, and Kapoor, 2022; Terrier, 2020; Tiedemann, 2002). In this paper, we conduct a randomized survey-based experiment to elicit teacher perceptions regarding the role model influence of top-performing boys and girls. While teachers may recognize the ongoing discourse concerning the influence of role models, there remains a paucity of empirical evidence addressing their perceptions regarding the effects of these role models.

Top performers may be considered as role models for their peers for three reasons. First, top performers usually demonstrate a strong commitment to academic excellence (Salmela and Uusiautti, 2015). Thus, their achievements may inspire their peers, encouraging them to strive for similar success.

Second, top-performing students may exhibit leadership qualities, such as confidence, autonomy, and responsibility in their approach to learning and collaboration (Gannouni and Ramboarison-Lalao, 2018). Third, exceptional students often display positive behavior and attitudes toward learning (Baumann and Harvey, 2021). Teachers and classmates may recognize these traits as role model qualities and as influential in molding a classroom culture conducive to learning.

Separating teachers' perceptions about the role model potential of students and other student characteristics is challenging in non-experimental settings. Top-performing boys and girls, for instance, may have different academic profiles, personalities, and other traits relevant to their role model influence on their peers. Our online survey-based experiment addresses this challenge by presenting fictitious top performer profiles. These profiles are identical except for two manipulated characteristics: the gender of the top performer and type of subject they excel in (STEM- or Non-STEM-related).

Prior studies suggest that girls may benefit more from the presence of female role models than boys. Specifically, research has found positive and significant effects from female mentors on female students' productivity (Breda, Grenet, Monnet, and Van Effenterre, 2023; Neumark and Gardecki, 1998; Wu, Thiem, and Dasgupta, 2022), as well as the positive influence of female peers on female students (Dasgupta, Scircle, and Hunsinger, 2015; Dennehy and Dasgupta, 2017; Goulas, Gunawardena, Megalokonomou, and Zenou, 2024). The literature has also shown that a higher share of high-achieving girls in the classroom improves girls' test scores and the overall classroom learning productivity Goulas, Megalokonomou, and Zhang (2023); Modena, Rettore, and Tanzi (2021); Mouganie and Wang (2020). Two key mechanisms have been proposed. First, girls may be less disruptive in the classroom than boys, creating an environment that may be more conducive to learning (Goulas, Megalokonomou, and Zhang, 2023; Lavy and Schlosser, 2011). Second, girls may be higher-performing than boys, leading to positive ability spillover effects on others (Bijou and Liouaeddine, 2018; Goulas, Megalokonomou, and Zhang, 2022).

In this study, we conducted a survey-based randomized controlled trial (RCT) among teachers in Greece to understand whether they view top-performing boys and girls as role models. Teachers were shown pictures of top-performing students writing on a whiteboard with varied gender and whiteboard content (STEM- or Non-STEM-related) to gather their perceptions. Our research design allows us to explore the intersection between perceived role model influences and gender stereotypes about STEM and Non-STEM fields. Specifically, we explore whether teachers perceive a top-performing girl in STEM as a more impactful role model than a top-performing boy in the same field (Shin, Levy, and London, 2016). This inquiry arises from the prevailing notion that proficiency in STEM subjects is traditionally associated more with boys than with girls (Cuddy, Fiske, Kwan, Glick, Demoulin, Leyens, Bond, Croizet, Ellemers, Sleebos, et al., 2009; Riegle-Crumb and Humphries, 2012).

Our first order result is that teachers confirm that role model influences among classroom peers exist. We also show that teachers recognize top-performing girls as wielding a greater influence as peer role models compared to boys, particularly evident within Non-STEM subject areas. Our analysis shows the gendered nature of teacher perceptions regarding role models, impacting not only short-term outcomes like test scores but also shaping longer-term decisions such as track selection, college major preferences, and career trajectories.

We also explore the qualities underpinning perceived role model influences, examining whether top performers are perceived to have heightened confidence, learning autonomy, or a stronger sense of being an example for others (Breda, Grenet, Monnet, and Van Effenterre, 2023; Chai, 2015; Gannouni and Ramboarison-Lalao, 2018; Goulas, Gunawardena, Megalokonomou, and Zenou, 2024; Haider, Snead, and Bari, 2016; Morgenroth, Ryan, and Peters, 2015). Our findings reveal that teachers attribute a greater sense of autonomy and sense of being an example to top-performing girls compared to top-performing boys. These perceived attributes among top-performing girls may help explain why teachers perceive them as having a greater impact on their classmates.

We complement our RCT results with two empirical investigations using administrative data on test scores and attendance from 120 public high schools in Greece. The first one explores whether teachers' beliefs reflect statistical bias related to gender differences in top performers' academic performance. We find scant evidence of differences in scores or attendance of top-performing boys and girls, effectively dispelling the notion of substantial statistical bias among teachers (i.e., gender-based perceptions may not mirror actual gender gaps in top-performing students' academic performance and conduct). In a second investigation, we explore the impact of top-performing boys and girls on their peers' academic outcomes. We compare the end-of-year scores of students in quasi-randomly formed classrooms with a top-performing girl with scores of students in classrooms with a top-performing boy. We find that students quasi-randomly assigned (in the beginning of the year) in a classroom with a top-performing girl have a significantly higher end-of-year performance relative to students in classrooms with a top-performing boy. These findings corroborate our RCT results and substantiate teachers' perceptions that top-performing girls may be more influential role models than top-performing boys.

We contribute to the existing literature in several important ways. First, we contribute to the literature on teacher gender stereotypes. We elicit teacher perceptions about top performers, who hold the potential of influencing the education production function of other students. Our experimental findings reveal an additional dimension of teachers' bias that may affect their behaviors and attitudes. These perceptions can shape whether teachers actively guide other students' attention toward these high achievers, and may also reflect prevailing social norms. Diagnosing biases in social norms is a crucial first step in behavioral change (Tankard and Paluck, 2016). Second, we contribute to a growing literature on the role model function of school peers (Goulas, Gunawardena, Megalokonomou, and Zenou, 2024). Given the extensive time students spend in schools and the developmental flexibility inherent in school-age children, educational settings offer fertile ground for the cultivation of role model influences. Third, our study illuminates the qualities teachers perceive influential role models to have. These insights are valuable in crafting interventions aimed at harnessing and amplifying the positive impact of role models. For instance, interventions targeting the strengthening of learning autonomy may serve to propagate role model influences among peers.

2 Current Study

Drawing on prior education research (Angrist and Lavy, 2009; Dobrescu, Faravelli, Megalokonomou, and Motta, 2021; Muralidharan, Singh, and Ganimian, 2019), we designed a randomized online survey-based experiment to investigate teachers' perceptions of the role model influence of top-performing boys and girls on their peers. Collaborating closely with the Ministry of Education, we randomly selected local school authorities of elementary and secondary education across Greece. Subsequently, school principals facilitated teacher participation in our online RCT, conducted via computer labs at schools in 2022. Participating teachers were provided with a link to the digital Qualtrics survey. To incentivize participation, we pledged a donation of 0.50 Euro to a philanthropic foundation of each participant's choosing for every completed response. Spanning the entirety of the country geographically (as illustrated in Figure S5), our study was approved by the Institutional Review Board (IRB) at Stanford University, with informed consent obtained from all participating teachers.

We collected data on teachers' demographic characteristics, subject specializations, personal educational experiences, explicit biases, and perceived grading leniency. Specifically, we explored their personal educational journeys, including their ability to recall the gender of top and second-best performers in their own early high school classroom—effectively tracing potential cognitive imprints of role models from their formative years to discern any predispositions toward the role of top performers as influential models today. We captured explicit biases in two ways. First, we inquired whether teachers demonstrate leniency toward girls as opposed to boys. Second, we probed teachers regarding their perceptions of gender associations with particular occupations.

Participants were then shown one of four profiles randomly selected: a top-performing girl in STEM, a top-performing girl in Non-STEM, a top-performing boy in STEM, and a top-performing boy in Non-STEM (Fig. 1). Employing a computer-generated randomization process, teachers were allocated to one of these profiles. Each prompt included a profile picture accompanied by the inquiry: "A top-performing [boy or girl] student in your classroom would be impactful for others with respect to:" Participants were then prompted to rate, using a 0-100 scale (with zero reflecting no influence and 100 reflecting highest influence), the perceived impact of top-performing students across various domains including STEM performance, Non-STEM performance, classroom conduct, track selection in high school,[1] college major choice, and occupational pursuits (additional details are provided in *Materials and Methods*). Profile pictures were carefully selected to subtly convey student excellence in different subjects while

[1]Students in each track (i.e., Classics, Science, Information Technology) take a set of mandatory track-specific courses in addition to general education courses.

avoiding explicit influence on participants (Deutskens, De Ruyter, Wetzels, and Oosterveld, 2004; Jansen, Boumeester, Coolen, Goetgeluk, and Molin, 2009; Van Auken, Golding, and Brown, 2012). The content displayed on the whiteboard in each picture was consistent for boys and girls within the same subject, ensuring experimental neutrality.[2] Following exposure to a randomly assigned profile, teachers were promptly queried about their perceptions of the impact of top-performing boys or girls on their peers (see Figures S6-S9).

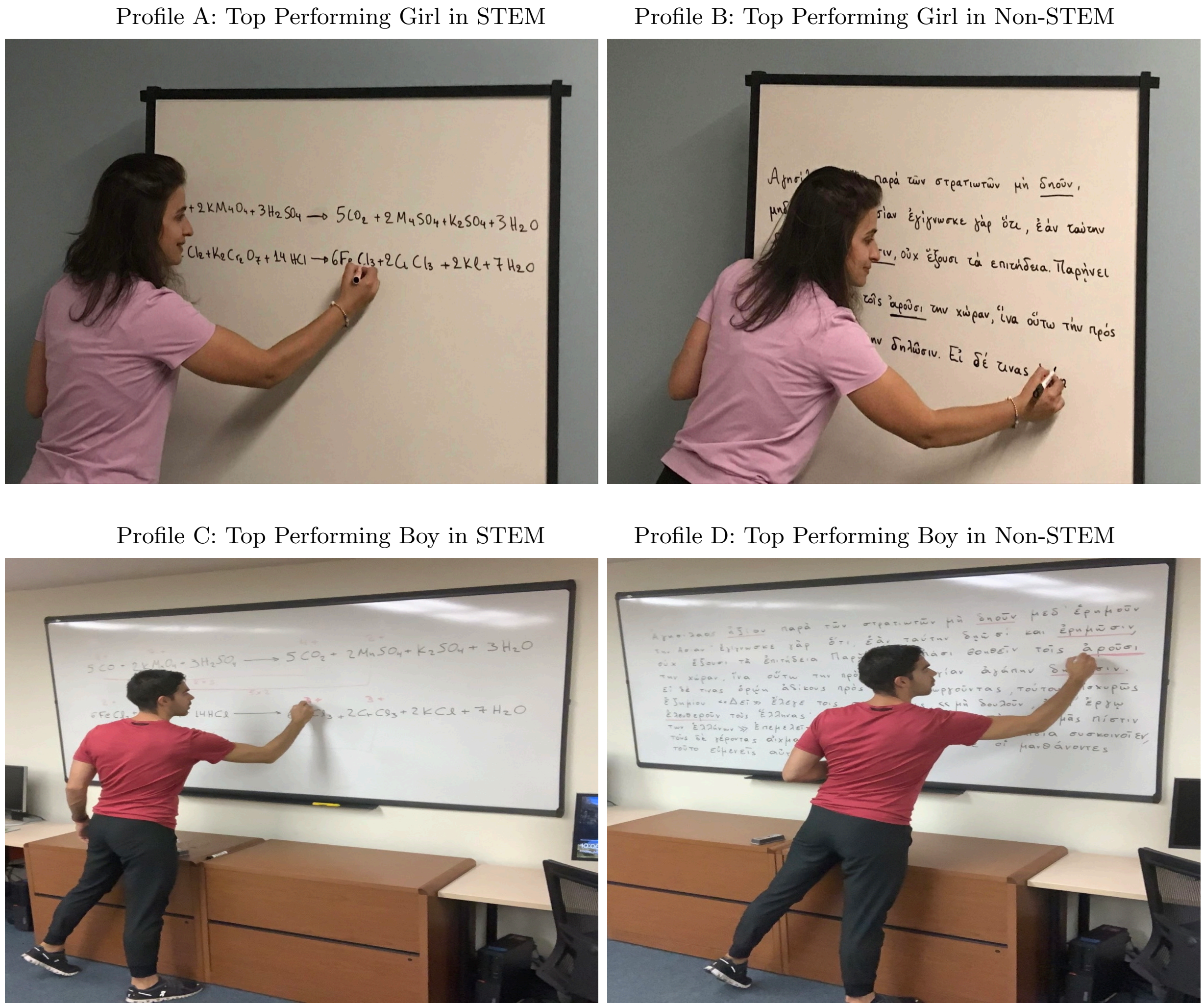


Figure 1: Randomized Survey Experiment Profiles. Each participant was randomly exposed to one of the following treatment scenarios: top-performing girl in STEM (Fig. 1 Profile A), top-performing girl in Non-STEM (Fig. 1 Profile B), top-performing boy in STEM (Fig. 1 Profile C) and top-performing boy in Non-STEM (Fig. 1 Profile D).

[2]Section S1 in the Supplementary Appendix discusses results of an auxiliary survey conducted to investigate differential participants' perceptions of role model influences because the whiteboard content may be perceived as indicator of hard work, effort, diligence, or attention to detail.

3 Results

Respondent Characteristics

Our analytical sample includes 670 responses.[3] Table S1 reports respondent demographics, specializations, personal educational experiences, explicit biases, and survey characteristics (i.e., survey timing, and duration).

Given the randomized assignment of student profiles, we anticipate no systematic discrepancies in their assignment to participants. Table 1 confirms the absence of such differences in a balancing test across the treatment conditions of *Shown Boy* (N: 333) and *Shown Girl* (N: 337).

Columns 1 and 2 show the mean and standard deviation for teachers exposed to a top-performing girl. Columns 3 and 4 report the mean and standard deviation for teachers exposed to a top-performing boy. Column 5 presents the difference in means between columns 1 and 3. Column 6 shows the standard errors. We find no statistically significant differences in participant or survey characteristics across the treatment conditions of *Shown Boy* and *Shown Girl*. We further conduct balancing tests across all four treatment scenarios (*Shown Girl in STEM*, *Shown Boy in STEM*, *Shown Girl in Non-STEM*, and *Shown Boy in Non-STEM*), with the results detailed in Tables S2 and S3. The balancing tests show absence of statistically significant differences across all treatment conditions, corroborating the successful randomization process.

Results by Top Performer Gender

Fig. 2 (A) shows that teachers perceive both top-performing girls and boys as having a role model influence on their peers, with outcomes significantly different from zero. We find that teachers attribute greater role model influence to top-performing girls compared to top-performing boys in almost every outcome, including Non-STEM performance ($p < 0.001$), conduct (79% vs. 60%; $p < 0.001$), track choice (60% vs. 54%; $p = 0.006$), college major choice (64% vs. 53%; $p < 0.001$), and occupational pursuits (60% vs. 51%; $p = 0.001$). There is no discernible difference in the perceived impact on other students' STEM performance between top-performing girls and boys (73% vs. 70%; $p = 0.200$).

We investigate the robustness of our results by controlling for a rich set of respondent and survey characteristics (Eq. (1) in *Material and Methods*). Fig. 2 (B) reports our results in standard deviation (SD) units. We find that even after adjusting for respondent characteristics, teachers associate top-performing girls with a significantly higher role model influence on other students' Non-STEM performance ($\hat{\beta} = 0.581$, $SE = 0.074$, $p < 0.001$), conduct ($\hat{\beta} = 0.349$, $SE = 0.077$, $p < 0.001$), track choice ($\hat{\beta} = 0.185$, $SE = 0.078$, $p = 0.017$), college major choice ($\hat{\beta} = 0.300$, $SE = 0.076$, $p < 0.001$), and occupational choice ($\hat{\beta} = 0.233$, $SE = 0.077$, $p < 0.001$) compared to top-performing boys.

[3] For details on the final sample construction, see *Materials and Methods*.

Table 1: Balancing Test Across Shown Girl and Shown Boy Conditions

	(1)	(2)	(3)	(4)	(5)	(6)
	Shown Girl		Shown Boy		Difference	
	Mean	SD	Mean	SD	Mean	SE
Demographics and History						
Female (1=Yes)	0.82	0.38	0.81	0.39	0.01	0.03
Age (Years)	41.30	10.35	41.23	10.72	0.06	0.88
Have a Daughter (1=Yes)	0.48	0.50	0.43	0.50	0.05	0.05
Have a Son (1=Yes)	0.48	0.50	0.43	0.50	0.05	0.05
Urban Residence (1=Yes)	0.56	0.50	0.53	0.50	0.03	0.04
Teacher's Specialization (1=Yes):						
Pre-school Education	0.09	0.29	0.09	0.29	0.00	0.02
Primary School Education	0.35	0.48	0.31	0.46	0.04	0.04
Secondary Education:						
STEM Subjects	0.17	0.38	0.19	0.39	-0.01	0.03
Social & Humanitarian Subjects	0.09	0.28	0.11	0.32	-0.03	0.03
Greek Language	0.18	0.39	0.18	0.38	0.00	0.03
Foreign Languages	0.12	0.32	0.12	0.33	-0.00	0.03
School Years History (1=Yes):						
Remember Top Performer's Gender	0.86	0.35	0.87	0.34	-0.01	0.03
Remember Second Best's Gender	0.61	0.49	0.57	0.50	0.04	0.04
Top Performer was Female	0.80	0.40	0.78	0.41	0.02	0.04
Second Best was Female	0.80	0.40	0.75	0.43	0.05	0.04
Was Top or Second Best Performer	0.24	0.43	0.22	0.42	0.02	0.03
Explicit Biases						
Do you Associate the Following Occupation with a Specific Gender? (1=Yes)						
Engineer	0.24	0.43	0.22	0.42	0.02	0.04
Lawyer	0.04	0.20	0.04	0.20	0.00	0.02
Greek Language Teacher	0.14	0.35	0.10	0.30	0.04	0.03
Math Teacher	0.12	0.33	0.08	0.27	0.04	0.03
Reported Leniency Toward Female Students (1=Yes)	0.17	0.37	0.15	0.35	0.02	0.03
Survey Characteristics						
Fall Survey (1=Yes)	0.27	0.44	0.20	0.40	0.07	0.03**
Duration (Minutes)	7.72	2.94	7.37	2.97	0.35	0.23

The table reports summary statistics for teachers across the treatment conditions *Shown Boy* (N: 333) and *Shown Girl* (N: 337). *Shown Girl* refers to the treatment condition in which a participant was exposed to a profile of a top-performing girl. *Shown Boy* refers to a treatment condition in which a participant was exposed to a profile of a top-performing boy. STEM subjects include mathematics, physics, chemistry, biology, and computer science. Social & humanitarian subjects include theology, art, sociology, and economics. Greek language courses include Greek literature, language, and philosophy. *, ** and *** indicate statistical significance from two sample mean comparison t-tests at the 10%, 5% and 1% level respectively.

We conduct a subsequent survey investigation of perceptions regarding study effort, attention to detail, diligence, and productivity associated to mitigate concerns about the amount of the whiteboard content displayed in the stimuli potentially priming respondents in favor of boys. We find no evidence of bias in favor of boys attributable to perceptions regarding study effort, attention to detail, diligence, or productivity (Tables S16 and S17).

Taken together, these findings suggest that the average effect size (i.e., the difference between the *Shown Girl* and *Shown Boy* conditions) across all outcomes is 0.289 SD ($SE = 0.058$, $p < 0.001$).[4] This indicates that teachers expect top-performing girls to have a greater influence on their peers, with a margin of 0.289 standard deviations compared to top-performing boys.

Results by Top Performer Gender and Subject Area

We further explore our baseline findings to investigate whether teachers' gender bias differs across academic domains (STEM vs. Non-STEM subjects). We do so by following two approaches. First, we estimate models including the interaction term between *Shown Girl* and *Shown Non-STEM* conditions (Eq. (2) in *Material and Methods*). This approach allows us to estimate the STEM-specific gender bias relative to the Non-STEM-specific gender bias and gauge the statistical significance of their difference. Table S5 presents the results controlling for participant and survey attributes. The marginal effect of the treatment condition *Shown Girl in Non-STEM* compared to the treatment condition *Shown Boy in Non-STEM* is given by the sum of the $\hat{\beta}_1$ and $\hat{\beta}_3$ coefficients. Regression results show that teachers perceive top-performing girls in Non-STEM as more impactful role models than top-performing boys in Non-STEM with respect to the outcome of STEM performance ($\hat{\beta}_1 + \hat{\beta}_3 = 0.316$, $SE = 0.109$, $p = 0.004$), Non-STEM performance ($\hat{\beta}_1 + \hat{\beta}_3 = 0.771$, $SE = 0.103$, $p < 0.001$), conduct ($\hat{\beta}_1 + \hat{\beta}_3 = 0.482$, $SE = 0.109$, $p < 0.001$), track choice ($\hat{\beta}_1 + \hat{\beta}_3 = 0.303$, $SE = 0.111$, $p = 0.007$), college major choice ($\hat{\beta}_1 + \hat{\beta}_3 = 0.427$, $SE = 0.109$, $p < 0.001$), and occupational choice ($\hat{\beta}_1 + \hat{\beta}_3 = 0.284$, $SE = 0.109$, $p = 0.010$).

Our regression results also show that teachers perceive top-performing girls in STEM as more impactful role models than top-performing boys in STEM. This difference is captured in the estimated coefficient $\hat{\beta}_1$ in Eq. (2). Teachers perceive top-performing girls in STEM as significantly impactful role models with respect to the outcomes of Non-STEM performance ($\hat{\beta}_1 = 0.407$, $SE = 0.103$, $p < 0.001$), conduct ($\hat{\beta}_1 = 0.228$, $SE = 0.105$, $p = 0.030$), college major choice ($\hat{\beta}_1 = 0.184$, $SE = 0.104$, $p = 0.077$) and occupational choice ($\hat{\beta}_1 = 0.186$, $SE = 0.107$, $p = 0.081$).

We hypothesize that a girl excelling in STEM subjects is perceived as more likely to stand out and inspire her peers because her success contradicts the stereotype that girls are less likely to excel in STEM. However, the inspiration this girl generates may be perceived as more likely to translate into behavior

[4] We computed the average treatment effect size following Kling, Liebman, Katz, and Sanbonmatsu (2004). Let β^μ denote the estimated coefficient for the outcome variable μ, and σ^μ denote the standard deviation of the same coefficient and outcome μ. The average treatment effect would be equal to $\frac{1}{M}\sum_{\mu=1}^{M}\frac{\beta^\mu}{\sigma^\mu}$, where M is the total number of outcome variables.

that aligns with the stereotype—such as girls studying harder in Non-STEM subjects. This perceived consistency of influence from a standout girl in STEM on Non-STEM performance, rather than STEM performance, may result in a stronger overall signal (i.e., greater estimated effect) with tighter confidence intervals for Non-STEM outcomes compared to STEM outcomes.

We also present how the marginal effects vary across gender (Girl vs. Boy) and subject (STEM vs. Non-STEM). Fig. 2 (C) shows significant differences with respect to the outcome of STEM performance ($\hat{\beta} = 0.414$, $SE = 0.150$, $p < 0.001$), Non-STEM performance ($\hat{\beta} = 0.364$, $SE = 0.145$, $p = 0.012$) and conduct ($\hat{\beta} = 0.254$, $SE = 0.150$, $p = 0.088$).

Our second approach is based on a split-sample (heterogeneity) analysis that mirrors the baseline investigation in comparing teachers' perceptions of the role model influence exerted by top-performing girls and boys. This approach produces similar estimates (Figure S1 (A)) with our results remaining robust after controlling for respondent and survey characteristics (Figure S1 (B)) (see Table S4 for detailed results).

Overall, our results suggest that teachers' gender bias differs across academic domains with the effects are more pronounced in terms of magnitude and precision for top-performing girls in Non-STEM subjects.

Role Model Qualities

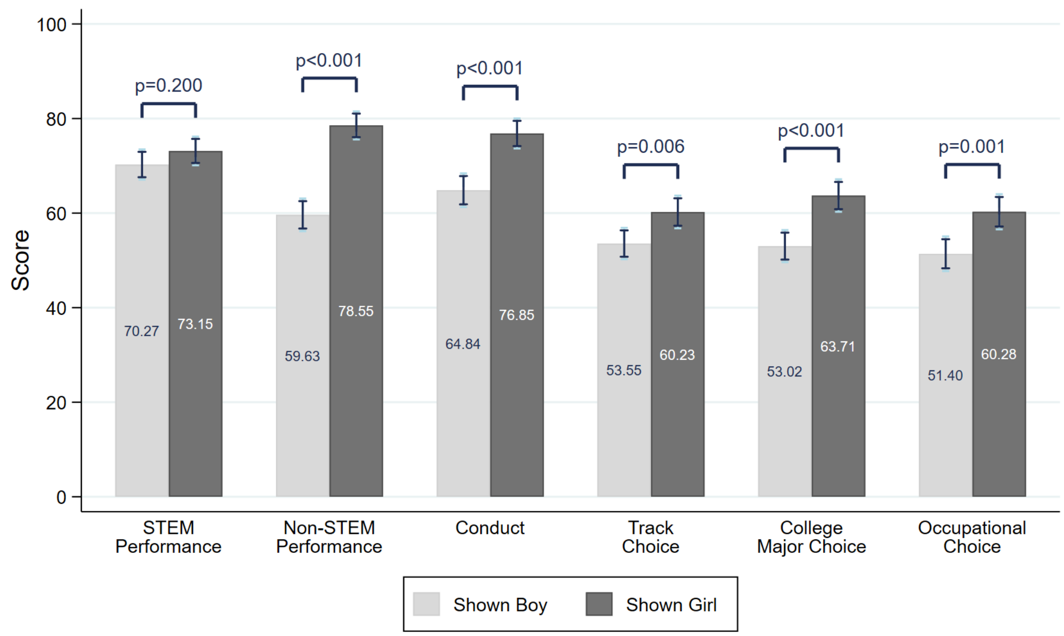
We inquire into the qualities teachers perceive top performers who are successful role models to have. We focus on aspects such as confidence, learning autonomy, and sense of being an example for others. Recognizing that these traits may be associated with their status as exemplary students, we hypothesize that such characteristics could heighten their influence on other students.

Overall, teachers perceive top-performing girls to have a greater sense of autonomy ($p < 0.001$) and sense of being an example ($p = 0.036$) relative to top-performing boys (Fig. 3 (A)). We find no differences in how confident teachers expect top-performing girls and boys to feel. Our results remain robust when controlling for respondent and survey characteristics. Specifically, teachers expect the top-performing girls who are successful role models to experience a greater sense of autonomy ($\hat{\beta} = 0.332$, $SE = 0.084$, $p < 0.001$) and a greater sense of being an example ($\hat{\beta} = 0.207$, $SE = 0.085$, $p = 0.015$) relative to top-performing boys (Fig. 3 (B)).[5]

Among top performers in Non-STEM subjects, teachers perceive girls to possess greater learning autonomy ($\hat{\beta}_1 + \hat{\beta}_3 = 0.476$, $SE = 0.122$, $p < 0.001$) and a greater sense of being an example for others ($\hat{\beta}_1 + \hat{\beta}_3 = 0.371$, $SE = 0.118$, $p = 0.002$) (Table S7). Among top performers in STEM subjects, teachers

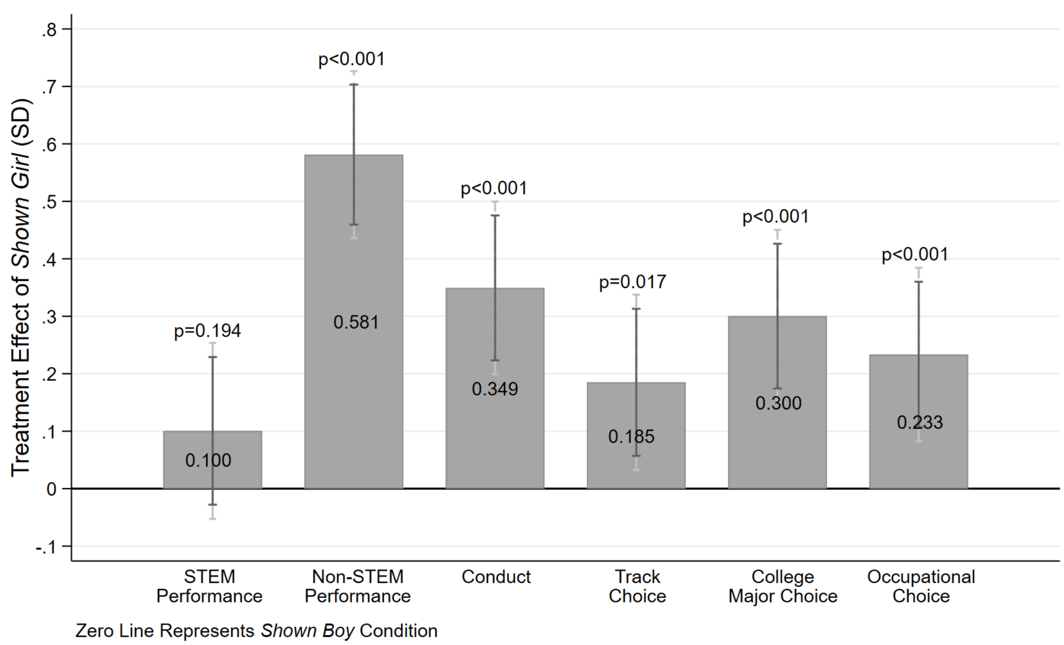
[5]A mediation investigation (see Table S15) shows that teachers' perceptions of top-performing girls' sense of autonomy and their sense of being an example significantly mediate the influence of these girls as role models, compared to top-performing boys, across all outcomes. However, teachers' perceptions of top-performing girls' confidence do not significantly mediate their role model influence relative to boys in any outcome.

(A)



Score
100
80
60
40
20
0
p=0.200
p<0.001
p<0.001
p=0.006
p<0.001
p=0.001
70.27
73.15
59.63
78.55
64.84
76.85
53.55
60.23
53.02
63.71
51.40
60.28
STEM Performance
Non-STEM Performance
Conduct
Track Choice
College Major Choice
Occupational Choice
Shown Boy
Shown Girl

(B)



Treatment Effect of *Shown Girl* (SD)
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
p=0.194
p<0.001
p<0.001
p=0.017
p<0.001
p<0.001
0.100
0.581
0.349
0.185
0.300
0.233
STEM Performance
Non-STEM Performance
Conduct
Track Choice
College Major Choice
Occupational Choice
Zero Line Represents *Shown Boy* Condition

(C)

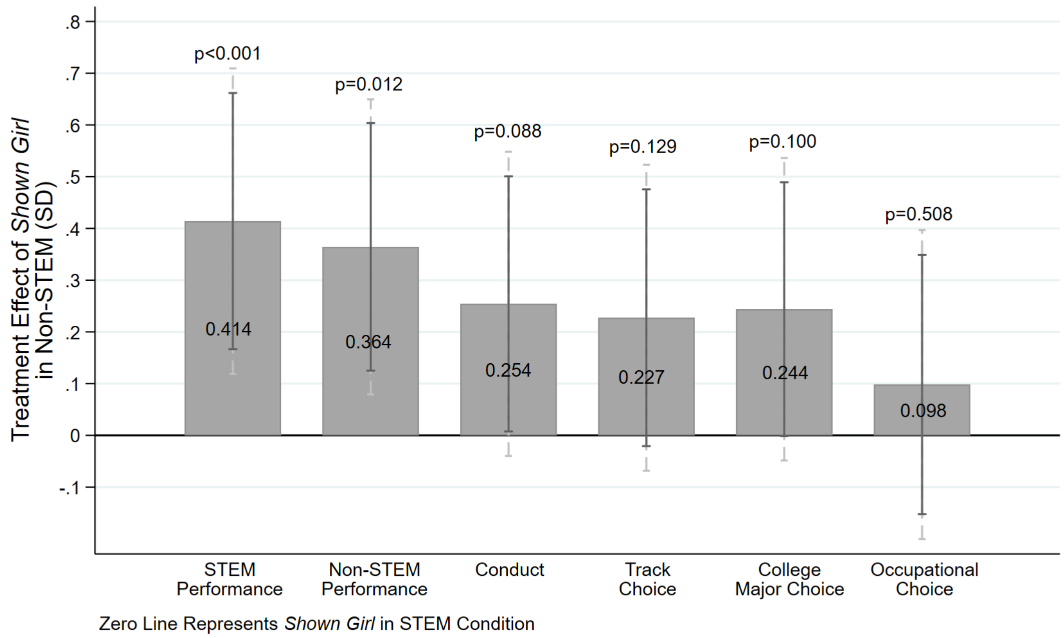


Figure 2: Teacher Perceptions of Role Model Influences of Top Performers. Fig. 2 (A) presents the mean differences in teacher perceptions of role model influences of top-performing boys and girls across all outcomes. The y-axis values are raw scores with a range of [0-100]. P-values denote the significance levels from two sample mean comparison tests. Fig. 2 (B) presents the estimated difference between the treatment conditions of *Shown Girl* and *Shown Boy* in standard deviations, controlling for participant and survey attributes (Eq.(1)). Fig. 2 (C) presents the estimated coefficients of the interaction term between *Shown Girl* and *Shown Non-STEM* treatment conditions in standard deviations, controlling for participant and survey attributes (Eq.(2)). P-values correspond to tests of statistical significance of the estimated differences. Dashed and solid error bars represent 90% and 95% confidence intervals, respectively.

perceive girls to possess greater learning autonomy ($\hat{\beta}_1 = 0.199$, $SE = 0.114$, $p = 0.083$). These differences remain when we use our split-sample approach (Fig. S3 and S4; see Table S6 for detailed results). Estimating the differences of these results, we find significant effects for the outcome of autonomy ($\hat{\beta} = 0.277$, $SE = 0.168$, $p = 0.097$) and sense of being an example ($\hat{\beta} = 0.318$, $SE = 0.170$, $p = 0.061$) (Fig. 3 (C)).

These results suggest that teachers expect top-performing girls to feel more autonomous learners and more as an example for other students, which aligns with their perception of girls being more impactful to their peers.

Results by Teacher Characteristics

We conducted a heterogeneity analysis to investigate whether the baseline effects differ by teachers' sex, age, parental status and residential location. Results suggest that the effects are not statistically different between women (average $\hat{\beta} = 0.322$, $SE = 0.065$, $p < 0.001$) and men teachers (average $\hat{\beta} = 0.256$, $SE = 0.130$, $p = 0.050$) (Table S8) or between teachers below (average $\hat{\beta} = 0.250$, $SE = 0.096$, $p = 0.010$) and above (average $\hat{\beta} = 0.313$, $SE = 0.089$, $p < 0.001$) the median age of 40 years (Table S9). However, our estimates are more pronounced for teachers with children (average $\hat{\beta} = 0.490$, $SE = 0.089$, $p < 0.001$) than teachers without children (average $\hat{\beta} = 0.204$, $SE = 0.106$, $p = 0.054$) (Table S10), and teachers residing in urban areas (average $\hat{\beta} = 0.369$, $SE = 0.081$, $p < 0.001$) than teachers residing in non-urban areas (average $\hat{\beta} = 0.191$, $SE = 0.090$, $p = 0.035$) (Table S11). These results suggest that family life and social context may contribute to teachers' gender stereotypes and consequently their perceptions regarding role model influences. These nuances highlight how teachers and students interact in complex ways, emphasizing the need to consider different demographic and social factors to fully understand these interactions.

Statistical Bias

Our survey results indicate that teachers perceive top-performing girls as more influential peer role models. One may worry that respondent beliefs reflect statistical realities in the study context, particularly if, on average, top-performing girls exhibit better academic and behavioral performance than their counterparts. To address this, we analyze hand-collected administrative transcript and attendance data sourced from the Greek Ministry of Education, covering a representative sample of 120 high schools.[6] First we use information on GPA and unexcused absences. Our investigation reveals limited evidence of differences in overall GPA between top-performing girls and boys (i.e., the highest performing student in each classroom). However, top-performing boys score slightly higher in STEM subjects, while top-performing

[6]This sample corresponds to roughly 10% of public schools in Greece. This is a representative sample of the population of high schools (Goulas, Megalokonomou, and Zhang, 2023).

girls score slightly higher in Non-STEM subjects (Table S12, Panel A). This pattern also holds when examining the top 5% of students in each classroom (Table S12, Panel B) instead of only focusing on the top performer in each classroom. We use unexcused absences as a behavioral proxy for conduct,[7] finding no statistically significant differences between top-performing girls and boys or between girls and boys in the top 5% of students in each classroom.

Next, we leverage information on double-blind exams conducted at the end of year 12 (Lavy and Megalokonomou, 2024). We pursue this approach because actual performance differences, as reflected in GPA, could be influenced by teachers' biases. At the end of high school, students take national exams that determine university admission. Exam papers with masked school and student information are graded by two external graders.[8] Thus, national exam scores are as close as possible to "double-blind" since student's name or gender is not directly revealed to graders and the students do not know the graders. These data enable us to examine differences in academic performance between top-performing boys and girls, minimizing the influence of potential teacher biases. We find that top-performing boys are either on par or outperform top-performing girls in every subject in double blind exams with the exception of modern Greek (Table S13). Overall performance differences, as reflected in GPA, favor girls, with their advantage in Non-STEM subjects surpassing boys' edge in STEM (Table S12). However, results from double-blind exams indicate that top-performing boys outperform top-performing girls in STEM subjects, with boys either matching or exceeding girls' performance in all STEM-related subjects (Table S13). Among, Non-STEM-related subjects top-performing girls outperform boys only in Modern Greek. These patterns hold for both top-performers and the top 5% of students in each class. Overall, these findings indicate that any statistical bias in teacher stereotypes may be limited.

Empirical Evidence

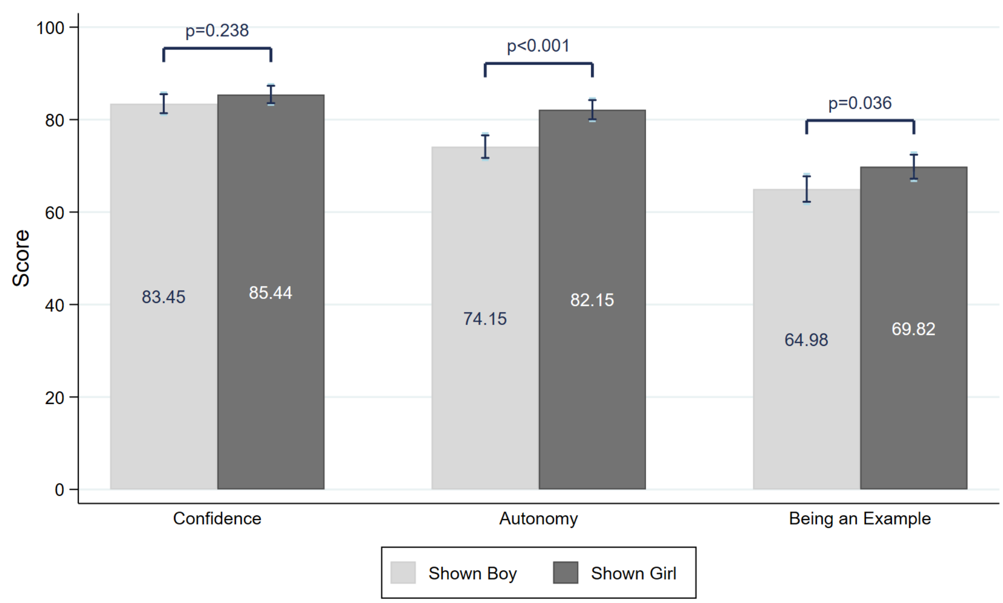
Our administrative data allow us to directly test whether top-performing girls have a greater impact on their classroom peers' academic performance than top-performing boys. A unique feature of the Greek school system is that students are quasi-randomly (alphabetically) assigned to classrooms in the beginning of high school (grade 10), providing exogenous variation in the gender of the top performer in the classroom. Top performers in each classroom are officially recognized and are assigned the task of taking

[7] Attendance measures have been included in indicators of non-cognitive skills in education (Jackson, 2018; Schanzenbach, Nunn, Bauer, Mumford, and Breitwieser, 2016), whereas research has shown positive association between non-cognitive skills and school conduct (Celio, Durlak, and Dymnicki, 2011; Durlak, Weissberg, Dymnicki, Taylor, and Schellinger, 2011). In our context, a student receives an unexcused absence when absent without a doctor's or guardian's note or when expelled from the classroom due to poor behavior. Also, we recognize that unexcused absences is an imperfect measure of the non-cognitive skills necessary for positive role model influences. However, as technology becomes increasingly integrated into education and student communication shifts to digital platforms, we can expect more measures of attention, engagement, extracurricular participation, collaboration, and social skills to emerge.

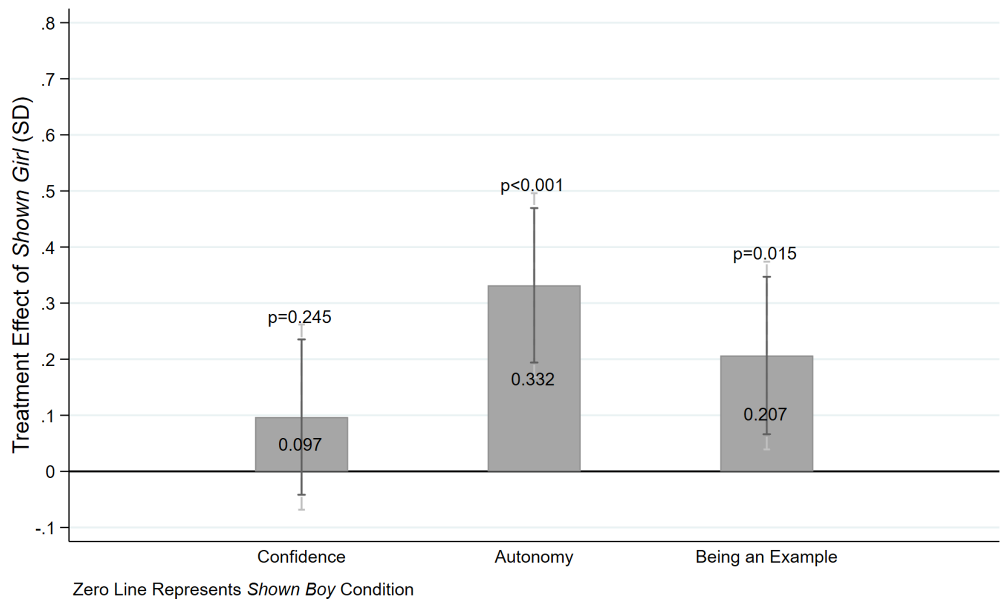
[8] Graders are teachers in other schools and are usually in different parts of the country than the students.

attendance during school day. Hence, one may anticipate that students randomly placed in classrooms with a top-performing girl will demonstrate higher performance compared to students in classrooms with a top-performing girl boy. We examine whether students in quasi-randomly formed classrooms in which the top performer is a girl have higher academic gains (i.e., difference between starting and final performance in grade 10) relative to classrooms in which the top performer is a boy (Table S14). We find that students in classrooms with top-performing girls outperform their counterparts in classrooms with top-performing boys in terms of average end-of-year performance ($p = 0.020$) and academic gains (i.e., difference between end-of-year and start-of-year performance; $p = 0.006$). These empirical results provide supporting evidence to our survey-based experiment and are in line with reported teachers' perceptions indicating that top-performing girls, in comparison with boys, exert greater positive influences on their classmates.

(A)



(B)



(C)

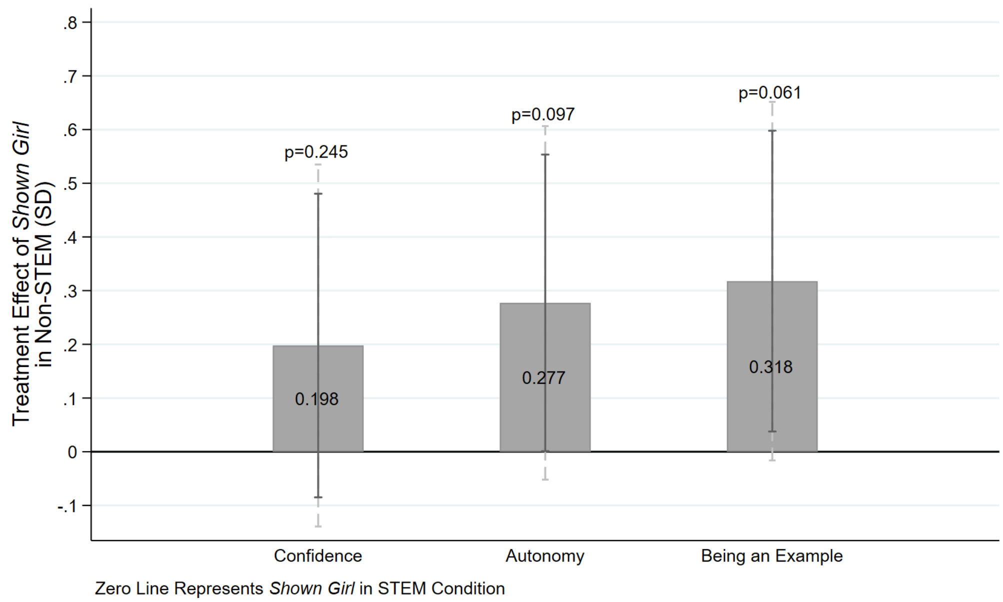


Figure 3: Perceived Role Model Qualities. Fig. 3 (A) presents the mean differences in the emotional conditions associated with role model influence teachers expect top-performing girls and boys to experience. The y-axis values are raw scores with a range of [0-100]. P-values denote the significance levels from two sample mean comparison tests. Fig. 3 (B) presents the estimated difference between the treatment conditions of *Shown Girl* and *Shown Boy* in standard deviations, controlling for participant and survey attributes (Eq.(1)). Fig. 3 (C) presents the estimated coefficients of the interaction term between *Shown Girl* and *Shown Non-STEM* treatment conditions in standard deviations, controlling for participant and survey attributes (Eq.(2)). P-values correspond to tests of statistical significance of the estimated differences. Dashed and solid error bars represent 90% and 95% confidence intervals, respectively.

4 Discussion

This study exploited a survey-based experiment to understand teacher beliefs on whether top-performing boys or girls can serve as role models for other students. Teacher attitudes toward potential peer role models are critical for the success of policies and interventions that rely on positive behavioral spillovers between students.

Our results show that top-performing girls are more likely to be perceived by teachers as impactful role models relative to top-performing boys. Our findings underscore the interplay between teachers' gender stereotypes and perceived role model influences and qualities.

Valuable implications arise from our study. If teachers consistently perceive some students, even top-performing ones, as less likely to serve as role models, teachers may not encourage these students to embrace a role model function or may not encourage other students to view top performers as examples. This stance might limit the set of available role models in the classroom, potentially limiting the positive externalities between students (Breda, Grenet, Monnet, and Van Effenterre, 2023). Promoting an open mind among teachers regarding who can be a role model might break vicious behavioral cycles and strengthen positive peer effects, leading to improved student outcomes for all (Ulug, Ozden, and Eryilmaz, 2011; Yang, Tian, Woodruff, Jones, and Uzzi, 2022).

The gains from positive student interactions might be particularly valuable in resource-poor learning environments, that are often plagued by a general lack of high expectations and high-goal setting for students (Kristoffersen, Krægpøth, Nielsen, and Simonsen, 2015; Zhao and Zhao, 2021). Understanding teachers' beliefs in these contexts can contribute to the design of better initiatives (Bryan and Atwater, 2002). The gains of role models may also be rich among adolescents, since exposure to role models within existing social confines, such as peers, is typically much longer and has long-lasting effects (Goulas, Gunawardena, Megalokonomou, and Zenou, 2024).

Future research could focus on role model interventions in disadvantaged learning environments to better understand their potential in addressing poor aspirations, ultimately contributing to the design of more effective educational initiatives. Future research can also investigate the role of teachers in facilitating positive interactions and role model influences among peers.

Our approach in extracting teacher beliefs is general and can be applied in other contexts. Any research design aiming at eliciting stereotypes and biases may benefit from our teacher-focused survey experiment. The benefit of population-based survey experiments is that it allows for condition randomization across participant characteristics.

5 Methods

Randomized Survey Experiment Design

We conducted a randomized controlled trial using online surveys involving teachers. Targeted population included teachers at all levels of education in Greece,[9] whereas the average completion time of the questionnaire was 7-8 minutes. Participants were invited to give consent and take part in an incentivized survey about the influence of top performing students on their fellow classmates (see, for example, Figure S10).

Initially, 705 responses were received. In consideration of survey quality, respondents who completed the survey in less than 2 minutes (N: 8) or more than 18 minutes (N: 27) were excluded from the analysis.[10] Consequently, our final analytical sample comprises 670 observations.

Each teacher who attempted the survey was randomly exposed to a profile of a top performing student, accompanied by a photograph. Each profile clearly communicated the fact that (1) the student is a top performer, (2) the student's gender and (3) the subject area in which they excelled (STEM or Non-STEM subjects). Each participant was randomly exposed to one of the following treatment scenarios: top-performing girl in STEM (Profile A), top-performing girl in Non-STEM (Profile B), top-performing boy in STEM (Profile C) and top-performing boy in Non-STEM (Profile D) (Fig. 1).

Immediately after randomly exposing participants to the aforementioned profiles, we asked them to assess on a scale from 0 to 100 the degree to which a girl or boy student who excels in their class would be impactful for others with respect to: 1) STEM performance, 2) Non-STEM performance, 3) classroom conduct, 4) track selection in high school, 5) college major choice and 6) occupational choice. These six variables represent the main outcomes in our study (see Figures S6-S9 in *SI Appendix* for examples of the randomized block questions). Subsequently, we inquired about the participants' perceptions regarding the extent to which top performer status for boys or girls in each profile is associated with specific behavioral explanations. We investigated behavioral explanations related to confidence, learning autonomy, sense of being an example for others. This allows us to understand the potential behavioral channels through which teachers perceive role model influences to operate.

Participants were also asked to recollect information and respond to questions about their actual top performer and second best student in class when they were students. Following this, participants were queried about their perceptions regarding gender associations with certain occupations, such as engineer, lawyer, language teacher, and math teacher. We also asked them whether they display greater leniency towards girls relative to boys in the classroom. These questions were formulated to assess any explicit biases among the participants. Lastly, we collected a comprehensive set of demographic

[9] While pre-K, Kindergarten, and primary school teachers have pedagogical but no subject-matter expertise, secondary education (i.e., middle and high school) teachers are specialized in specific fields based on their college education.

[10] Our results do not change if we include these observations in the analytical sample.

characteristics from the respondents, including gender, age, parental status, residential location, and teaching specialization[11] (see Figure S11 for a comprehensive list of all survey questions presented in the sequential order they were asked).

Empirical Strategy

We estimate the effects of the survey experiment—i.e., the average effect of presenting a prompt describing a different treatment condition. The main specification is estimated as follows:

$$Y_{ij} = \beta_0 + \beta_1 Shown\,Girl_i + \gamma X_{ij} + \theta + \tau + \epsilon_{ij}, \tag{1}$$

where Y_{ij} is the outcome variable measured after participant i has been exposed to a treatment condition j. We measure six different outcomes that capture the perceived influence of top performers on others with respect to: STEM performance, Non-STEM performance, conduct, track selection in high school, college major choice, and occupational choice. Variable $Shown\ Girl_i$ is a binary indicator that equals one if participant i has been randomly assigned to a profile of a top-performing girl j and zero otherwise. We account for the field of excellence of the top performer in the prompt by controlling for an binary indicator equal to one if participant i has been randomly exposed to a profile of a top performing student j in STEM and zero otherwise. Vector X_{ij} captures respondents' and survey characteristics. We also control for prefecture fixed effects (θ) and month fixed effects (τ) to account for spatial and time heterogeneity since participants were located at different prefectures in Greece and surveyed at different times.

Parameter β_1 reflects the coefficient of interest and captures the impact of exposure to a top-performing girl relative to a top-performing boy on teachers' responses. Specification (1) is estimated using ordinary least squares (OLS) and heteroskedasticity-robust standard errors.

We also investigate the impact of exposure to a girl relative to a boy separately for top performer profiles in STEM and Non-STEM. To do this, we estimate the following specification:

$$\begin{aligned} Y_{ij} = \beta_0 &+ \beta_1 \text{Shown Girl}_i + \beta_2 \text{Shown Non-STEM}_i \\ &+ \beta_3 \text{Shown Girl}_i \times \text{Shown Non-STEM}_i \\ &+ \gamma X_{ij} + \theta + \tau + \epsilon_{ij}, \end{aligned} \tag{2}$$

where Y_{ij} denotes one of the aforementioned outcome variables measured after participant i has been exposed to a treatment condition j. Similarly to the specification 1, $Shown\ Girl_i$ is a binary indicator that equals one if participant i has been randomly assigned to a profile of a top-performing girl j and zero otherwise. $Shown\ Non\text{-}STEM_i$ is a binary indicator that equals one if participant i has been randomly

[11] While pre-school and primary school teachers cover all subjects, secondary school (high school) teachers are specialized in specific fields.

assigned to a profile of a top performing student j in a Non-STEM subject and zero otherwise. We also include the interaction between *Shown Girl*$_i$ and *Shown Non-STEM*$_i$. All controls and fixed effects are the same as in specification 1.[12]

The estimated coefficient β_1 represents the treatment effect of teacher exposure to top-performing boys and girls in STEM. The linear combination of β_1 and β_3 coefficients estimates the treatment effect of teacher exposure to top-performing boys and girls in Non-STEM.

Alternatively, we follow a split-sample approach and run sub-sample regressions estimating specification (1) for *STEM* profiles (i.e., profile A vs. profile C) and *Non-STEM* profiles (i.e., profile B vs. profile D) separately. For instance, in Fig. S1 (B) the treatment variable is *Shown Girl in STEM*$_i$ and is a binary indicator equal to one if participant i has been randomly exposed to a profile of a top-performing girl j in STEM and zero otherwise. Similarly, in Fig. S2 (B) the treatment variable is *Shown Girl in Non-STEM*$_i$ and is a dummy equal to one if participant i has been randomly exposed to a profile of a top-performing girl j in Non-STEM and zero otherwise. This exercise is equivalent to estimating a model including interaction terms as in specification 2.

[12] In both 1 and 2 we include binary indicators for missing values in the covariates.

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Supplementary Appendix

Top-performing Girls are more Impactful Peer Role Models than Boys, Teachers Say

Table S1: Respondent Characteristics

	(1) Mean	(2) SD	(3) Min	(4) Max
Demographics and History				
Female (1=Yes)	0.82	0.38	0	1
Age (Years)	41.27	10.53	22	65
Have a Daughter (1=Yes)	0.45	0.50	0	1
Have a Son (1=Yes)	0.46	0.50	0	1
Urban Residence (1=Yes)	0.54	0.50	0	1
Teacher's Specialization (1=Yes):				
Pre-school Education	0.09	0.29	0	1
Primary School Education	0.33	0.47	0	1
Secondary Education:				
STEM Subjects	0.18	0.38	0	1
Social & Humanitarian Subjects	0.10	0.30	0	1
Greek Language	0.18	0.38	0	1
Foreign Languages	0.12	0.33	0	1
School Years History (1=Yes):				
Remember Top Performer's Gender	0.86	0.35	0	1
Remember Second Best's Gender	0.59	0.49	0	1
Top Performer was Female	0.79	0.41	0	1
Second Best was Female	0.78	0.42	0	1
Was Top or Second Best Performer	0.23	0.42	0	1
Explicit Biases				
Do you Associate the Following Occupation with a Specific Gender? (1=Yes)				
Engineer	0.23	0.42	0	1
Lawyer	0.04	0.20	0	1
Greek Language Teacher	0.12	0.33	0	1
Math Teacher	0.10	0.30	0	1
Reported Leniency Toward Female Students (1=Yes)	0.16	0.36	0	1
Survey Characteristics				
Fall Survey (1=Yes)	0.23	0.42	0	1
Duration (Minutes)	7.54	2.96	2	18

Notes: The table reports descriptive statistics for teachers' demographic characteristics and school years history, explicit biases and survey's characteristics. Sample consists of 670 teachers. Teachers specializing in STEM subjects include those who teach mathematics, physics, chemistry, biology, and computer science; specializing in social & humanitarian encompasses those who instruct in theology, art, sociology, and economics; specializing in Greek language includes those who teach Greek literature, language, and philosophy.

Table S2: Balancing Test Across Shown Girl in STEM and Shown Boy in STEM Conditions

	(1)	(2)	(3)	(4)	(5)	(6)
	Shown Girl in STEM		Shown Boy in STEM		Difference (1) - (3)	
	Mean	SD	Mean	SD	Mean	SE
Demographics and History						
Female (1=Yes)	0.84	0.37	0.82	0.38	0.02	0.04
Age (Years)	40.34	10.14	41.35	10.55	-1.01	1.20
Have a Daughter (1=Yes)	0.50	0.50	0.41	0.49	0.09	0.08
Have a Son (1=Yes)	0.51	0.50	0.45	0.50	0.05	0.07
Urban Residence (1=Yes)	0.58	0.50	0.53	0.50	0.05	0.06
Teacher's Specialization (1=Yes):						
Pre-school Education	0.10	0.30	0.10	0.30	0.00	0.04
Primary School Education	0.36	0.48	0.28	0.45	0.08	0.06
Secondary Education:						
STEM Subjects	0.16	0.37	0.20	0.40	-0.04	0.05
Social & Humanitarian Subjects	0.09	0.29	0.11	0.31	-0.01	0.04
Greek Language	0.19	0.39	0.20	0.40	-0.01	0.05
Foreign Languages	0.10	0.30	0.11	0.32	-0.01	0.04
School Years History (1=Yes):						
Remember Top Performer's Gender	0.86	0.35	0.85	0.36	0.01	0.04
Remember Second Best's Gender	0.58	0.49	0.57	0.50	0.01	0.06
Top Performer was Female	0.79	0.41	0.75	0.43	0.04	0.05
Second Best was Female	0.79	0.41	0.75	0.44	0.04	0.06
Was Top or Second Best Performer	0.24	0.43	0.23	0.42	0.01	0.05
Explicit Biases						
Do you Associate the Following Occupation with a Specific Gender? (1=Yes)						
Engineer	0.26	0.44	0.23	0.42	0.03	0.06
Lawyer	0.07	0.25	0.06	0.24	0.01	0.03
Greek Language Teacher	0.17	0.38	0.10	0.30	0.08	0.05*
Math Teacher	0.13	0.34	0.09	0.28	0.04	0.04
Reported Leniency Toward Female Students (1=Yes)	0.18	0.38	0.17	0.38	0.01	0.04
Survey Characteristics						
Fall Survey (1=Yes)	0.25	0.43	0.21	0.41	0.04	0.05
Duration (Minutes)	7.58	2.87	7.23	2.92	0.36	0.31

Notes: The table reports descriptive statistics for teachers across the treatment groups *Shown Boy in STEM* (N: 173) and *Shown Girl in STEM* (N: 174). *Shown Girl in STEM* refers to a treatment scenario where the participant was exposed to a top-performing girl in STEM. *Shown Boy in STEM* refers to a treatment scenario where the participant was exposed to a top-performing boy in STEM. Teachers specializing in STEM subjects include those who teach mathematics, physics, chemistry, biology, and computer science; specializing in social & humanitarian encompasses those who instruct in theology, art, sociology, and economics; specializing in Greek language includes those who teach Greek literature, language, and philosophy. Significance stars denote the results from two sample mean comparison t-tests; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S3: Balancing Test Across Shown Girl in Non-STEM and Shown Boy in Non-STEM Conditions

	(1)	(2)	(3)	(4)	(5)	(6)
	Shown Girl in Non-STEM		Shown Boy in Non-STEM		Difference (1) - (3)	
	Mean	SD	Mean	SD	Mean	SE
Demographics and History						
Female (1=Yes)	0.81	0.39	0.81	0.40	0.00	0.04
Age (Years)	42.35	10.50	41.12	10.94	1.23	1.28
Have a Daughter (1=Yes)	0.46	0.50	0.44	0.50	0.01	0.07
Have a Son (1=Yes)	0.45	0.50	0.40	0.49	0.05	0.07
Urban Residence (1=Yes)	0.54	0.50	0.53	0.50	0.01	0.06
Teacher's Specialization (1=Yes):						
Pre-school Education	0.09	0.28	0.08	0.27	0.01	0.03
Primary School Education	0.34	0.47	0.34	0.47	-0.00	0.06
Secondary Education:						
STEM Subjects	0.18	0.39	0.17	0.38	0.01	0.05
Social & Humanitarian Subjects	0.08	0.27	0.12	0.33	-0.04	0.04
Greek Language	0.18	0.38	0.16	0.37	0.02	0.05
Foreign Languages	0.14	0.35	0.14	0.34	0.00	0.04
School Years History (1=Yes):						
Remember Top Performer's Gender	0.85	0.35	0.88	0.33	-0.03	0.04
Remember Second Best's Gender	0.64	0.48	0.57	0.50	0.07	0.06
Top Performer was Female	0.82	0.39	0.82	0.39	0.00	0.05
Second Best was Female	0.81	0.39	0.75	0.43	0.06	0.06
Was Top or Second Best Performer	0.24	0.43	0.22	0.41	0.02	0.05
Explicit Biases						
Do you Associate the Following Occupation with a Specific Gender? (1=Yes)						
Engineer	0.22	0.41	0.21	0.41	0.01	0.06
Lawyer	0.02	0.13	0.03	0.17	-0.01	0.02
Greek Language Teacher	0.11	0.31	0.10	0.31	0.00	0.04
Math Teacher	0.11	0.31	0.08	0.27	0.03	0.04
Reported Leniency Toward Female Students (1=Yes)	0.15	0.36	0.12	0.32	0.03	0.04
Survey Characteristics						
Fall Survey (1=Yes)	0.29	0.45	0.18	0.39	0.11	0.05**
Duration (Minutes)	7.86	3.01	7.53	3.03	0.33	0.34

Notes: The table reports descriptive statistics for teachers across the treatment groups *Shown Boy in Non-STEM* (N: 160) and *Shown Girl in Non-STEM* (N: 163). *Shown Girl in Non-STEM* refers to a treatment scenario where the participant was exposed to a top-performing girl in Non-STEM. *Shown Boy in Non-STEM* refers to a treatment scenario where the participant was exposed to a top-performing boy in Non-STEM. Teachers specializing in STEM subjects include those who teach mathematics, physics, chemistry, biology, and computer science; specializing in social & humanitarian encompasses those who instruct in theology, art, sociology, and economics; specializing in Greek language includes those who teach Greek literature, language, and philosophy. Significance stars denote the results from two sample mean comparison t-tests; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S4: Treatment Effect of Teacher Exposure to Top Performers

	(1) STEM Performance	(2) Non-STEM Performance	(3) Conduct	(4) Track Choice	(5) College Major Choice	(6) Occupational Choice
Panel A: Girl Relative to Boy						
Shown Girl	0.100	0.581***	0.349***	0.185**	0.300***	0.233***
	(0.078)	(0.074)	(0.077)	(0.078)	(0.076)	(0.077)
Shown STEM	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	670	670	670	670	670	670
R-squared	0.111	0.189	0.132	0.148	0.174	0.161
Panel B: Girl Relative to Boy in STEM						
Shown Girl in STEM	-0.102	0.393***	0.240**	0.067	0.165	0.183*
	(0.108)	(0.105)	(0.107)	(0.108)	(0.107)	(0.110)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	347	347	347	347	347	347
R-squared	0.177	0.211	0.160	0.222	0.253	0.226
Panel C: Girl Relative to Boy in Non-STEM						
Shown Girl in non-STEM	0.338***	0.792***	0.514***	0.311***	0.444***	0.317***
	(0.113)	(0.106)	(0.112)	(0.116)	(0.115)	(0.113)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	323	323	323	323	323	323
R-squared	0.198	0.278	0.213	0.189	0.206	0.224

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. Panel A estimates treatment effects of teacher exposure to top-performing girls and boys irrespective of the subject these top performers excelled in with a *Shown STEM* binary indicator being included in all specifications. Panel B estimates treatment effects of teacher exposure to top-performing girls and boys in STEM. Panel C estimates treatment effects of teacher exposure to top-performing girls and boys in Non-STEM. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S5: Treatment Effect of Teacher Exposure to Top Performers: Specifications Using Interaction Terms

	(1) STEM Performance	(2) Non-STEM Performance	(3) Conduct	(4) Track Choice	(5) College Major Choice	(6) Occupational Choice
Shown Girl [β_1]	-0.098	0.407***	0.228**	0.076	0.184*	0.186*
	(0.106)	(0.103)	(0.105)	(0.105)	(0.104)	(0.107)
Shown Non-STEM [β_2]	-0.269**	-0.304***	-0.191*	-0.157	-0.060	-0.059
	(0.109)	(0.112)	(0.115)	(0.106)	(0.108)	(0.108)
Shown Girl x Shown Non-STEM [β_3]	0.414***	0.364**	0.254*	0.227	0.244	0.098
	(0.150)	(0.145)	(0.150)	(0.151)	(0.149)	(0.152)
Observations	670	670	670	670	670	670
R-squared	0.121	0.197	0.136	0.151	0.178	0.162
P-value [β_1] + [β_3]	0.004	0.000	0.000	0.007	0.000	0.010
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S6: Behavioral Channels Associated with Role Model Influences

	(1) Confidence	(2) Autonomy	(3) Being an Example
Panel A: Girl Relative to Boy			
Shown Girl	0.097	0.332***	0.207**
	(0.084)	(0.084)	(0.085)
Shown STEM	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes
Observations	578	576	568
R-squared	0.070	0.122	0.113
Panel B: Girl Relative to Boy in STEM			
Shown Girl in STEM	0.022	0.207*	0.032
	(0.115)	(0.117)	(0.127)
Controls	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes
Observations	298	297	291
R-squared	0.099	0.121	0.121
Panel C: Girl Relative to Boy in Non-STEM			
Shown Girl in non-STEM	0.214	0.507***	0.438***
	(0.135)	(0.130)	(0.124)
Controls	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes
Observations	280	279	277
R-squared	0.148	0.237	0.213

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. Panel A estimates treatment effects of teacher exposure to top-performing girls and boys irrespective of the subject these top performers excelled in with a *Shown STEM* binary indicator being included in all specifications. Panel B estimates treatment effects of teacher exposure to top-performing girls and boys in STEM. Panel C estimates treatment effects of teacher exposure to top-performing girls and boys in Non-STEM. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S7: Behavioral Channels Associated with Role Model Influences: Specifications Using Interaction Terms

	(1) Confidence	(2) Autonomy	(3) Being an Example
Shown Girl [β_1]	0.002	0.199*	0.053
	(0.114)	(0.114)	(0.122)
Shown Non-STEM [β_2]	-0.164	-0.177	0.016
	(0.129)	(0.128)	(0.124)
Shown Girl x Shown Non-STEM [β_3]	0.198	0.277*	0.318*
	(0.172)	(0.168)	(0.170)
Observations	578	576	568
R-squared	0.072	0.126	0.119
P-value [β_1] + [β_3]	0.115	0.000	0.002
Controls	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S8: Heterogeneity Analysis: Subsample Regressions by Teacher's Sex

	(1) STEM Performance	(2) Non-STEM Performance	(3) Conduct	(4) Track Choice	(5) College Major Choice	(6) Occupational Choice
Panel A: *Women Teachers*						
[1] Shown Girl	0.126	0.597***	0.413***	0.187**	0.320***	0.289***
	(0.089)	(0.083)	(0.087)	(0.087)	(0.085)	(0.085)
Observations	549	549	549	549	549	549
R-squared	0.121	0.202	0.160	0.150	0.187	0.173
Panel B: *Men Teachers*						
[2] Shown Girl	0.138	0.552***	0.238	0.184	0.315	0.163
	(0.203)	(0.188)	(0.195)	(0.211)	(0.207)	(0.203)
Observations	121	121	121	121	121	121
R-squared	0.360	0.410	0.326	0.428	0.379	0.390
P-value Diff [1]-[2]	0.947	0.789	0.319	0.988	0.978	0.486
Shown STEM	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. Panel A estimates treatment effects of teacher exposure to top-performing girls and boys for women teachers, whereas Panel B focuses on men teachers. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S9: Heterogeneity Analysis: Subsample Regressions by Teacher's Age

	(1) STEM Performance	(2) Non-STEM Performance	(3) Conduct	(4) Track Choice	(5) College Major Choice	(6) Occupational Choice
Panel A: *Age < 40*						
[1] Shown Girl	-0.003	0.575***	0.439***	0.027	0.193	0.167
	(0.120)	(0.122)	(0.117)	(0.130)	(0.128)	(0.127)
Observations	273	273	273	273	273	273
R-squared	0.155	0.221	0.203	0.206	0.225	0.204
Panel B: *Age ≥ 40*						
[2] Shown Girl	0.170	0.573***	0.342***	0.268**	0.342***	0.292**
	(0.129)	(0.121)	(0.128)	(0.123)	(0.121)	(0.119)
Observations	304	304	304	304	304	304
R-squared	0.136	0.222	0.170	0.208	0.222	0.245
P-value Diff [1]-[2]	0.290	0.990	0.546	0.147	0.360	0.437
Shown STEM	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. Panel A estimates treatment effects of teacher exposure to top-performing girls and boys for teachers aged less than 40, whereas Panel B focuses on teachers aged 40 and above. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S10: Heterogeneity Analysis: Subsample Regressions by Teacher's Parental Status

	(1) STEM Performance	(2) Non-STEM Performance	(3) Conduct	(4) Track Choice	(5) College Major Choice	(6) Occupational Choice
Panel A: *With Children*						
[1] Shown Girl	0.323**	0.739***	0.364***	0.562***	0.600***	0.443***
	(0.125)	(0.120)	(0.123)	(0.125)	(0.124)	(0.129)
Observations	243	243	243	243	243	243
R-squared	0.207	0.294	0.197	0.234	0.247	0.229
Panel B: *Without Children*						
[2] Shown Girl	-0.103	0.605***	0.493***	-0.080	0.145	0.099
	(0.142)	(0.141)	(0.133)	(0.127)	(0.125)	(0.142)
Observations	197	197	197	197	197	197
R-squared	0.194	0.221	0.253	0.177	0.191	0.198
P-value Diff [1]-[2]	0.013	0.421	0.432	0.000	0.004	0.048
Shown STEM	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. Panel A estimates treatment effects of teacher exposure to top-performing girls and boys for teachers who have kids, whereas Panel B focuses on teachers who don't have kids. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S11: Heterogeneity Analysis: Sub-sample Regressions by Teacher's Locale

	(1) STEM Performance	(2) Non-STEM Performance	(3) Conduct	(4) Track Choice	(5) College Major Choice	(6) Occupational Choice
Panel A: *Urban Locale*						
[1] Shown Girl	0.156	0.525***	0.478***	0.351***	0.434***	0.369***
	(0.125)	(0.116)	(0.118)	(0.121)	(0.117)	(0.115)
Observations	319	319	319	319	319	319
R-squared	0.175	0.223	0.233	0.238	0.249	0.241
Panel B: *Non-urban Locale*						
[2] Shown Girl	0.019	0.645***	0.272**	-0.028	0.101	0.116
	(0.121)	(0.114)	(0.118)	(0.121)	(0.123)	(0.126)
Observations	267	267	267	267	267	267
R-squared	0.150	0.283	0.169	0.216	0.234	0.223
P-value Diff [1]-[2]	0.398	0.426	0.183	0.016	0.034	0.110
Shown STEM	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Outcomes are standardized to have a mean equal to zero and a standard deviation equal to one. Panel A estimates treatment effects of teacher exposure to top-performing girls and boys for teachers who reside in urban areas, whereas Panel B focuses on teachers who reside in rural areas. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S12: Performance and Behavior Differences of Top Performing Students

	(1)	(2)	(3)	(4)	(5)	(6)
	Girls		Boys		Difference (1) - (3)	
	Mean	SD	Mean	SD	Mean	SE
Panel A: Top Performing Students						
Overall Performance						
Grade 10	18.92	0.78	18.86	0.81	0.05	0.03**
Grade 11	18.83	0.95	18.79	0.99	0.04	0.03
Grade 12	18.90	0.78	18.89	0.95	0.00	0.03
STEM Performance						
Grade 10	18.76	1.08	18.97	0.97	-0.21	0.03***
Grade 11	18.91	1.12	19.12	0.92	-0.21	0.03***
Grade 12	18.90	1.08	19.15	1.06	-0.24	0.03***
Non-STEM Performance						
Grade 10	18.86	0.82	18.59	0.99	0.27	0.03***
Grade 11	18.75	0.95	18.38	1.21	0.37	0.04***
Grade 12	18.94	0.78	18.70	1.09	0.25	0.03***
Unexcused Absences						
Grade 10	14.68	10.84	13.93	10.45	0.75	0.45*
Grade 11	19.12	12.19	18.12	12.27	1.00	0.55*
Grade 12	18.83	13.50	19.26	13.70	-0.43	1.00
Panel B: Top 5% of Students						
Overall Performance						
Grade 10	18.73	0.83	18.66	0.86	0.07	0.02***
Grade 11	18.68	0.95	18.64	0.99	0.04	0.03
Grade 12	18.77	0.78	18.75	0.92	0.02	0.02
STEM Performance						
Grade 10	18.52	1.19	18.75	1.10	-0.23	0.03***
Grade 11	18.74	1.16	18.98	1.00	-0.24	0.03***
Grade 12	18.73	1.15	19.04	1.03	-0.31	0.03***
Non-STEM Performance						
Grade 10	18.69	0.87	18.39	1.03	0.30	0.02***
Grade 11	18.62	0.97	18.22	1.22	0.40	0.03***
Grade 12	18.85	0.81	18.53	1.09	0.32	0.03***
Unexcused Absences						
Grade 10	15.18	11.23	14.62	10.74	0.56	0.36
Grade 11	19.67	12.40	18.95	12.44	0.72	0.45
Grade 12	19.90	13.90	20.64	14.03	-0.74	0.81

Notes: The table presents summary statistics produced utilizing administrative data from Greece. Sample consists of 4,772 top-performing girls and 2,437 top-performing boys in their own class/grade from 123 schools, corresponding to 10% of the total number of public schools. Panel A identifies top performing students as those with the highest overall performance in each classroom. Panel B identifies the top 5% of students with the highest overall performance in each classroom. Student performance is measured on a scale between 0 and 20. Unexcused absences are a continuous variable and serve as a behavioral proxy, as students receive an unexcused absence when the teacher dismisses them from the class due to poor conduct. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S13: Performance Differences of Top Performing Students in Blind Exams

	(1)	(2)	(3)	(4)	(5)	(6)
	Girls		Boys		Difference (1) - (3)	
	Mean	SD	Mean	SD	Mean	SE
Panel A: Top Performing Students						
Ancient Greek	17.18	2.06	17.35	2.12	-0.17	0.18
Biology	18.27	1.57	18.33	1.73	-0.06	0.08
Chemistry	18.73	1.60	18.86	1.58	-0.14	0.08*
Computer Programming	18.09	2.12	18.67	1.92	-0.58	0.12***
Greek Literature	16.59	2.26	16.61	2.15	-0.02	0.18
History	18.02	2.24	18.27	1.88	-0.25	0.16
Latin	18.63	1.66	18.68	1.68	-0.06	0.14
Advanced Mathematics	16.45	2.97	17.18	2.87	-0.72	0.11***
Mathematics and Statistics	17.93	3.34	18.84	2.33	-0.92	0.09***
Advanced Physics	16.92	3.07	17.78	2.58	-0.86	0.10***
Modern Greek	16.01	1.78	15.67	1.95	0.34	0.06***
Panel B: Top 5% of Students						
Ancient Greek	16.98	2.07	17.22	1.95	-0.25	0.13*
Biology	18.09	1.65	18.10	1.79	-0.02	0.07
Chemistry	18.48	1.83	18.70	1.72	-0.22	0.07***
Computer Programming	17.95	2.14	18.46	2.02	-0.52	0.09***
Greek Literature	16.43	2.27	16.44	2.17	-0.01	0.14
History	17.87	2.27	18.27	1.80	-0.41	0.12***
Latin	18.50	1.67	18.55	1.67	-0.05	0.11
Advanced Mathematics	16.11	3.08	16.86	2.95	-0.75	0.09***
Mathematics and Statistics	17.54	3.64	18.75	2.38	-1.21	0.07***
Advanced Physics	16.64	3.12	17.47	2.75	-0.83	0.09***
Modern Greek	15.85	1.83	15.45	1.96	0.40	0.05***

Notes: The table presents summary statistics produced utilizing administrative data on blind exams in grade 12. Sample consists of 4,475 top-performing girls and 2,313 top-performing boys in their own class/grade from 123 schools, corresponding to 10% of the total number of public schools. Panel A identifies top performing students as those with the highest overall performance in each classroom. Panel B identifies the top 5% of students with the highest overall performance in each classroom. Student performance is measured on a scale between 0 and 20. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S14: Performance of Students in Classrooms with Top-Performing Girls and Boys

	(1)	(2)	(3)	(4)	(5)	(6)
	Top-Performing Girl		Top-Performing Boy		Difference (1) - (3)	
	Mean	SD	Mean	SD	Mean	SE
Average School Performance	14.326	2.423	14.279	2.417	0.047	0.020**
Difference Between Starting and Final Performance	0.806	0.661	0.787	0.656	0.019	0.006***

Notes: The table reports descriptive statistics of the school performance of students in grade 10. Average school performance refers to the average GPA at the end of the year on a scale 0-20. Difference between starting and final performance denotes the difference in the GPA in semester 2 and 1. Columns (1) and (2) present the results for students in classrooms with top-performing girls, whereas columns (3) and (4) present the results for students in classrooms with top-performing boys. Top performers are excluded from the analysis. Significance stars denote the results from two sample mean comparison t-tests; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

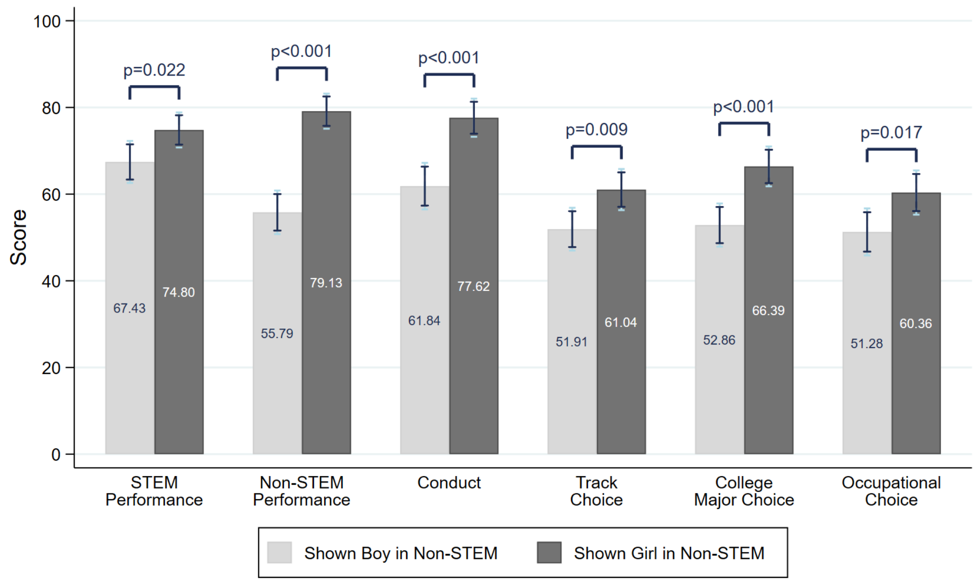
Table S15: Mediation Analysis

	(1) STEM Performance	(2) Non-STEM Performance	(3) Conduct	(4) Track Choice	(5) College Major Choice	(6) Occupational Choice
Panel A: *Mediator: Confidence*						
Indirect Effect						
Shown Girl	0.031	0.028	0.034	0.026	0.027	0.022
	(0.026)	(0.024)	(0.029)	(0.022)	(0.022)	(0.019)
Direct Effect						
Shown Girl	0.013	0.492***	0.296***	0.179**	0.261***	0.221***
	(0.072)	(0.070)	(0.071)	(0.074)	(0.073)	(0.075)
Total Effect						
Shown Girl	0.043	0.521***	0.330***	0.206***	0.288***	0.243***
	(0.077)	(0.074)	(0.077)	(0.077)	(0.076)	(0.078)
Observations	578	578	578	578	578	578
Panel B: *Mediator: Autonomy*						
Indirect Effect						
Shown Girl	0.162***	0.159***	0.181***	0.140***	0.142***	0.111***
	(0.044)	(0.042)	(0.046)	(0.038)	(0.038)	(0.032)
Direct Effect						
Shown Girl	-0.102	0.376***	0.142*	0.080	0.150**	0.141*
	(0.073)	(0.072)	(0.072)	(0.075)	(0.073)	(0.075)
Total Effect						
Shown Girl	0.059	0.535***	0.322***	0.220***	0.291***	0.252***
	(0.077)	(0.074)	(0.076)	(0.077)	(0.076)	(0.077)
Observations	576	576	576	576	576	576
Panel C: *Mediator: Being an Example*						
Indirect Effect						
Shown Girl	0.066**	0.071**	0.082**	0.071**	0.074**	0.059**
	(0.028)	(0.030)	(0.034)	(0.030)	(0.031)	(0.026)
Direct Effect						
Shown Girl	-0.004	0.468***	0.263***	0.149**	0.215***	0.165**
	(0.075)	(0.074)	(0.074)	(0.074)	(0.073)	(0.075)
Total Effect						
Shown Girl	0.062	0.539***	0.345***	0.220***	0.289***	0.224***
	(0.077)	(0.074)	(0.076)	(0.078)	(0.076)	(0.078)
Observations	568	568	568	568	568	568
Shown STEM	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

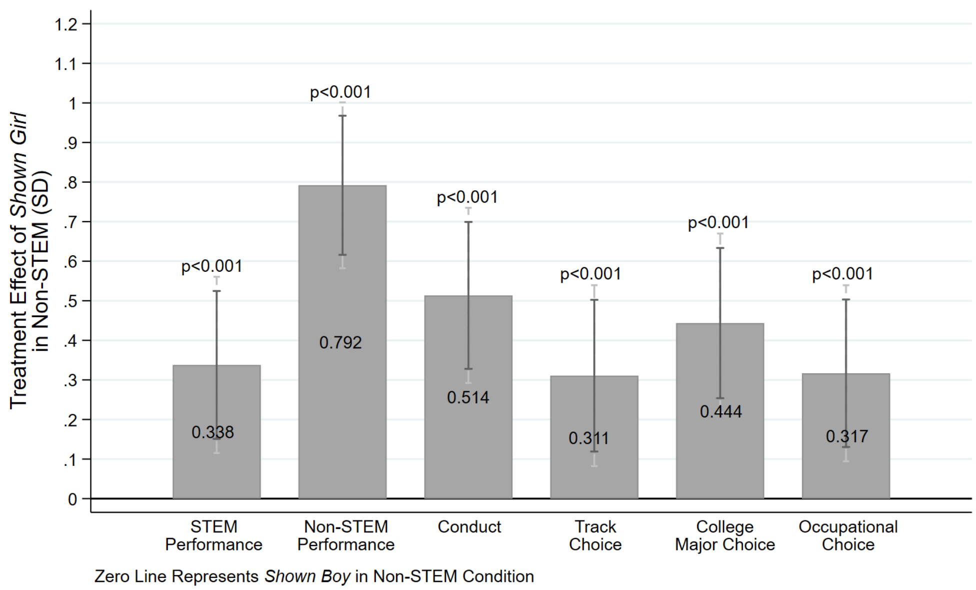
Notes: Mediator questions were presented after outcome questions in our survey instrument. The sequence of the mediator and the outcome questions can influence the results of the mediation analysis (Chaudoin, Gaines, and Livny, 2021). Outcomes and mediators are standardized to have a mean equal to zero and a standard deviation equal to one. In all specifications we control for demographics, teacher specializations, own history from school years, explicit biases, survey characteristics and state, month fixed effects. We control for indicators reflecting any missing values. Robust standard errors in parentheses; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Figure S1: Teacher Perceptions of Role Model Influences of Top Performers in Non-STEM

(A)



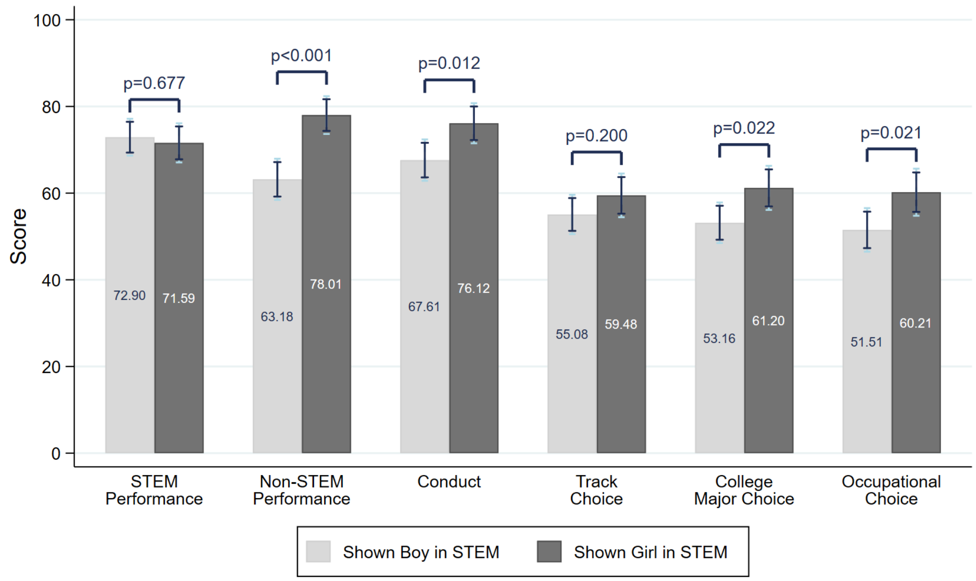
(B)



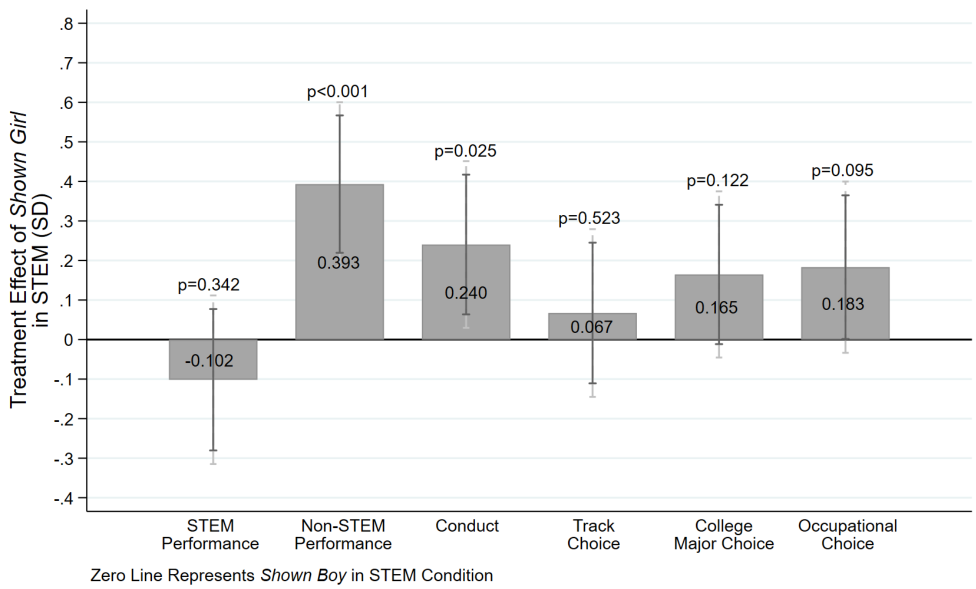
Notes: (A) presents the mean differences in teacher perceptions of role model influences of top-performing girls and boys in Non-STEM across all outcomes. The y-axis values are raw scores with a range of [0-100]. P-values denote the significance levels from two sample mean comparison tests. (B) presents the estimated difference between the treatment conditions of *Shown Girl in Non-STEM* and *Shown Boy in Non-STEM* in standard deviations, controlling for participant and survey attributes. P-values correspond to tests of statistical significance of the estimated differences. Error bars represent 90% and 95% confidence intervals.

Figure S2: Teacher Perceptions of Role Model Influences of Top Performers in STEM

(A)



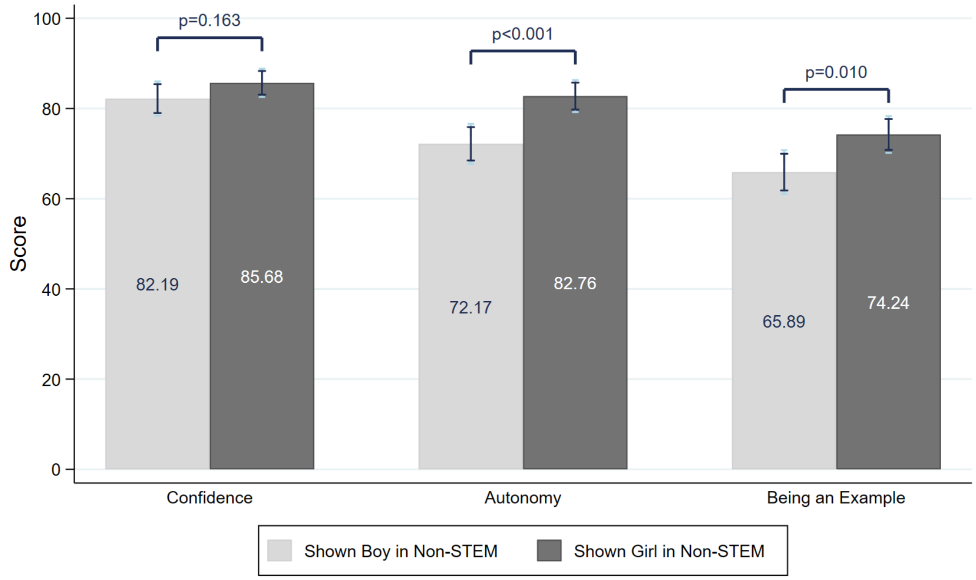
(B)



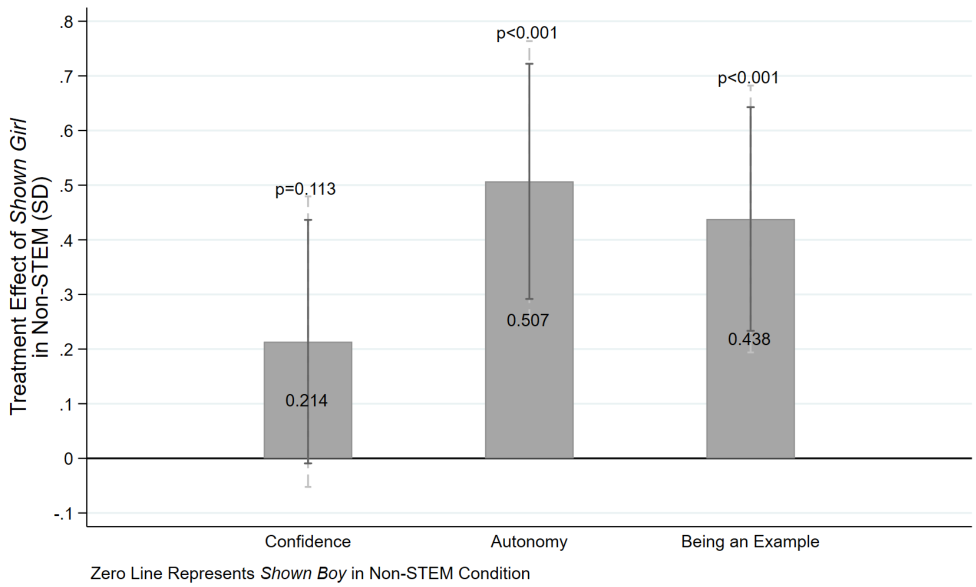
Notes: (A) presents the mean differences in teacher perceptions of role model influences of top-performing girls and boys in STEM across all outcomes. The y-axis values are raw scores with a range of [0-100]. P-values denote the significance levels from two sample mean comparison tests. (B) presents the estimated difference between the treatment conditions of *Shown Girl in STEM* and *Shown Boy in STEM* in standard deviations, controlling for participant and survey attributes. P-values correspond to tests of statistical significance of the estimated differences. Error bars represent 90% and 95% confidence intervals.

Figure S3: Perceived Role Model Qualities: Top Performers in Non-STEM

(A)



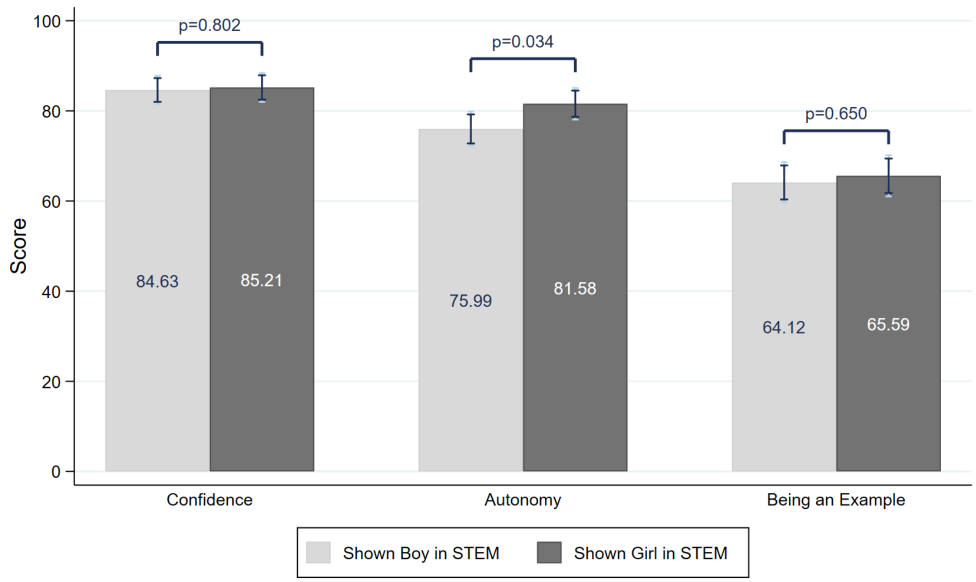
(B)



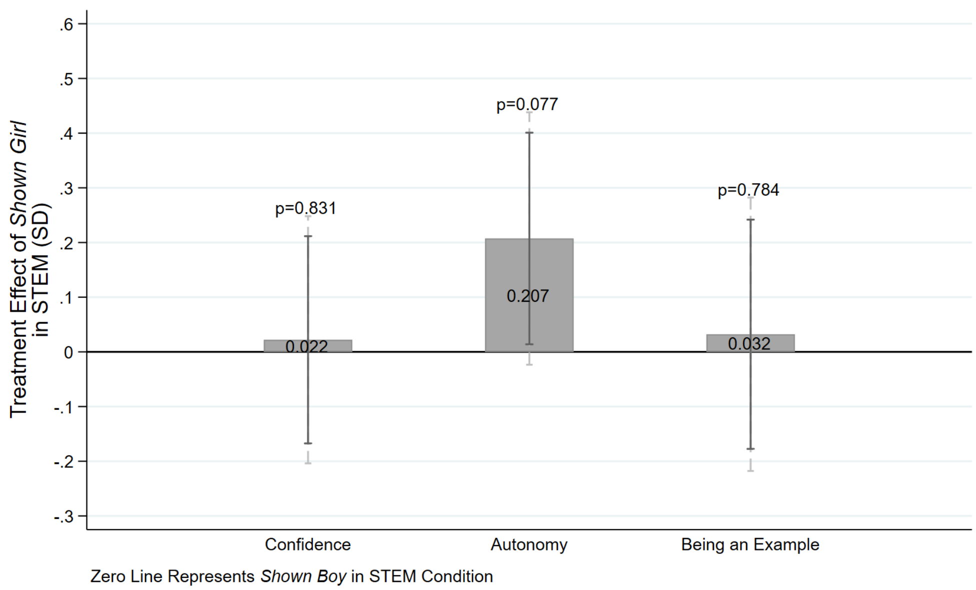
Notes: (A) presents the mean differences in the emotional conditions associated with role model influence teachers expect top-performing girls and boys in Non-STEM to experience. The y-axis values are raw scores with a range of [0-100]. P-values denote the significance levels from two sample mean comparison tests. (B) presents the estimated difference between the treatment conditions of *Shown Girl in Non-STEM* and *Shown Boy in Non-STEM* in standard deviations, controlling for participant and survey attributes. P-values correspond to tests of statistical significance of the estimated differences. Error bars represent 90% and 95% confidence intervals.

Figure S4: Perceived Role Model Qualities: Top Performers in STEM

(A)

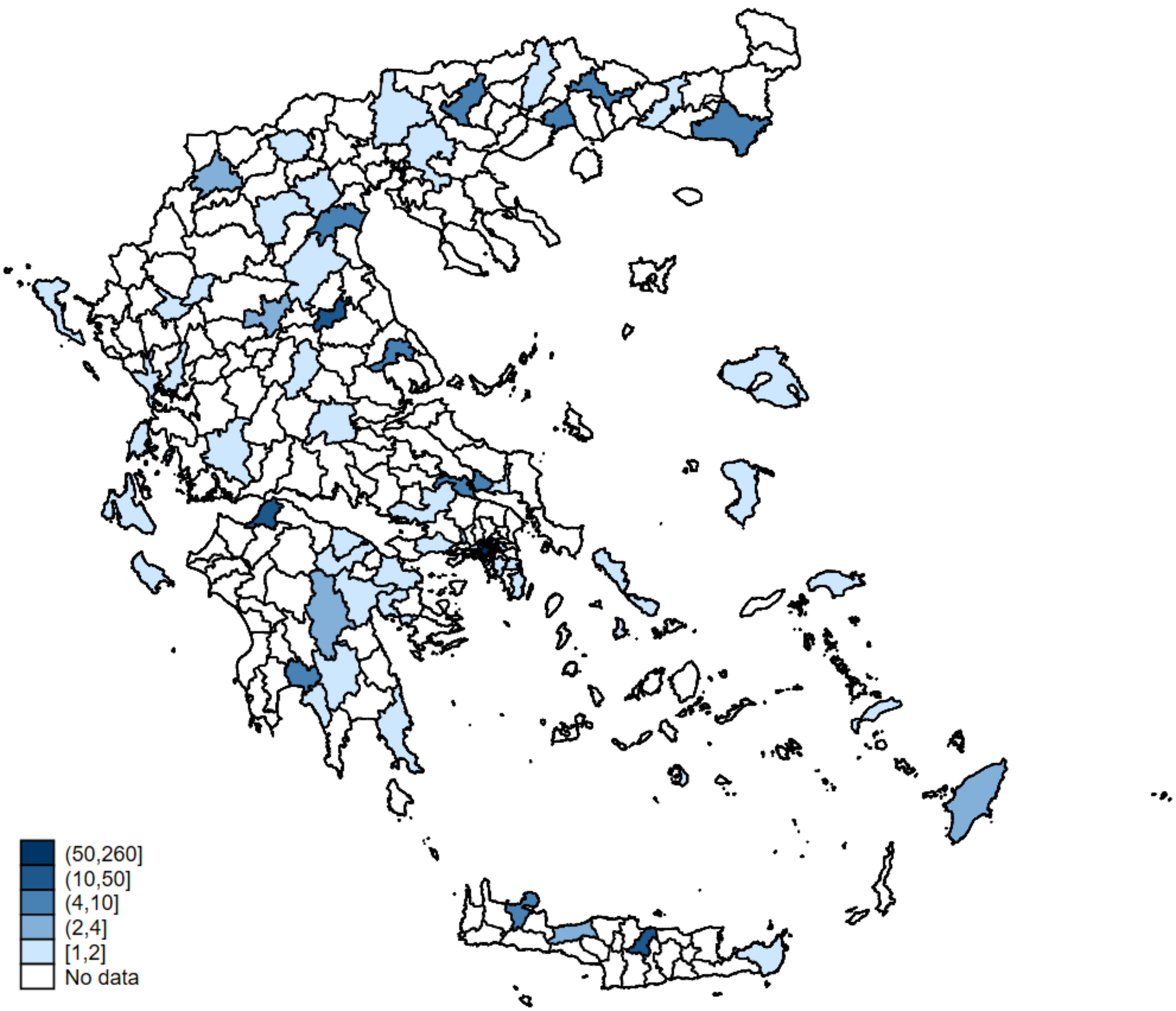


(B)



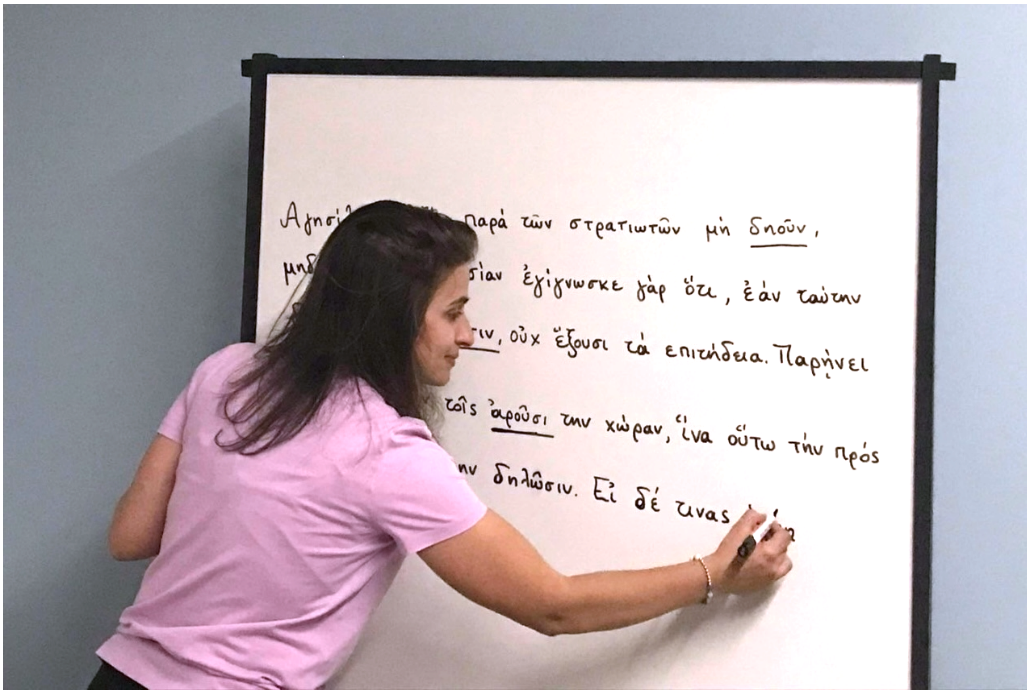
Notes: (A) presents the mean differences in the emotional conditions associated with role model influence teachers expect top-performing girls and boys in STEM to experience. The y-axis values are raw scores with a range of [0-100]. P-values denote the significance levels from two sample mean comparison tests. (B) presents the estimated difference between the treatment conditions of *Shown Girl in STEM* and *Shown Boy in STEM* in standard deviations, controlling for participant and survey attributes. P-values correspond to tests of statistical significance of the estimated differences. Error bars represent 90% and 95% confidence intervals.

Figure S5: Respondent Density



Notes: The map shows respondent density by prefecture across Greece.

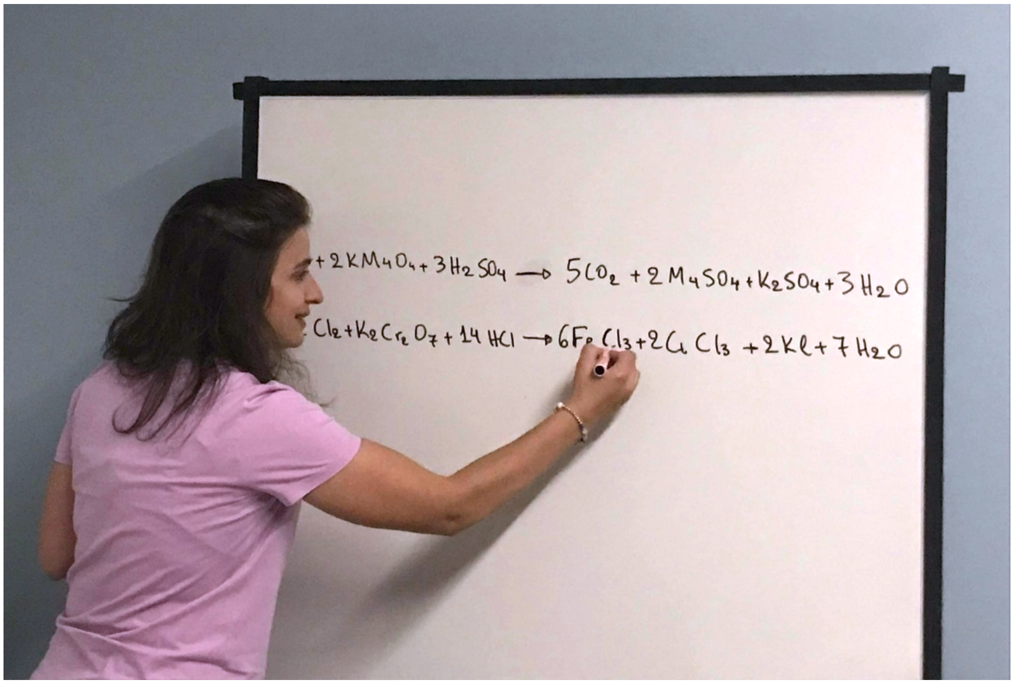
Figure S6: Example of Randomized Block Question, Girl, Non-STEM



A top performing **female** student in your classroom would be impactful for others with respect to:

	0 means Strongly Disagree and **100** means **Strongly Agree** 0 10 20 30 40 50 60 70 80 90 100
School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational Choice	

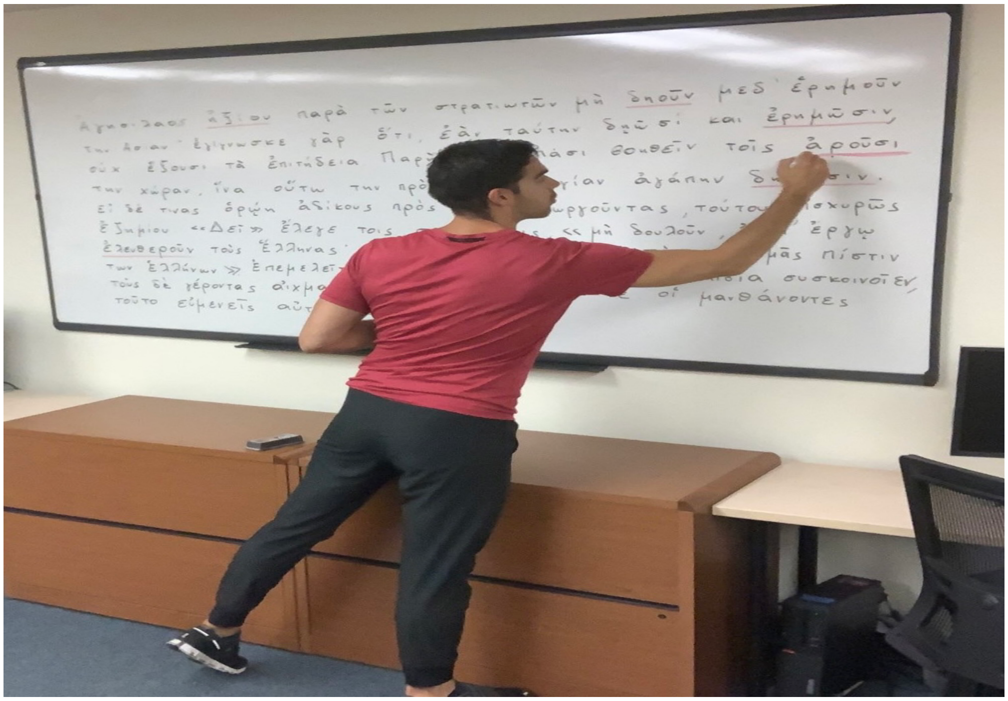
Figure S7: Example of Randomized Block Question, Girl, STEM



A top performing **female** student in your classroom would be impactful for others with respect to:

	0 means Strongly Disagree and **100** means **Strongly Agree** 0 10 20 30 40 50 60 70 80 90 100
School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational Choice	

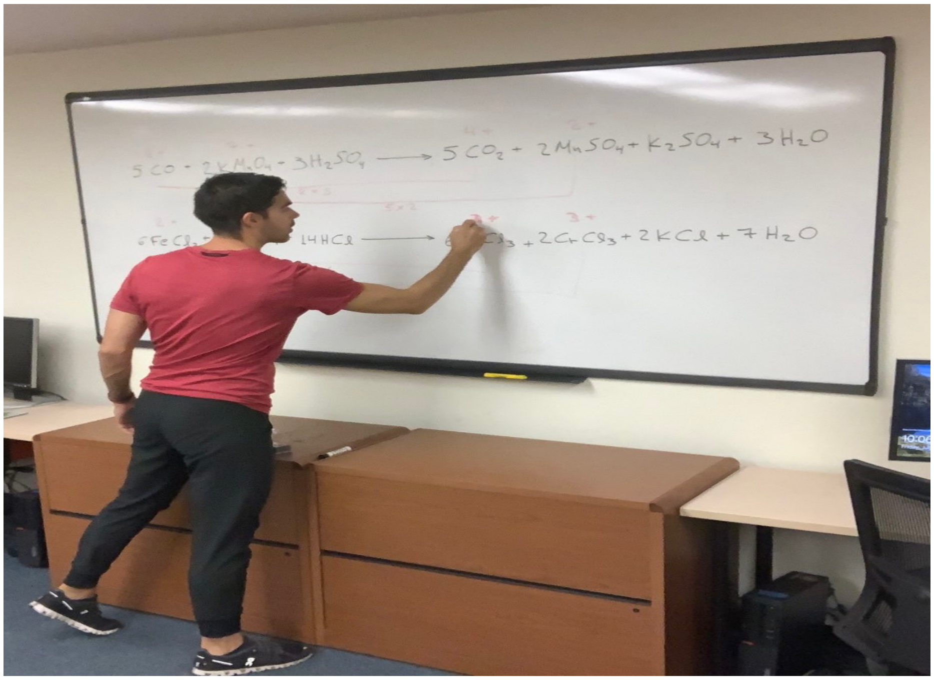
Figure S8: Example of Randomized Block Question, Boy, Non-STEM



A top performing **male** student in your classroom would be impactful for others with respect to:

	0 means Strongly Disagree and **100** means **Strongly Agree** 0 10 20 30 40 50 60 70 80 90 100
School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational Choice	

Figure S9: Example of Randomized Block Question, Boy, STEM



A top performing **male** student in your classroom would be impactful for others with respect to:

	0 means Strongly Disagree and **100** means **Strongly Agree** 0 10 20 30 40 50 60 70 80 90 100
School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational Choice	

Figure S10: Survey Consent Form

Questionnaire (English)

Researchers Associate Professor Rigissa Megalokonomou and Dr. Sofoklis Goulas invite you to a study on the role model function of classmates. The following questions focus on the influences of female and male top performers during high school.

The questions refer to your recollections from high school. Participation in the survey is optional and should take no more than 9 minutes. There is no risk associated with participating or choosing not to participate, and your personal privacy is guaranteed.

Upon completing the survey, a donation of € 0.50 will be made to one of the following charitable organizations based on your selection: SOS Children's Village Greece, All Together We Can, Schedia, Kivotos you Kosmos, or another organization that you will indicate to us.

If you have any questions about the questionnaire, you can contact the researchers by email at r.megalokonomou@uq.edu.au or goulas@stanford.edu.

Should you be dissatisfied with the study's conduct, have questions, complaints, or concerns about the research or your rights as participants, please contact the Stanford Institutional Review Board (IRB) to speak with someone independent of the research organization. You can contact them by calling 650-723-2480 or mailing at Stanford IRB, Stanford University, 1705 El Camino Real, Palo Alto, CA 94306.

Under the General Data Protection Regulation (GDPR), you have certain rights regarding Your Study Data. These include the right to request access to, correct, or erase Your Study Data; object to or restrict our processing of Your Study Data; and request the transfer of Your Study Data to another organization. You may also withdraw your consent at any time. If you withdraw your consent or request Your Study Data be erased, we can still legally collect, use, and share Your Study Data up to the point in time that you withdraw your consent or request your data be erased. Even if you withdraw your consent, we may still use Your Study Data that has been anonymized or pseudonymized for specific purposes, as allowed by law. Your anonymized or pseudonymized data may be used for public health, scientific research, historical research, statistical analysis, and storage for important reasons of public interest. We will keep Your Study Data in identifiable form if required by law, and there is no limit on the length of time we will keep it for research purposes. We will also keep your Study Data to comply with legal and regulatory requirements, as long as it remains useful, unless you decide you no longer want to take part. You are allowing access to this information indefinitely as long as you do not withdraw your consent.

You consent to the collection, use, and transfer of Your Study Data, including health and other sensitive personal data, for the purpose of carrying out the research study, and know that you can withdraw your consent at any time. We will stop processing your personal data, except as described above.

Thank you for your participation.

Figure S11: All Survey Questions

==

What is your gender?

- Male
- Female
- Non-binary
- I do not wish to answer

Are you a teacher or a student?

- I am a student
- I am a primary school teacher
- I am a secondary school teacher
- I was a primary school teacher
- I was a secondary school teacher
- None of the above

[The following questions are displayed for the participants who selected "I am/was a primary/secondary school teacher" in the above question]

Do you find yourself more lenient in grading girls than boys?

- Not at all
- Little
- Probably yes
- Definitely yes

What is/was your primary subject assignment?

- PE
- …
- Other

Do you think the profession "engineer" is best suited to

- Males
- Females
- Both

Do you think the profession “lawyer” is best suited to

- ○ Males
- ○ Females
- ○ Both

Do you think the profession “language teacher” is best suited to

- ○ Males
- ○ Females
- ○ Both

Do you think the profession “math teacher” is best suited to

- ○ Males
- ○ Females
- ○ Both

Do you have children (multiple answers)?

- ○ Yes, I have at least a daughter
- ○ Yes, I have at least a son
- ○ No, I don’t have children

[RANDOMIZED BLOCKS]
[In the randomized block, participants receive a random treatment where only the questions related to the allocated treatment are displayed. Each participant receives a unique treatment.]

[Treatment 1 – A girl excelling in STEM]

[IMAGE HERE]

A top performing **female** student in your classroom would be impactful for others with respect to:

0 means Strongly Disagree and **100** means Strongly Agree

0 10 20 30 40 50 60 70 80 90 100

School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational choice	

Do you think the **female** student who excels in your classroom and is recognized for it feels:

	0 means Strongly Disagree and **100** means Strongly Agree 0 10 20 30 40 50 60 70 80 90 100
Greater confidence	
Greater learning autonomy	
Being an example for others	

[End Treatment 1]

[Treatment 2 – A girl excelling in Non-STEM]

[IMAGE HERE]

A top performing **female** student in your classroom would be impactful for others with respect to:

0 means Strongly Disagree and **100** means Strongly Agree

	0 10 20 30 40 50 60 70 80 90 100
School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational choice	

Do you think the **female** student who excels in your classroom and is recognized for it feels:

0 means Strongly Disagree and **100** means Strongly Agree

	0 10 20 30 40 50 60 70 80 90 100
Greater confidence	
Greater learning autonomy	
Being an example for others	

[End Treatment 2]

[Treatment 3 – A boy excelling in STEM]

[IMAGE HERE]

A top performing **male** student in your classroom would be impactful for others with respect to:

0 means Strongly Disagree and **100** means Strongly Agree

0 10 20 30 40 50 60 70 80 90 100

School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational choice	

Do you think the **male** student who excels in your classroom and is recognized for it feels:

0 means Strongly Disagree and **100** means Strongly Agree

	0 10 20 30 40 50 60 70 80 90 100
Greater confidence	
Greater learning autonomy	
Being an example for others	

[End Treatment 3]

[Treatment 4 – A boy excelling in Non-STEM]

[IMAGE HERE]

A top performing **male** student in your classroom would be impactful for others with respect to:

0 means Strongly Disagree and **100** means Strongly Agree

	0 10 20 30 40 50 60 70 80 90 100
School performance in STEM subjects	
School performance in non-STEM subjects	
School conduct	
High school track choice	
College major choice	
Occupational choice	

Do you think the **male** student who excels in your classroom and is recognized for it feels:

0 means Strongly Disagree and **100** means Strongly Agree

	0 10 20 30 40 50 60 70 80 90 100
Greater confidence	
Greater learning autonomy	
Being an example for others	

[End Treatment 4]

[END OF RANDOMIZED BLOCKS]

[The following questions are about your experiences as a student.]

In which year were you in grade 10?

____

Do you remember when you were a student, if the *top performing* student in grade 10 in your class was a girl or a boy?

- ○ Yes, they were a girl
- ○ Yes, they were a boy
- ○ No, I do not remember
- ○ I was the top performing student in my class

Do you remember when you were a student, if the *second-best* student in grade 10 in your class was a girl or a boy?

- ○ Yes, they were a girl
- ○ Yes, they were a boy
- ○ No, I do not remember
- ○ I was the second-best student in my class

If you would like to participate in our next survey, please fill in your email address below.
We will also send you the findings of our survey for your information as well as confirmation of our donations.

____

To which charity would you like us to donate the amount of money related to your completion?

- ○ SOS children's village of Greece
- ○ Together we can
- ○ Raft
- ○ Ark of the World
- ○ Other _____

==

S1 Supplementary Survey

One may worry that any differences in the whiteboard content of boy and girl performers in the survey stimuli may affect participants' perceptions of role model influences because the whiteboard content may be perceived as indicator of hard work, effort, diligence, or attention to detail. We have conducted a supplementary survey-based experiment on the same population of our main study to test the hypothesis that the specific stimuli used could generate differential perceptions of hard work, study efforts, diligence, or attention to detail. We disseminated the survey via email during August - September 2024 targeting the same population of our main study. The sample includes 120 teachers. We were able to identify 51 teachers who also participated in our main study and use them in an additional robustness investigation of our main results that controls for their perceptions of hard work, study efforts, diligence, or attention to detail.

Table S16 in this Supplementary Appendix reports our results. If the content on the whiteboard influences participant responses, we would anticipate our survey results to favor boy actors over girl actors, particularly in Non-STEM. Our results suggest that study participants associate the girl actor (top-performing girl) with higher levels of hard work, study efforts, and attention to detail compared to the boy actor (top-performing boy) in the Non-STEM scenarios. In the STEM scenarios, the study participants associate the girl actor with higher levels of attention to detail. These results suggest that the boy actor, whose whiteboard may appear having slightly more content in the Non-STEM scenarios, is not perceived as working harder, studying more, being more diligent, or paying more attention to detail. This implies that the amount of content in the whiteboard does not influence participant responses.

Next, we replicate the baseline specification using a smaller sample derived from our supplementary survey-based experiment. In this analysis, we also control for teachers' perceptions of hard work, study efforts, diligence, and attention to detail. This allows us to assess whether the inclusion of these controls affects the effect size of our estimates. The results are presented in Table S17. Column 1 shows the replication of our baseline model using the smaller sample. Although the estimated coefficients remain consistent with the baseline results and are positive, they are not statistically significant, likely due to the reduced sample size and lower statistical power. Subsequently, we add teachers' perceptions of hard work, study efforts, diligence, and attention to detail as controls, one at a time (columns 2 to 5), and all together in column 6. In the presence of bias towards the actor who is doing more work, we would expect our estimated coefficients to decrease in magnitude with he inclusion of these controls. Our results indicate that the estimated coefficients either remain stable or slightly increase. This is in line with our previous findings, suggesting that the amount of whiteboard content does not significantly influence participant responses.

Table S16: Supplementary Survey Results

	(1) Mean	(2) SD	(3) Mean	(4) SD	(5) Mean	(6) SE
Panel A: Overall	Shown Girl		Shown Boy		Difference (1) - (3)	
Hard-Working	2.98	0.76	2.63	0.75	0.35	0.14**
Deligent	2.98	0.69	2.76	0.74	0.22	0.13*
Studies More Hours	2.52	0.66	2.34	0.54	0.17	0.11
Gives Attention to Details	3.04	0.72	2.49	0.72	0.54	0.13***
Panel B: STEM	Shown Girl in STEM		Shown Boy in STEM		Difference (1) - (3)	
Hard-Working	2.89	0.85	2.59	0.80	0.30	0.22
Deligent	2.96	0.72	2.75	0.76	0.21	0.20
Studies More Hours	2.35	0.56	2.48	0.63	-0.14	0.16
Gives Attention to Details	3.00	0.69	2.55	0.72	0.45	0.19**
Panel C: Non-STEM	Shown Girl in Non-STEM		Shown Boy in Non-STEM		Difference (1) - (3)	
Hard-Working	3.06	0.68	2.67	0.71	0.40	0.18**
Deligent	3.00	0.68	2.77	0.73	0.23	0.18
Studies More Hours	2.67	0.71	2.20	0.41	0.47	0.15***
Gives Attention to Details	3.07	0.75	2.43	0.73	0.64	0.19***

Notes: We investigated whether the specific stimuli used in the study are associated with differential perceptions of constructs related to hard work, study efforts, diligence, and attention to detail. The table reports descriptive statistics for teachers across all treatment groups. Panel A compares *Shown Girl* (N: 59) and *Shown Boy* (N: 61) treatment conditions. Panel B compares *Shown Girl in STEM* (N: 28) and *Shown Boy in STEM* (N: 31) treatment conditions. Panel C compares *Shown Girl in Non-STEM* (N: 31) and *Shown Boy in Non-STEM* (N: 30) treatment conditions. Significance stars denote the results from two sample mean comparison t-tests; *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table S17: Robustness Check: Accounting for Perceptions of Hard Work, Diligence, Study Effort, and Attention to Detail

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: STEM Performance						
Shown Girl	0.359	0.359	0.416	0.387	0.402	0.458
	(0.301)	(0.305)	(0.293)	(0.304)	(0.313)	(0.309)
Observations	51	51	51	51	51	51
R-squared	0.394	0.394	0.422	0.407	0.416	0.441
Panel B: Non-STEM Performance						
Shown Girl	0.345	0.342	0.405	0.411	0.366	0.365
	(0.367)	(0.352)	(0.358)	(0.345)	(0.384)	(0.346)
Observations	51	51	51	51	51	51
R-squared	0.210	0.277	0.242	0.281	0.215	0.324
Panel C: Conduct						
Shown Girl	0.087	0.084	0.171	0.160	0.137	0.152
	(0.345)	(0.334)	(0.335)	(0.307)	(0.343)	(0.328)
Observations	51	51	51	51	51	51
R-squared	0.186	0.261	0.249	0.274	0.217	0.305
Panel D: Track Choice						
Shown Girl	0.096	0.096	0.175	0.133	0.142	0.215
	(0.328)	(0.331)	(0.296)	(0.329)	(0.305)	(0.300)
Observations	51	51	51	51	51	51
R-squared	0.268	0.271	0.324	0.291	0.294	0.340
Panel E: College Major Choice						
Shown Girl	0.136	0.135	0.220	0.190	0.202	0.260
	(0.340)	(0.342)	(0.314)	(0.341)	(0.314)	(0.316)
Observations	51	51	51	51	51	51
R-squared	0.315	0.327	0.378	0.363	0.368	0.403
Panel F: Occupational Choice						
Shown Girl	0.259	0.260	0.300	0.261	0.266	0.322
	(0.317)	(0.322)	(0.300)	(0.316)	(0.318)	(0.326)
Observations	51	51	51	51	51	51
R-squared	0.263	0.264	0.278	0.263	0.264	0.294
Shown STEM	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional Controls:						
Hard-Working	No	Yes	No	No	No	Yes
Diligent	No	No	Yes	No	No	Yes
Studies More Hours	No	No	No	Yes	No	Yes
Gives Attention to Details	No	No	No	No	Yes	Yes

Notes: We investigated whether the specific stimuli used in the study are associated with differential perceptions of constructs related to hard work, study effort, diligence, and attention to detail. Sample consists of 51 teachers who also participated in the initial survey. In all specifications we control for demographics, own history from school years and survey characteristics. We control for indicators reflecting any missing values. Robust standard errors are reported in parentheses.

Figure S12: Supplementary Survey Questions

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What is your gender?

- Male
- Female
- Non-binary
- I do not wish to answer

Are you a teacher or a student?

- I am a student
- I am a primary school teacher
- I am a secondary school teacher
- I was a primary school teacher
- I was a secondary school teacher
- None of the above

[RANDOMIZED BLOCKS]

[In the randomized block, participants receive a random treatment where only the questions related to the allocated treatment are displayed. Each participant receives a unique treatment.]

[Treatment 1 – A girl excelling in STEM]

[IMAGE HERE]

Do you believe that the girl depicted, who excels in the classroom, works hard?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the girl depicted, who excels in the classroom, is diligent?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the girl depicted, who excels in the classroom, studies for many hours?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not
Do you believe that the girl depicted, who excels in the classroom, pays attention to the details of her assignments?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

[End Treatment 1]

[Treatment 2 – A girl excelling in Non-STEM]

[IMAGE HERE]

Do you believe that the girl depicted, who excels in the classroom, works hard?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the girl depicted, who excels in the classroom, is diligent?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the girl depicted, who excels in the classroom, studies for many hours?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the girl depicted, who excels in the classroom, pays attention to the details of her assignments?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

[End Treatment 2]

[Treatment 3 – A boy excelling in STEM]

[IMAGE HERE]

Do you believe that the boy depicted, who excels in the classroom, works hard?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the boy depicted, who excels in the classroom, is diligent?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the boy depicted, who excels in the classroom, studies for many hours?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the boy depicted, who excels in the classroom, pays attention to the details of his assignments?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

[End Treatment 3]

[Treatment 4 – A boy excelling in Non-STEM]

[IMAGE HERE]

Do you believe that the boy depicted, who excels in the classroom, works hard?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the boy depicted, who excels in the classroom, is diligent?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the boy depicted, who excels in the classroom, studies for many hours?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

Do you believe that the boy depicted, who excels in the classroom, pays attention to the details of his assignments?
o Definitely yes
o Probably yes
o I am not sure
o Probably not
o Definitely not

[End Treatment 4]

[END OF RANDOMIZED BLOCKS]

Thank you.

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