

Shaping Women's Aspirations through Information and Motivation: Experimental Evidence from India

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Motivation

- Women's education levels in India have been rising (*Klasen & Pieters 2015*)
- However, many women have yet to reach education levels where returns are substantial
- Convex returns to education (*Kingdon & Unni 1998*)
- Higher education yields large gains — for women aged 25–34, a postgraduate degree in non-technical fields increases salaried income by 13.5 % compared to a graduate degree (*PLFS - 2022-23*)

Motivation

- Yet, many women drop out after their bachelor's — among graduates and above in this age group, only 26.8 % complete postgraduation (*PLFS - 2022-23*)
- Our work explores continuation of a masters level using a bundled intervention in Haryana, India
- Provide college-going girls with information on career and education opportunities in economics
- Exposure to female role models with successful careers in the field

Motivation

- Information constraint
- Around 56% of students reported lack of knowledge about career and education opportunities after Bachelor's in Economics
- Around 68% of students reported lack of counseling for future opportunities at undergraduate level
- Another issue - Attitude towards economics is also not very positive
- Around 30% students believed that they will not be able to succeed in economics even if they put in effort
- Around 45% students believed that boys are better than girls at Economics

Contributions to Literature

- Literature on impact of role model exposure on students' educational and labour market outcomes (*Breda et al 2023, Agurto 2021, Ahmed et al 2024, Riley 2024, Bernard et al 2015*)
- Limited research on interventions boosting women's representation in economics education and careers. (*Porter and Serra 2020, Patnaik et al 2024, Blau et al 2010*)
- Our intervention is intensive (approx 6 hours spread across 4 sessions) (*Breda et al. - one hour in-class treatment, Ahmed et al. - 10 minute video, Porter & Serra - 30 minutes session, Agurto - 20 minutes session*)
- Our intervention also aims at bridging the information gap

Contributions to Literature

- Contribute to non-experimental work on influence of female role models in media on education and fertility choices of women (*Kearney and Levine 2015, Ferrara, Chong and Duryea 2012, Jensen and Oster 2009*)
- Contribute to how exposure to influential females shapes girls aspirations, education and labour market outcomes (*Beaman, Duflo, Pande and Topalova 2012, Priyanka 2022, Jain and Nandwani 2024*)

Intervention

- Six role models from diverse fields discussed their journeys
- All role models have roots in Haryana. Evidence exists that role models that share background and gender with the target audience are the most effective (*Kofoed et al. 2019, Nguyen 2008, Goulas et al 2024, Dennehy & Dasgupta 2017, Lockwood 2006*)
- Each role model has an Economics background and holds a Masters in Economics degree
- Profiles:
 - Indian Economic Services Officer
 - Corporate Professional
 - First Year Economics PhD student
 - Policy Researcher (Think Tank)
 - Assistant Professor of Economics (Indian Institute)
 - Assistant Professor of Economics (Foreign Institute)

Intervention

- Each role model video was approximately 30 minutes long
- Scripts made before recording the videos
- Role models explained career trajectory
- Quality of Masters in Economics college matters
- How they managed pushback when moving out of Haryana
- Stressed on financial independence for women
- How masters in Economics helped them in their careers; shared career opportunities available after Masters
- How they navigated language (English) barrier
- Importance of self study
- Strategies for preparing for competitive entrance exams
- Navigating scholarship and funding opportunities for Masters and PhD

Topics covered

- Four structured sessions
- **Session 1** (*1 hour*) - Structure of the sessions shared, IES officer's video screened, RAs shared information on career paths after Masters in Economics
- **Session 2** (*2 hours*) - Journeys of a corporate professional and a first-year Economics Ph.D. student screened, RAs shared a list of Indian Institutions offering Master's programs in Economics
- **Session 3** (*1.5 hours*) - highlighted journeys of two Assistant Professors (Indian Institute, International Institute)
- **Session 4** (*1.5 hours*) - featured a professional from a policy research think tank.
- RAs addressed student queries during all four sessions

Target students

- Intervention targeted students enrolled in 2 courses:
 - B.A. (Hons) Economics
 - B.A. Programme courses with Economics as an elective
- First- and third-year students were included in the study sample
- Videos were shown to students in college. 112 sessions conducted in total with 4 held online

Randomisation

- 55 colleges affiliated with a state University in Haryana
- Colleges located across **7 Haryana districts** - Ambala, Kaithal, Karnal, Kurukshetra, Panchkula, Panipat and Yamunanagar
- Colleges: 28 (*treatment*), 27 (*control*)
- Students: 578 (*treatment*), 565 (*control*)
- Based on **stratified randomisation**
- Stratification based on college characteristics
- college - administrative division, co-educational status, public or private college affiliation

Timeline of the Field Activities

- **Baseline** : October - December, 2024
- **Intervention** : Mid Feb - Mid April , 2025
- **Endline** : Mid March - April, 2025
- **Follow - up** : October - November, 2025

Outcome Variables

- **Primary Outcomes**

- Enrolment in Masters
- Interest in pursuing Masters
- Appearing in Masters Entrances
- Dropout
- Marks in College subjects
- Aspirations

- **Secondary Outcomes**

- Perception towards Economics ▶ Economics Attitude Index
- Grit (Duckworth Quinn 2009) ▶ Grit Index
- Gender Attitudes ▶ Gender Attitudes Index
- Growth Mindset (3 item scale, Carol Dweck) ▶ Growth Mindset Index

Empirical Specification

$$Y_{icd} = \alpha + \delta \text{Treatment}_{cd} + \mathbf{X}_{icd} + \mathbf{Z}_{cd} + \phi_d + \epsilon_{icd}$$

- Y_{icd} : dependant variable for student i enrolled in college c in district d
- Treatment_{cd} : whether role model intervention done in college c in district d
- \mathbf{X}_{icd} : student and household characteristics like whether eco hons enrolment, 12th from govt school, caste, hindu, land owner, urban/rural residence, asset score and house owned
- \mathbf{Z}_{cd} : college characteristics like govt/private and coed/girls
- ϕ_d : District fixed effects
- Standard errors are clustered at the college level.
- δ is the coefficient of interest.

Balance Table - College (Baseline)

Variable	Control	Treatment	p value (Difference)
Girls college	0.370	0.428	0.666
Govt	0.481	0.5	0.893
Rural	0.444	0.464	0.885
Hostel	0.333	0.428	0.476
Years since establishment	42.592	36.928	0.448
Masters in Eco	0.148	0.25	0.353
Observations	28	27	55

Balance Table - Student characteristics (Baseline)

Variable	N	Control	N	Treatment	p value (Difference)
Asset Score	565	2.86	578	3.10	0.30
Arts Stream	565	0.86	578	0.81	0.09*
Govt School	565	0.64	578	0.56	0.15
House Owned	565	0.88	578	0.81	0.07*
Land Owned	565	0.48	578	0.50	0.63
Urban	565	0.26	578	0.32	0.23
SC	565	0.28	578	0.26	0.65
OBC	565	0.29	578	0.29	0.95
General	565	0.41	578	0.42	0.91
Hindu	565	0.92	578	0.89	0.20
Eco hons.	565	0.15	578	0.24	0.19
Father's Edu	555	8.72	567	8.94	0.57
Father's Works	519	0.88	526	0.88	0.92
Mother's Edu	557	6.98	567	6.85	0.76
Mother's Works	548	0.16	567	0.18	0.57
First Year	565	0.49	578	0.50	0.72
Private Tutions	565	0.07	578	0.06	0.60
Income (< 2.5L)	305	0.86	284	0.86	0.94
Intruption (English)	565	0.30	578	0.36	0.28
CBSE/ICSE	565	0.21	578	0.25	0.46
Social Desirability Index	565	1.19	578	1.07	0.16

Balance Table - Outcomes (Baseline)

Variable	N	Control	N	Treatment	p value (Difference)
Interest in Masters (Eco)	565	2.75	578	2.77	0.78
Economics Attitude	565	3.39	578	3.37	0.59
Growth Mindset	565	4.04	578	4.04	0.98
Grit	565	3.23	578	3.23	0.90
Discuss Masters (Eco)	565	0.55	578	0.53	0.52
Search Masters (Eco)	565	0.42	578	0.43	0.80
Gender Attitude	565	3.09	578	3.09	0.90

Attrition

Variable	Control	Treatment	p value (Difference)
Attrition	.12	.14	0.43
Observations	565	578	1143

Balance Table (Post Attrition) - College

Variable	Control	Treatment	p value (Difference)
Girls college	0.370	0.428	0.666
Govt	0.481	0.5	0.893
Rural	0.444	0.464	0.885
Hostel	0.333	0.428	0.476
Years since establishment	42.592	36.928	0.448
Masters in Eco	0.148	0.25	0.353
Observations	28	27	55

Balance Table (Post Attrition) - Student characteristics

Variable	N	Control	N	Treatment	p value (Difference)
Asset Score	495	2.85	493	3.02	0.46
Arts Stream	495	0.85	493	0.82	0.28
Govt School	495	0.64	493	0.56	0.15
House Owned	495	0.88	493	0.82	0.11
Land Owned	495	0.48	493	0.50	0.64
Urban	495	0.26	493	0.31	0.34
SC	495	0.27	493	0.27	0.97
OBC	495	0.30	493	0.30	0.85
General	495	0.41	493	0.39	0.65
Hindu	495	0.92	493	0.89	0.14
Eco hons.	495	0.14	493	0.22	0.23
Father's Edu	486	8.79	485	8.94	0.67
Father's Works	454	0.88	448	0.89	0.70
Mother's Edu	489	7.10	485	6.79	0.50
Mother's Works	480	0.15	483	0.17	0.41
First Year	495	0.47	493	0.50	0.49
Private Tutions	495	0.06	493	0.06	0.98
Income (< 2.5L)	267	0.87	234	0.86	0.77
Intruccion (English)	495	0.30	493	0.35	0.37
CBSE/ICSE	495	0.21	493	0.23	0.63
Social Desirability Index	495	1.22	493	1.22	0.20

Balance Table (Post Attrition) - Outcomes

Variable	N	Control	N	Treatment	p value (Difference)
Interest in Masters (Eco)	495	2.77	493	2.79	0.80
Economics Attitude	495	3.40	493	3.39	0.81
Growth Mindset	495	4.05	493	4.06	0.88
Grit	495	3.24	493	3.24	0.87
Discuss Masters (Eco)	495	0.56	493	0.54	0.58
Search Masters (Eco)	495	0.41	493	0.43	0.51
Gender Attitude	495	3.10	493	3.10	0.87

Student Feedback on Role Model Sessions

Role Model	N	Like (%)	Informative (%)	Understood (%)	Inspirational (%)	More sessions (%)
Role Model 1	308	81.87	81.87	81.87	82.52	99.35
Role Model 2	285	81.11	80.06	82.86	81.46	98.95
Role Model 3	299	85.66	86.00	87.00	88.00	99.00
Role Model 4	298	85.61	86.62	86.62	87.29	99.33
Role Model 5	283	83.09	85.56	84.85	83.8	99.65
Role Model 6	289	87.58	87.93	87.24	87.58	100.00

# Sessions	N	Attendance (%)
0	93	18.83
1	42	8.50
2	28	5.67
3	63	12.75
4	52	10.53
5	52	10.53
6	164	33.20

Impact of Intervention on **Interest in Masters in Economics**

	(1)	(2)	(3)
Treatment	0.77*** (0.11)	0.75*** (0.10)	0.78*** (0.10)
Observations	988	988	988
R-squared	0.09	0.20	0.22
Control Mean	2.56	2.56	2.56
District Fixed Effects	Yes	Yes	Yes
Baseline Y	No	Yes	Yes
StudentChar	No	No	Yes
HHChar	No	No	Yes
CollegeChar	No	No	Yes

Impact on **Intent for Masters in Economics Application**

	(1)	(2)
Treatment	0.16*** (0.04)	0.15*** (0.04)
Observations	500	500
R-squared	0.04	0.08
Control Mean	0.50	0.50
District Fixed Effects	Yes	Yes
StudentChar	No	Yes
HHChar	No	Yes
CollegeChar	No	Yes

Impact of Intervention on other outcomes

	(1) Discuss Masters	(2) Search Masters	(3) Economics Attitude
Treatment	0.12*** (0.02)	0.10*** (0.04)	0.21*** (0.03)
Observations	988	988	988
R-squared	0.11	0.13	0.24
Control Mean	0.69	0.60	3.22
District Fixed Effects	Yes	Yes	Yes
Baseline Y	Yes	Yes	Yes
StudentChar	Yes	Yes	Yes
HHChar	Yes	Yes	Yes
CollegeChar	Yes	Yes	Yes

Impact of Intervention on other outcomes

	(1) Growth Mindset	(2) Grit	(3) Grit (Pos)	(4) Grit (Neg)	(5) Gender Attitude	(6) Gender Attitude (Pos)	(7) Gender Attitude (Neg)
Treatment	-0.359*** (0.0919)	-0.0601** (0.0291)	-0.172** (0.0741)	-0.0712 (0.0620)	-0.0126 (0.0340)	0.244*** (0.0557)	0.218*** (0.0455)
Observations	988	988	988	988	988	988	988
R-squared	0.06	0.11	0.06	0.10	0.26	0.16	0.18
Control Mean	4.47	3.22	3.76	3.32	3.10	3.08	1.88
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline Y	Yes	Yes	Yes	Yes	Yes	Yes	Yes
StudentChar	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HHChar	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CollegeChar	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Differential impact of Attendance

Differential Impact of Attendance

	(1) Interest (Masters in Eco)	(2) Search Masters	(3) Economics Attitude	(4) Masters Application
Treatment	0.34** (0.13)	0.03 (0.05)	0.02 (0.04)	-0.03 (0.06)
Treatment x Attendance(%)	0.76*** (0.14)	0.13* (0.07)	0.34*** (0.05)	0.31*** (0.08)
Observations	988	988	988	500
R-squared	0.24	0.09	0.12	0.10
Control Mean	2.56	0.60	3.22	0.50
District Fixed Effects	Yes	Yes	Yes	Yes
Baseline Y	Yes	Yes	Yes	No
StudentChar	Yes	Yes	Yes	Yes
HHChar	Yes	Yes	Yes	Yes
CollegeChar	Yes	Yes	Yes	Yes

Testing Information/Role Model Channel

	(1) Jobs Knowledge	(2) Institutes Knowledge	(3) Role Model
Treatment	0.72*** (0.15)	1.47*** (0.27)	0.03 (0.03)
Observations	988	988	944
R-squared	0.12	0.11	0.08
Control Mean	2.08	2.21	0.71
District Fixed Effects	Yes	Yes	Yes
Baseline Y	No	No	Yes
StudentChar	Yes	Yes	Yes
HHChar	Yes	Yes	Yes
CollegeChar	Yes	Yes	Yes

Impact on Relocation Preferences

	(1) Study (Across India)	(2) Work (Across India)
Treatment	0.10*** (0.03)	0.13*** (0.04)
Observations	988	988
R-squared	0.14	0.18
Control Mean	0.31	0.38
District Fixed Effects	Yes	Yes
Baseline Y	Yes	Yes
StudentChar	Yes	Yes
HHChar	Yes	Yes
CollegeChar	Yes	Yes

Impact on other options after graduation

	(1) MBA	(2) BEd	(3) Govt Exams
Treatment	0.80*** (0.11)	0.79*** (0.11)	0.46*** (0.06)
Observations	988	988	988
R-squared	0.13	0.14	0.19
Control Mean	2.56	2.56	3.19
District Fixed Effects	Yes	Yes	Yes
Baseline Y	Yes	Yes	Yes
StudentChar	Yes	Yes	Yes
HHChar	Yes	Yes	Yes
CollegeChar	Yes	Yes	Yes

Impact on other options after graduation

	(1) Employed (10 years)	(2) Private Job	(3) Family Business	(4) Own Business
Treatment	0.07** (0.03)	0.60*** (0.08)	0.50*** (0.11)	0.34*** (0.07)
Observations	988	988	988	988
R-squared	0.07	0.13	0.14	0.11
Control Mean	0.26	2.33	1.98	2.58
District Fixed Effects	Yes	Yes	Yes	Yes
Baseline Y	No	Yes	Yes	Yes
StudentChar	Yes	Yes	Yes	Yes
HHChar	Yes	Yes	Yes	Yes
CollegeChar	Yes	Yes	Yes	Yes

Impact on marriage age preference

	(1) Own Preference	(2) Parents Preference
Treatment	1.14*** (0.17)	0.55*** (0.18)
Observations	976	960
R-squared	0.24	0.30
Control Mean	29.03	28.60
District Fixed Effects	Yes	Yes
Baseline Y	Yes	Yes
StudentChar	Yes	Yes
HHChar	Yes	Yes
CollegeChar	Yes	Yes

Impact on views about Haryana girls

	(1) Career (Economics)	(2) Good Opportunities	(3) Overcome English Barrier
Treatment	0.02* (0.01)	0.08*** (0.02)	0.05*** (0.01)
Observations	988	988	988
R-squared	0.02	0.06	0.04
Control Mean	0.98	0.88	0.93
District Fixed Effects	Yes	Yes	Yes
StudentChar	Yes	Yes	Yes
HHChar	Yes	Yes	Yes
CollegeChar	Yes	Yes	Yes

Summary

- We aim to assess if exposure to role models can push women to continue studies
- We find impact on interest to do a Masters in Economics, searching and discussing about the same and better attitude towards Economics
- Things in pipeline:
 - Analyse heterogeneity based on pre - intervention marks and parents background; look at impact on post intervention marks
 - Analyse peer effects
 - Explore mechanisms (role model? Information effects?)
 - Session-level effects using feedback collected after each session
 - Conduct a follow up survey to check impact on actual outcomes; change in enrollment in Masters, appearance in entrance exams

Grit Index

Response Options: 1 - Very much like me, 2 - Mostly like me, 3 - Somewhat like me, 4 - Not much like me, 5 - Not like me at all

1. New ideas and projects sometimes distract me from previous ones.*
2. Setbacks don't discourage me.
3. I have been obsessed with a certain idea or project for a short time but later lost interest.*
4. I am a hard worker.
5. I often set a goal but later choose to pursue a different one.*
6. I have difficulty maintaining my focus on projects that take more than a few months to complete.*
7. I finish whatever I begin.
8. I am diligent. [▶ Back](#)

Growth Mindset Index

Response Options: 1 - Strongly Disagree, 2 - Disagree, 3 - Mostly Agree, 4 - Mostly Disagree, 5 - Agree, 6 - strongly Agree

1. You have a certain amount of intelligence, and you can't really do much to change it.
2. Your intelligence is something about you that you can't change very much.
3. You can learn new things, but you can't really change your basic intelligence. [▶ Back](#)

Gender Attitude Index

Response Options: 1 - Strongly Disagree, 2 - Disagree, 3 - Agree, 4 - Strongly Agree

1. A woman's most important role is being a good homemaker.
2. A man should have the final word about decisions in his home.
3. A woman should tolerate violence to keep her family together.
4. Wives should be less educated than their husbands.
5. Boys should get more opportunities/resources for education.
6. Men and women should get equal opportunities in all spheres of life.
7. Girls should be allowed to study as far as they want.
8. Daughters should have a similar right to inherited property as sons.
9. It would be a good idea to elect a woman as the village Sarpanch.

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Economics Attitude Index

Response Options: 1 - Strongly Disagree, 2 - Disagree, 3 -Neutral, 4 - Agree, 5 - Strongly Agree

1. I enjoy Economics.
2. I enjoy Math.
3. I am good at Economics.
4. I can succeed in Economics subjects if I put in effort.
5. Economics is a difficult subject.
6. Economics is interesting.
7. I want to take up a job in Economics related fields (for example - research in Economics, Analytics, Consultant, IES, Economist, Public Policy Advisor and others)
8. Jobs in Economics are interesting.
9. Boys are better than girls at Economics.
10. It's hard to maintain work life balance in Economics jobs.

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